POWER GRID COMPANY OF BANGLADESH LIMITED

Addendum-1 and Clarification-1 of Queries

FOR

Design, Supply, Erection, Testing & Commissioning and Integration with NLDC of 13 nos of 132 KV new Grid Sub-Stations on Turnkey Basis.

POWER GRID COMPANY OF BANGLADESH LIMITED

DESIGN, SUPPLY, ERECTION, TESTING, COMMISSIONING AND INTEGRATION WITH NLDC OF 13 NOS OF NEW GRID SUB-STATIONS ON TURNKEY BASIS

ADDENDUM NO. 1

(Date: December 6, 2016)

Following revisions/changes are made in the bid document which will form part of the bid document.

01. Volume-1, Section-2, ITB 1.1, Page-2-1 the number of the invitation for bid.

"01/PGCB/Sec (Comm)/2016/..... date-03.11.2016". is replaced by "01/PGCB/Sec (Com)/2016/6001 dated: November 3, 2016".

02. Volume-1, Section-4

Revised section-4 has been issued and attached as annexure-1, the existing section-4 is replaced by revised one.

03. Volume-1, Section-9, Appendix-1

Revised pages 9-7 to 9-10 has been issued and attached herewith as annexure-11.

04. Volume-2, Section-1, Clause 1.1, Page-1/3 and other places in BID document.

"IEC-60870-5-104 or IEC-60870-5-101" is replaced by IEC-60870-5-104 and "IEC-60870-5-101".

05. Volume-2, See-1, Page-1/8, Sl. No. 12,

"RTU have to be Alstom.....model and version" is replaced by "RTU have to be Alstom T&D (at present GE)/ABB/Siemens/Schnider make of latest model and version".

06. Volume-2, Section-1, Page-1/8, for Tele protection (Line to be protected).

Sl No. 5 column "no. of line feeder" 04 replaced by 02.

07. Volume-2, See-1, Page-1/10, Sl. No. 17

"Telecom equipment have to be.....make" is replaced by "telecom equipment have to be ABB (SDH/PDH)/Alsotom T&D (at present GE)/ (SDH & PDH) Huawei/(SDH)/loop telecom (PDH) make".

08. Volume-2, Section-3, Cluse-3.2.1 drawing 11001 T and 11002 T-1.

Drawing 11001T and 11002 T-1 are missing. These drawings have been issued and attached as anexure-2.

09. Volume-2, Section-3, Clause 3.3

SCADA standard document is missing. It has been issued and attached as anexure-3.

10. Volume-2, Section-3, Clause- 3.3.5.2 Interface to field device.

The estimated I/O list is missing. Feeder wise tentative I/O list has been issued and attached as anexure-4.

11. Valume-2, Section-3, Clause- 3.3.5.3 RTU capacity.

"Each RTU and marshalling cubicle shall be wired and equipped with a minimum of 25% spare capacity of each facility type (i.e. digital and pulse inputs, analogue inputs and outputs, and control outputs) over and above the indicated requirements itemised an the I/O schedule as "To 2007 +" in Technical Appendix 3" is replaced by "Each RTU and marshalling cubicle shall be wired and equipped with a minimum of 20% spare capacity of each facility type (i.e. digital and pulse inputs, analogue inputs and outputs, and control outputs) over and above the indicated requirements itemised an the I/O schedule".

12. Volume-2, Section-3, page-3/12, clause 3,3,5,3 1st line.

"Minimum of 25% spare capacity" is replaced by "minimum 20% spare capacity".

13. Volume-3, Schedule-A, 2nd page cast 2nd line.

"Daily allowance of US $ 150 for each of the employees Engineer" is replaced by "Daily allowance of US $ 100 for each of the employees Engineer".

14. Volume -3, Schedule - E, Remote terminal limit (RTU).

In Schedule-E, Revised Part-2 has been issued, Remote terminal unit (RTU) is replaced by revised part-2, remote terminal unit (RTU) and attached as annexure-5.

15. Existing telecom equipment communication architecture is missing. It has been issued and attached as annexure-6.

16. Sub-station communication architecture is missing. It has been issued and attached as annexure-7.

17. Sub-station layout drawing is missing. It has been issued and attached as annexure-8.

18. Sub-station Control room drawing is missing. It has been issued and attached as annexure-9.

19. Volume -3, Price Schedule

Revised price schedule has been issued and attached herewith as annexure-10.

POWER GRID COMPANY OF BANGLADESH LIMITED

TENDER: Integration with NLDC of 13 nos of new Grid Sub-Stations

SR. NO.	VOLUME	SECTION	PAGE	CLAUSE	QUERIES	PGCB Answer
1	2 of 3	SEC 1: Scope of Work	1/5	Necessary cabling and interfacing between the Sub-Station and the RTU and the communication equipment are to be included in this contract.	Please provide the tentative Quantity of cables to be considered for tender purpose. If the quantity is not furnished, we will need the signal list to be integrated to the system and distance of the signal from respective RTUs.	Signal List (Pleasr see the item no: 10, annexure: 4 of addendum-1) and SS SLD (vol 2 of 3, sec-1, page-16/28 in the BID Document) Control room and SS (switchyard) layout drawings (Please see the item no: 17 & 18; annex: 8 & 9 of addendum-1). Tentative quantity of cable can be calculated with the help of those mention above.
2	2 of 3	SEC 1: Scope of Work	1/5	Necessary modification in the software and hardware at NLDC master station and back up station at Biddyut Bhaban is also to be done under this contract to accommodate all the new system extended under this contract.	This shall be done by the SCADA OEM as per the unit rate provided in the tender. Please confirm.	Your understanding is correct.
3	2 of 3	SEC 1: Scope of Work	1/9	Summary of BOQ - Ptno. 2 : Different LAN services (CCTV, DFDR etc for central monitoring)	Please provide details of the system required. System architecture is required.	02 (Two) physical LAN ports have to be available in SDH for CCTV, DFDR, Video Conferencing etc. at each Substation.
4	2 of 3	SEC 1: Scope of Work	1/9	Summary of BOQ - Ptno. 2 : Proposed equipment shall be integrated to NMS as well as the station's services.	We presume that the NMS is suitable for the proposed addition of equipments.	There are 02 (Two) NMS in PGCB- 1. U 2000 (V2R6) 2. FOXMAN-UN (R9C)
5	2 of 3	SEC 1: Scope of Work	1/10	Arrangement for auxiliary AC & DC power supply from existing power source for supplied equipment (i.e. RTU &MC).	Noted. For sites where there is existing power supply available, the same shall be tapped from the source DB.	Your understanding is correct.
6	2 of 3	SEC 1: Scope of Work	1/11	All RTU shall be integrated to the master station (NLDC) & back station (Biddyut Bhaban) by IEC-60850-05-104 or IEC-60850-05-104 protocol. Any necessary up-gradation if required at NLDCs is contractor's scope.	We presume that the existing RTUs are already complying to the system requirements. Any field side updgradation is not envisaged. Please confirm if the understanding is correct.	Your understanding is correct.
7	2 of 3	SEC 1: Scope of Work	1/11	RTU have to be ALSTOM T&D or ABB Ltd. make of latest model & version.	RTUs shall be from the make list provided in the tender specifications. Please confirm.	Your understanding is correct. Please see RTU's manufacturer list in Vol-1, Sec-3, Clause-2.6 and item no: 05 of addendum no-1.
8	2 of 3	SEC 2: Fibre Optic Multiplexer Equipment	2/36	This specification describes the communication requirements for the transport of DATA (SCADA& Diff. LAN Services), VOIP-IP Telephone (Operational Telephone) & 2-W Telephone (Administrative Telephone) signal from the new 13 Grid Sub-Stations to Main NLDC (Rampura) and Back-up NLDC (Biddyut Bhaban) through/upgrading existing communication Back-bone.	Please provide the details of equipments and also provide the system architecture of the network already existing.	Please see the item no: 15 & 16 of addendum-1, annexure-6 & 7.
9	2 of 3	SEC 2: Fibre Optic Multiplexer Equipment	2/66	OPGW / FOAC = 01 km	Please confirm the OPGW supply and laying is in contractor scope or it will be done by thrid party.	Supply and laying of OPGW/FOAC is contractor scope.
10	2 of 3	SEC 3: RTU	3/11	Image Controller/Display	Please provide the following: 1. System description & its architecture 2. Whether the existing SCADA is capable of the feature mentioned. 3. Please specify "other souces" which will provide video signals to image controller.	Local Image control/Display is not required.
11	1 of 3	Section-3	3-8	Subcontractors	Please confirm the following: 1. Make of RTU shall be as per the list mentioned in the make list - GE, ABB, Siemens, Schneider. If more than one type of RTUs are required for different substations, the same shall be decided by the contractor based on the suitabililty of the product and solution. 2. Make of Cable : Please add CORDS, KEI and KEC RPG. 3. Contractor shall be free to choose from the make provided in the make list.	As per BID requirement.
12	-	General	-	Configuration diagram of Substation LAN	Please provide the system architecture of Substation LAN of each site.	Please see the item no: 15 & 16 of addendum-1, annexure-6 & 7.
13	-	General	-	LAN Services	Please confirm if the following requirement : 1. Whether Local SCADA is required? 2. Is Substation Automation system is available at all location, if yes provide details substation-wise. 3. Also what are the number of ethernet ports available at each substation to connect the additional system.	1. No 2. SIEMENS SAS is available only at Gallamari. 3. Two

14	-	General	-	Telecommunication system at Main & Backup Centres of NLDC	We have not envisaged any telecommunication system at the NLDC Main and Backup Centres. Please confirm if the understanding is correct. We have considered only inegration services of the new additional RTUs and bays. No replacement or additional is considered in contractor scope.	Your understanding is correct.
15	-	Contract with Alstom	-	Unit rates for integration of bays.	Please confirm, if the integration of the bay charges are same upto 2 bays. Which means, if you integrate 1 bay, the charges shall be applied for atleast 2 bays. Please confirm the understanding.	Your understanding is correct.
16	-	General	-	Integration of furture bays	Please confirm whether the furture bays (shown as "Spare for Future) shown in the SLDs are to be integrated as a part of this contract.	Your understanding is correct.
17		Section Instruction to Bidders	4. Eligible Biddder,4.3	A bidder shall not have a Conflict.....contract	We understand that Conflict of Interest is not applicable for "Integration of RTU and Telecom equipment to Master & Backup stations's SCADA EMS and Telecom NMS System	Your understanding is correct. Bidder may participate as bidder in one bid and as a suncontractor in another BID. Please reffer to clause 4.3 (e) of ITB.
18		GCC	9.1 Contractor's responsibility	The Contractor shall design, manufacture including associated purchases and/or subcontracting, install and complete thl Facilities in accordance with the Contract. When completed, the Facilities should be fit for the purposes for which they are intended as defined in the Contract	The warranty shall be limited to delivery of facility as per specifications. Intended use is not defined. Except for warranties expressly provided in contract, all other implied warranties are disclaimed including merchantability. Please confirm	Please reffer to clause 27.2 of GCC.
19		GCC	15 Confidential Information	The provisions of this GC Clause 16 shall survive termination, for whatever reason, of the Contract	No mention of confidentiality period. In absence of which, the obligation shall survive for a definite period of 2 years. Please confirm.	Please reffer to clause 16.1 of GCC.
20		GCC	24 Completion time Guarantee		Liquidated damages under this clause shall be sole remedy and in full satisfaction of damages caused due to delay by contractor, without any further liability on contractor to pay compensation or additional cost under termination clause. Please confirm.	As per BID requirement
21		GCC	27. Defect Liability	27.7. ....the Employer may, following notice to the Contractor, proceed to do such work, and the reasonable costs incurred by the Employer in connection therewith shall be paid to the Employer by the Contractor or may be deducted by the Employer from any monies due the Contractor or claimed under the Performance Security.	Employer shall submit the documents evidencing costs incurred towards such repair/replacement prior to deducting any monies due to Contractor. This clause 27 provides the exclusive remedies for all claims based on failure of or defect in Products or Services, regardless of when the failure or defect arises, and whether a claim, however described, is based on contract, warranty, indemnity, tort/extra-contractual liability (including negligence), strict liability or otherwise. Please confirm.	As per BID requirement
22		GCC	30. Limitation of Liability	Except in cases of criminal negligence or willful misconduct, (a) neither Party shall be liable to the other Party, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, which may be suffered by the other Party in connection with the Contract, other than specifically provided as any obligation of the Party in the Contract, and (b) the aggregate liability of the Contractor to the Employer, whether under the Contract, in tort or otherwise, shall not exceed the amount resulting from the application of the multiplier specified in the PC, to the Contract Price or, if a multiplier is not so specified, the total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the Contractor to indemnify the Employer with respect to patent infringement	In GCC 49 (b), the cost of repair and replacement of defective equipment shall also have cap of 100%. Willful Misconduct shall have following definition: Willful Misconduct means, on the part of a Party's managerial or senior supervisory personnel (does not include foreman, engineer, inspector, technical advisor, site manager, first level of managerial or supervisory level), an intentional and wrongful act, or an intentional and wrongful omission of some act, in either case with the intent to inflict damage or injury Please confirm	As per BID requirement

23		GCC	33.3 Loss of or Damage to Property; Accident or Injury to Workers; Indemnification	The Employer shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from any liability for loss of or damage to property of the Employer, other than the Facilities not yet taken over, that is caused by fire, explosion or any other perils, in excess of the amount recoverable from insurances procured under GC Clause 34, provided that such fire, explosion or other perils were not caused by any act or failure of the Contractor.	We understand Employer shall indemnify the Contractor completely under this clause no matter any claim is pending before Insurance company. We request you to please amend the following clause.	As per BID requirement
24		GCC	Missing Clause	No Nuclear Use	The Material/equipment/services sold by the Contractor are not intended for use in connection with any nuclear facility or activity, and the Employer warrants that it shall not use or permit other to use the material/equipment/services for such purpose, without advance written consent of Contractor. If in breach of this, any such use occurs, Contractor (and its parent, affiliate, suppliers and subcontracts) disclaims all liability for any nuclear or other damage, injury or contamination.	No additional clause has been included in the Bidding Document.
25		GCC	GCC 21.1-21.4 & 23.3	Insurances	Please confirm Third Party Insurance and additional Insurance are not applicable in current scope of work	CIF shall be up to site. Work insurance also required. All insurance shall be from "Sadharon Bima of Bangladesh."
26		GCC	27.2	Warranty	We understand that Warranty for equipment shall be for 12 months from the date of Delivery or 18 months from the date of use by Employer/Engineer.	Defect liability shall be twelve (12) months from the date of operational acceptance as per clause GCC 27.2 of special condition of contract (section-8)
27		GCC		Revision of Documents	We understand that only one set of documents are to be submitted for approval.Time linit defined to approve the document is 14 days	As per BID requirement.
28		Section :3	2.4.2 Specific Experience	Completion of contracts as contractorl aleast three (3) contracts within the last ten (10) years for the design, supply, delivery,l installation, testing & commissioning of a) extension/renovation/ new 1 10kV or higher voltage level AIS/GIS substations including RTUs/SAS (Substation Automation System) and Fibrer Optic Communicationion quipment and/or b) installation of RTUs RTUs/SAS Substation Automation System) and Fibre Optic Communication Equipment and Integration with Load Despatch Centre; and/or c) RLDC (Regional Load Despatch Centre) or NLDC(National Load Despatch Centre) All of the above experiences shall be supported by user's certificates in their letterhead indicating their address, telephone & fax number and details of project (i.e. name, address & nationality of customer; details of Contract, voltage & equipment; completion period, commissioning date/commercial operation date, Contract value)	QR requirement states "Completion of Contracts as contractor at Least three (3) contracts within the last ten (10) years for design ,supply, Delivery, installation, testing & commissioning of : 1. Please confirm do we have to submit the 3 separate contracts for the requirement or single contract meeting following requirement will fulfill the requirement of QR. 2 . As current requirement is the supply of RTU's , Communication equipment & Integration, please confirm the QR Clause a) certificate is required to be produced for Qualification.	1. Yes, separate three contract is required as per clause. Single contract fullfilling the requirement of (a), (b) and © will not be considered as fullfilling the requirement of three contract It will be treated as one contract. 2. Since the manufacturers name has been specified in the BIDING document. So only the manufacturer authorization letter and Broceur of the offered equipment have to be submitted within the BID.
29		Section-2 Bid Data Sheet	The number for the Inviatation of Bid is : 01/PGCB/Sec (COMM)/2016?*** dated 03 November,2016		Please confirm the the number of Invitation , is it 01/PGCB/Sec (COMM)/2016?*** or it is PGCB/SO/2016/01 as per Invitation of Bids.	Please see the item no: 01 of addendum-1.

30		Section-1 Scope of Work	1.5.2 Telecom & Teleprotection	Information of Telecom Equipment at remote station and no of feeders to be protected	Please confirm No of Line/feeder to be protected by Teleprotection ,as data is missing in the table.	There are 07 numbers of 132 KV lines have to be protected by teleprotection. Details also in drawings pages-2/22 to 2/34
31		Section-1 Scope of Work	SLD of Nimatpur		We understand that no RTU is to be supplied at Nimatpur Substation. Please confirm	Your understanding is correct.
32		Section-1 Scope of Work	1.5.3 SCADA/EMS Integration to NLDC		Please confirm the distance between 132kV Control Room and 33kV Control Room of respective Substation. We understand they will be in same control room. If not please specify distances between them. Further please confirm the Number of feeders of 33kV are to be covered under present scope.	On average the distance between 132 KV and 33 KV control room is 150 meter. The number of feeders of 33kV are to be covered under present scope is 03 (three) per sub-station.
33		Section-2 Fibre Optics Multiplexer Equipment	Appendix 2.A.2		Please confirm the line distance between Panchagar & Thakurgoan Substation	48 Kilometer
34		Section-2 Fibre Optics Multiplexer Equipment	Appendix 2.A.2		Please confirm the line distance between Bheramara GK & Bheramara PS	01 Kilometer
35		Section-2 Fibre Optics Multiplexer Equipment	Appendix 2.A.2		Please confirm the Line distance between Shajibazar, B.Baria & Ashuganj	Shajibazar- B.Baria= 60 Kilometer B.Baria-Ashugaj= 16 Kilometer
36		Section-2 Fibre Optics Multiplexer Equipment	Appendix 2.A.2		Please confirm the Line distance between Chuadangha & Jhenaidha	40 Kilometer
37		Section-2 Fibre Optics Multiplexer Equipment	Appendix 2.A.2		Please confirm the Line distance betweenSonargoan, Daukhandi & Comilla North Substation	Sonargaon-Daudkandi= 25 Kilometer Comilla North- Daudkandi= 60 Kilometer
38		Section-2 Fibre Optics Multiplexer Equipment	Appendix 2.A.2		Please confirm the Line distance between Gallamari GIS & Khulna South	45 Kilometer
39		Section-2 Fibre Optics Multiplexer Equipment	Appendix 2.A.2		Please confirm the Line distance between Jyopurhat & Noagoan	46 Kilometer
40		Section-2 Fibre Optics Multiplexer Equipment	Appendix 2.A.2		Please confirm the Line distance between Magura & Jhenaidha	28 Kilometer
41		Section-2 Fibre Optics Multiplexer Equipment	Appendix 2.A.2		Please confirm the Line distance between Munshiganj & Madanganj	40 Kilometer
42		Section-2 Fibre Optics Multiplexer Equipment	Appendix 2.A.2		Please confirm the Line distance between New Tongi & Tongi	04 Kilometer
43		Section-2 Fibre Optics Multiplexer Equipment	Appendix 2.A.2		Please confirm the Line distance between Nimatpur & Naogoan	47 Kilometer
44		Section-2 Fibre Optics Multiplexer Equipment	Appendix 2.A.2		Please confirm the Line distance between Aminbazar & Saver	20 Kilometer

45		Section-2 Fibre Optics Multiplexer Equipment	Appendix 2.A.2		Please confirm the Line distance between Sonargoan & Haripur	20 Kilometer
46		Section:3: RTU	3.4 IT Equipment		We understand that 3.4.1 Bridges, Hubs, Switches, Routers....., 3.4.2 Firewalls are not covered under present scope of supply. Please confirm	Your understanding is correct.
47		Schedule B2-1 Price for itemized works, Goods, or Services ouside Employer's Country	Price Schedule	5. Auxilary Relays	Please confirm the quantity of Auxiliary Relay along with Specification. Furher please suggest the location where these relays are ot be installed. We don't find any details in specification. Please elobrate and delete line item 5. Auxiliary relay from price schedule. Further please confirm the Auxilary relays are used for Digital Output control Command only.	Please estimate the quantity from I/O list and SLD. These relays have to be used in the control/relay panels. These will be used for digital inputs and signals. It should be best quality and approved by PGCB.
48		Schedule B2-2 Price for itemized works, Goods, or Services inside Employer's Country	Price Schedule	5. Auxilary Relays	Please confirm the quantity of Auxiliary Relay along with Specification. Furher please suggest the location where these relays are ot be installed. We don't find any details in specification. Please elobrate and delete line item 5. Auxiliary relay from price schedule. Further please confirm the Auxilary relays are used for Digital Output control Command only.	Please estimate the quantity from I/O list and SLD. These relays have to be used in the control/relay panels. These will be used for digital inputs and signals. It should be best quality and approved by PGCB.
49		Schedule B2-2 Price for itemized works, Goods, or Services inside Employer's Country	Price Schedule	6. LVAC , control Cables, Signal Cables Length.	Please confirm the length of LVAC , control Cables, Signal Cables for each substation.	Please see the reply of quarry no 1.
50		Schedule B2-2 Price for itemized works, Goods, or Services inside Employer's Country	Price Schedule	7. Civil work for Installation of panels and extension of cable trench (if applicable)	Please confirm the site wise Minor Civil Work required at indivisual sites covered under present scope.	For all sites . It is only for cable laying, Battery Bank, Battery Charger, panel installation and all relevant works.
51		Section 2 -Bid Data Sheet	ITB 19.3	The following text is added.....enforceable"	Please confirm that following clause means that BG is to be printed in Bangladesh.	Your understanding is correct.
52		Section-6 Employer's Requirements	1.2 Major Contract Component	2. Fiber Optic Telecommunication.....Central Monitoring)	Please confirm the requirement of 2.d) Different LAN Services(CCTV,DFDR etc. for central Monitoring). Please elobrate. Further, please confirm that CCTV, DFDR etc is not covered under present scope.	Please see the reply of quarry no 3.
53		Section-9 Contract form	Appendix 5	Civil Work	Please confirm Civil work is not envisaged in current scope. We understand that minor Civil work for Installtion & Commissioning of DCPS & Battery charger are included in present scope	Your understanding is correct.
54		Section-7-General Conditions of Contract	14. Taxes & Duties	14.1 Except as otherwise.....hereof	We request you to please inform all taxes & Duties applicable along with percentage applicable for foreign contractor.	As per BID Requirement.
55		Section-7-General Conditions of Contract	15. License /Use of Technical Information	15.1 For the operation.....Employer	Please confirm that any kind of transfer of any kind of source code is not covered under present scope.	As per BID Requirement.
56		Section 3 RTU & SCADA Integration	Clause 3 Hardware Requiement, 3.1 General requirement , 3.2 Master Station Computer System	3 Hardware Requiement, 3.1 General requirement , 3.2 Master Station Computer System	We understand that Clause 3 Hardware Requiement, 3.1 General requirement , 3.2 Master Station Computer System are not to be supplied under this contract. We understand that purpose of these details are shared for understanding of NLDC System. Please confirm	Your understanding is correct.

57		Section: 2 Fiber Optic Multiplexer Equipment	Appendix 2. A.2, 2.7.14	Communication network with services to be transmitted	Please confirm the Line distances between respective Stations in order to calculate the Configuration of Telecom Equipment accordingly. In order to design the Equipment following information is important.	Please see the reply of quarry nos : 33, 34, 36, 38-45.
58		Section: 2 Fiber Optic Multiplexer Equipment	General		We understand no new PABX are to be supplied under present scope.	Your understanding is correct.
59		Section :1 Scope of Work	1.5.2 Telecom & Teleprotection	Information of Telecom Equipment at remote station and no of feeders to be protected	Please confirm that both end Teleprotections are to be supplied under present scope.	Your understanding is correct.
60		Section :1 Scope of Work	1.5.2 Telecom & Teleprotection		Further please confirm that the column No. of Line/ feeder to be protected by Teleprotection shows the number of lines to be protected.	Your understanding is correct. (Please see the item no: 06 of addendum-1).
61		Section :1 Scope of Work	1.5.4 Battery & Battery Charger	05. Each Set of Battery shall be Alkaline	Please confirm that each set of battery shall be of Ni- Ca type as per Section-3 Communication DC Power Supply.	Your understanding is correct.
62		Section 3 Evaluation and Qulaification Criteria	2.6 Sb-Contractors	iv) LVAC and Control Cables	Please confirm other makes of Cables are also approved apart from those mentioned in the specification.	As per BID Requirement.
63		Section 3 Evaluation and Qulaification Criteria	Section -3 Evaluation & Qulaification	2. Qualification	Please provide Forms EL1; EL2, Letter for Technical Proposal,for LIT-1, Form FIN-1 with attachments, Form FIN-2, Form FIN-3, Form Exp-1, FormEXP-2(a).	Please see the item no: 02 of addendum-1.
64		Section 3 Evaluation and Qulaification Criteria	Section -3 Evaluation & Qulaification	2. Qualification	Please provide the Section: 4 Bidding documents completely as many areas under specification it is mentioned to refer Bidding documents which are incomplete.	Your quarry is not clear
65		Volume 2 Section 1 - Scope of Work 1.5.2 Telecom & Teleprotection		04. Adaptation works with required materials (i.e. supply of all control/data/power cables, patch cord, ODF, FOAC, TBs etc).	Please specify the tentative quantity of all the cables,ODF, FOAC etc.	Please see the reply of quarry no 1.
66		Volume 2 Section 1 - Scope of Work 1.5.2 Telecom & Teleprotection		List of Telecom Equipment need to be supplied: Sl. No. / Name of Grid S/S / Telecom Equipment / Remarks 1 Siuri ... 2 Munshigonj ... 3 Daudkandi ... 4 New Tongi ... 5 Sonargaon ... 6 B. Baria ... 7 Panchagar 1 8 Joypurhat 1 9 Nawabganj 1 10 Chandpur 1 11 Magura 1 12 Gulshan-2 GIS 1 13 GK Project 132kV 1 Total 13 Lots	As the list new telecom equipment is required at 08 new locations whereas the eqauipment at the remote end substation is existing OSN 1500, ABB FOX 515, FOX 615. Can bidder propose new equipment at remote S/s? As our offered equipment is of ECI China make and to integrate the offered equipment with existing OSN 1500, ABB FOX 515, FOX 615 can be carried out at SDH level. For smooth operation and reducing the complexity of integration this may be required.	As per BID Requirement.
67		Volume 2 Section 1 - Scope of Work 1.5.2 Telecom & Teleprotection		17. Telecom equipment have to be ABB Ltd. or ALSTOM T&D make.	As we are different manufacturer we would be offering the equipment of ECI China make. Whether this equipment is acceptable.	As per BID Requirement.

68		Volume 2 Section 1 - Scope of Work 1.5.2 Telecom & Teleprotection		13. All Telecom system shall be integrated into the NMS system of NLDC master station, any necessary upgrade required to NLDC master station's NMS system should be done by the contractor.	We request for clarification, communication equipment integration and augmentation only at node level for DCN/DCC. Further, existing communication equipment (SDH/ PMUX/ DACS) will be managed by existing NMS/EMS where as new communication equipment (SDH/ PMUX/ DACS) will be managed by new NMS Hardware and Software.	As per BID Requirement.
69		Volume 2 Section 1 - Scope of Work 1.5.2 Telecom & Teleprotection		Information of Telecom equipment at remote S/S and No. of feeder to be protected: Sl. No / Name of Sub-Station / Name of Remote Sub-Station / Name of the existing Telecom equipment of remote station / No. of line/feeder to be protected by Teleprotection / Remarks 1 Savar Ammbazar OSN-1500,FOX515 -- 2 Munshiganj Madanganj OSN 1500B, FOX515 -- 3 Daudkandi Sonargaon, FOX515, 02 Comilla North, FOX515, OSN-1500 Daudkandi p/s None -- 4 New Tongi Tongi 230kV FOX515, OSN-1500 -- 5 Narsingdi Daudkandi FOX515 -- 6 B. Baria Ashuganj FOX515, OSN-1500 -- Shahjibegar, FOX515, OSN-1500 Narsindi FOX615 7 Ponchagar Thakurgaon METRO 01 8 Joypurhat Naogaon METRO 01 9 Nanoipur Naogaon METRO 01 10 Chuadanga Jhenaidah METRO 01 11 Magura Jhenaidah METRO 01 12 Gollamari GIS Khulna South FOX515, OSN-1500 -- 13 GK Project Bheramara s/s METRO --	As per our understanding, this specifies the the number of Teleprotection Equipment (4 i/p and 04 o/p per equipment) required as respective sites per equipment. Please confirm if bidder understanding is correct? OR Please specifythe no. of teleprotection equipment required per site in detail.	Number of Teleprotection equipment have to be minimum 01 (one) per direction(Line) and also see the item no: 06 of addendum-1.
70		SECTION 2 FIBRE OPTIC MULTIPLEXER EQUIPMENT FOR COMMUNICATION AND TELEPROTECTION		Appendix 2.A.2 COMMUNICATION NETWORK WITH SERVICES TO BE TRANSMITTED	As per the network diagram in the Appendix 02. There are requirement of various cards at ABB/Alstom for SDH and AB/SOPHO make for EPAX. We request to PGCB to directly procure the card from the respective vendors as per their standard price agreement and their integration into the existing network. As a different manufacturer we will not be able to procure and integrate this equipment.	As per BID Requirement.
71		Volume 2 Section 1 - Scope of Work 1.5.2 Telecom & Teleprotection 1.4 Summery of BoQ		2 Fiber Optic Telecommunication Equipment (SDH) PDH for each Lot with following services: a) Voice Communication (IP Phone and 2-w phone) b) Data Communication (Both LAN & WAN). c) Teleprotection d) Different LAN services (CCTV, DETR etc for central monitoring) — 8 Lots — Proposed telecom equipment shall be communicated with remote station's telecom equipment, if supplier proposed different type of telecom equipment, they have to provide the same equipment to the remote station under the same lot. Connection can be arrange by telecom equipment of the existing with the new Proposed equipments shall be integrated to NMS as well as the station's services. 3 Integration of RTU and Telecom equipment to Master & Back Up Station's SCADA EMS and Telecom NMS system. — 12 Lots — Integration of RTU and Telecom equipment to Master & Back Up Station's SCADA EMS and NMS system is proprietary item the ALSTOM T&D. Alstom will do this work as per approved PGCB rate.	In our solution all the supplied elements will be supported by our NMS which will be part of Scope of Supply. Our equipment's will be integrated in existing network with SNMP protocol suite and existing elements should also support DCC transparency seamless integration'	As per BID Requirement.
72		Volume 2 of 3, Clause 1.5, Detail scope of work	10 of 148	Adaptation works with required materials (i.e. supply of all control/status/data/LV power cables, multiplying relays, transducers, TBs etc).	Please provide us with the quantities of these equipments to be supplied? Do we need to mount these equipments in the existing panels or can we mount it in the marshalling cubicles?	Please see the reply of quarry no 1. your understanding is correct

73		Volume 2 of 3, Clause 1.5, Detail scope of work	11 of 148	RTU have to be ALSTOM T&D or ABB Ltd. make of latest model & version	We understand that Siemens make RTU's can also be supplied as given in Volume-1, Page 40 of 157, Clause 2.6, Subcontractors. Kindly confirm	your understanding is correct, Please reffer to item no: 05 of addendum no -1.
74		Volume 2 of 3, Clause 1.5.3, Signal List	13 of 148	Analog Input	Will these signals come from any multifunction meters? Do we have to supply multifunction meters also in this contract?	Analog inputs have to be taken from the metering core of fedeer CT & PT (available in the C/P or M/P) through supplied IED/MFT
75		Inspection (a)	17 of 148	Six(6) engineers nominated by the Employer shall participate in the inspection and witnessing of factory acceptance tests at manufacturers' works for RTUs, for Communication equipment and Battery & Battery Chargers (3 trips), each visit to be attended by two engineer of at least seven (7) days duration each.	We understand there will be total 3 visits of atleast 7 days duration attended by two engineers, one each for RTU, Communication equipment and Battery & Battery charges. Please confirm	your understanding is correct
76		Volume 2 of 3, Section 3, Hardware requirements	86 of 148	Hardware requirements like workstations, servers, VDU screens, displays, Magnetic tape cartridge units, audible alarm devices, LAN, Portable PCs, Printers etc.	Do we need to supply this hardware? Is it required at Main and Backup control centres of Alstom? What is the purpose of this additional hardware? Can you please provide us the quantities for the same?	No.
77		Volume 2 of 3, Clause 12.13.3.3.1, General	97 of 148	The PGCB "SCADA Standard" document included in Technical Appendix 1, Volume 3, gives the requirements for monitoring and control of each type of substation equipment.	We request you to provide the technical Appendix 1, Volume 3	Please see the item no: 09 of addendum-1, annexure-3
78		Volume 2 of 3, Clause 12.13.3.3.1, General	97 of 148	At some sites all I/O will be wired to the one RTU and at others, a separate RTU will be required for 132kV, 230kV and/or power stations because of the distances separating the control rooms.	We request you to provide a list of substations having 132KV and 230KV equipments in a separate builidng along with bifercation of I/O's in order to estimate the quantity of RTUs	All Substations are 132 KV. For I/O list reffer to item no:10 of addendum-1, annexure-4.
79		Volume 2 of 3, Clause 12.17.1.2 3.3.5.2, Interface to field devices	100 of 148	The estimated I/O point assignments for each RTU are given in Technical Appendix 2.	We request you to provide the technical Appendix 2 containing the details of I/Os per RTU's. These details are required to size the RTU I/O modules	Please see the item no:10 of addendum-1, annexure-4.
80		Volume 2 of 3, Clause 12.17.1.3.3.5.3, RTU Capacity	100 of 148	Each RTU and marshalling cubicle shall be wired and equipped with a minimum of 25% spare capacity of each facility type (i.e. digital and pulse inputs, analogue inputs and outputs, and control outputs) over and above the indicated requirements itemised in the I/O Schedule as "To 2007 +"in Technical Appendix 3.	Clause 1.4, Summary of BoQ on Page 9 of 148 mentions 20% spare capacity to be provided. Kindly clarify Kindly clarify the meaning of "To 2007+"	Please see the item no:12 of addendum-1.
81		Volume 2 of 3, Clause 12.18.1.1 3.3.5.6, Communication interface	101 of 148	The front end communications interface options that shall be provided are:	Please provide biferaction of substations having the three options of communication as mentioned in this clause	For substation communication architecture please see the reply of quarry no 12
82		Volume 2 of 3, Clause 12.18.1.1 3.3.5.6, Communication interface	102 of 148	For communications with IEDs, the RTU shall be equipped with multiple serial communications interface circuits enabling multiple simultaneous operation on each communications channel, with the possibility of one or all of the channels connecting with devices arranged on a multi-drop basis. The RTU shall be capable of supporting eight or more serial ports, and shall be equipped as required to communicate with existing IEDs or IEDs added under this Contract. It is preferred that not more than four IEDs are connected via one multi-drop link.	Please provide us with the substation-wise list of IED's which are required to be interfaced to the RTU along with their communication protocol details	Calculate the number of IEDs on the basis of SS SLD and the IED communication protocol is MODBUS (RS 485).
83		Volume 3 of 3	22 of 40	Integration of New RTU/SAS at Control Center {as per technical specs}	We have to consider this price given in sr. no. 1 per integration of each RTU with the control centre of Alstom. All the development work including testing at control centre and any software licences required at control centre will be taken care by Alstom. Hope above understanding is correct. Kindly confirm	Your understanding is correct.
84		Other queries		Field cables	Please provide us with the quantification of field cables to be supplied and installed at each substations	Please see the reply of quarry no 1.
85		Other queries		Local HMI Hardware and software	Is there any requirement of Local HMI at the substations?	No.
86		Other queries		RTU/SIC/Marshalling panels	Please provide us with the specifications of these panels. Also we understand these panels will be mounted inside the substations. Kindly confirm	All panels height have to be 100mm (plinth)+ 2100mm, Depth 600mm and Width: for RTU & MC 800 mm, for telecom 600 mm, Details have to be approved by PGCB

87	GCC & SCC	Vol 1 of 3-Section 7 & 8	7-13 & 8-5	GCC-14: Taxes & Duties GC-14: Taxes & Duties	We understand that the Employer will pay Custom duties and Taxes & the contractor need not to consider duties and Taxes in their pricing, please confirm. Please give details on how much VAT, Tax, CD applicable for Schedule-B1, B2 & B3. Also please clarify whether VAT is applicable or not for this tender.	CD & VAT will be paid by employer and AIT have to paid by contractor as per the finance ACT of Bangladesh.
88	BDS & Contract Forms	Vol 1 of 3-Section 2 & 9	2-3 & 9-7	ITB 14.8: AIT Appendix 1: Terms & procedures of payment	It is not clear how much AIT will be deducted from the submitted invoice (7.5% or 5%). Please clarify.	7.5% .
89	SCC	Vol 1 of 3-Section 8	8-9	Liquidated damage	Please clarify whether Liquidated Damage is 0.05% of the contract price/day or 0.05% of the contract price/week.	Liquidated Damage is 0.05% of the contract price/day
90	EQC	Vol 1 of 3-Section-3	3-6	Specific experience 2.4.2	We understand that if one of the JV partners is fullfilling the General Experience and Specific experience criterias, then the JV Bidder is qualified. Please confirm whether our understanding is correct.	Please reffer to clause-2, section-3, volume 1 of 3 of the Bidding document.
91	ITB	Vol 1 of 3-Section-1	1-4	ITB 4.3: Eligible Bidders	We understand that "Conflict of interest" clause doesn't limit the bidder as a subcontractor in another which means a bidder can offer it's products to other bidders. Please cnfirm whether our understanding is correct.	Your understanding is correct.
92	Scope of Work & Brief discription of the works	Vol 2 of 3-Section 1 & Vol 3 of 3-Schedule A	1/14 & page#3	Inspection	Please clarify how much daily allowance the contractor need to pay USD 150 or USD 100 for each of the employer's engineer. We understand that inspection period is 7 days including travel time, please confirm	Please see the item no: 13 of addendum-1.
93				Space in the control room	Please confirm that in existing control building there are enough spaces available for 48VDC battery room. Also please confirm that in existing control rooms, spaces are available for installing Multiplexer, RTU, MC, Battey charger cubicle.	Your understanding is correct.
94				Connection to Marshalling Cubicle (MC)	We understand that there is no existing connection between the equipments and MC in the substations. Please confirm our understanding is correct.	Your understanding is correct.
95				Bid submission date	Considering the versatile scope of works and local works needed in this tender, we would like to request for time extension of bid submission date by at least 4 weeks as we are yet to get local offers from subcontractors. Kindly accept.	The dead line for submission of BID has been extended, please reffer to see the notice of addendum-1.
96	Communications DC Power supply equipments	Vol 3 of 3-Section 4	4/2	DC Supply system	We understand that DCDB is also in the supply scope of this tender. Please confirm.	Your understanding is correct.
97	EQC and SoW	Vol 1 of 3-Section-3 and Vol-2 of 3-section-1	3-8 and 1-11	RTU manufacturers	As per Vol-1 EQC, RTU should be supplied from Alstom/ABB/Siemens/Schneider and as per Vol-2 SoW, RTU should come from Alstom/ABB. Please confirm the manufacturer's list for RTU.	Please see the reply of quarry no 73.
98	VAT & AIT	Price Schedule	Schedule-B3	% of VAT & AIT	In Finance act 2016-2017, Section 56 it is mentioned that for "Professional service, technical servics, technical know-how or technical assistance" rate of TDS deduction is 20% and also 15% applicable VAT. But in your price schedule-B3 it is mentioned as only 7.5% (AIT/TDS) will be duducted from the contractor's invoice. Please confirm the % of VAT & AIT to be considered for service payment (schedule-B3) and incase of extra deductuction by the bank during the time of remitance PGCB will adjust the same %	As per the finance ACT of Bangladesh.
99	Scope of work	Vol 2/3 - SEC 1	1/5	Name of Grid S/S	There is a station called "Sonargaon". We think it is the same as "Meghnaghat 132kV" -> please confirm	Your understanding is correct.

100	FO Mux Equipment	Vol 2/3 - SEC 2 Appendix 2.A.2		FO-Mux Network drawing Gallamari GIS 132/33kV SS	In the drawing it is mention that in Gallamari GIS 132/33kV SS there is a FOX515. Is Gallamari corresponding to what we call "GT 132kV", or is it another station? If it is GT, it means that the FOX in Gallamari has the HE Number HE550825. -> please clarify	Gallamari 132 KV is a GIS SS and there is no FOX. GT 132 KV is a Power Plant SS and there is FOX. So, MUX is required at Gallamari SS as per BID Requirement.
101	FO Mux Equipment	Vol 2/3 - SEC 2 Appendix 2.A.2		FO-Mux Network drawing Thakurgaon 132/33kV SS	In the drawing for Thakurgaon 132/33kV SS the ODF is marked in Black (as existing). We think, this is not correct. -> Please confirm	Your understanding is correct.
102	FO Mux Equipment	Vol 2/3 - SEC 2 Appendix 2.A.2		FO-Mux Network drawing Panchagor 132/33 kV	According SLD there is only one 132kV Line. We think the FO-Mux network drawing showing 2 lines is not correct. -> please confirm	Your understanding is correct.
103	FO Mux Equipment	Vol 2/3 - SEC 2 Appendix 2.A.2		FO-Mux Network drawing Joypurhat 132/33 kV	According SLD there is only one 132kV Line. We think the FO-Mux network drawing showing 2 lines is not correct. -> please confirm	Your understanding is correct.
104	FO Mux Equipment	Vol 2/3 - SEC 2 Appendix 2.A.2		FO-Mux Network drawing Niamatpur 132/33 kV	According SLD there is only one 132kV Line. We think the FO-Mux network drawing showing 2 lines is not correct. -> please confirm	Your understanding is correct.
105	FO Mux Equipment	Vol 2/3 - SEC 2 Appendix 2.A.2		FO-Mux Network drawing Chuadangha 132/33 kV	According SLD there is only one 132kV Line. We think the FO-Mux network drawing showing 2 lines is not correct. -> please confirm	Your understanding is correct.
106	FO Mux Equipment	Vol 2/3 - SEC 2 Appendix 2.A.2		FO-Mux Network drawing Magura 132/33 kV	According SLD there is only one 132kV Line. We think the FO-Mux network drawing showing 2 lines is not correct. -> please confirm	Your understanding is correct.
107	FO Mux Equipment	Vol 2/3 - SEC 2 Appendix 2.A.2		FO-Mux Network drawing Magura 132/33 kV	According SLD there is only one 132kV Line. We think the FO-Mux network drawing showing 2 lines is not correct. -> please confirm	Your understanding is correct.
108	FO Mux Equipment	Vol 2/3 - SEC 2 Appendix 2.A.2		FO-Mux Network drawing Bheramara GK 132/33 kV	According SLD there is only one 132kV Line. We think the FO-Mux network drawing showing 2 lines is not correct. -> please confirm	Your understanding is correct.
109	Standard Data list for RTU	Section 1 1.5.1 Sl.No. 01		Standard Data List approved by PGCB SCADA Division	Please provide us the Standard Data List for Survey	Please see the reply of quarry no 78.
110	SCADA Standard document	Section 3 3.3.1		SCADA Standard document - Technical Appendix I, Volume 3	Could not be found in these spec documents	Please see the reply of quarry no 77.
111					Can this doucment be considered as Standard List for RTU site Survey and remove the need for aprpoval during supply of RTU	Approval required.
112	Dual Power Supply for RTU	Section 3 3.3.2 (k)		Support Dual Power Supplies	Yes, ABB RTU560 supports dual power supplies Kindly let us know whether it should be considered or not	Power Supply can be single or double.
113	Dual Redundant CPUs for RTU			Dual Redundant CPUs in a hot-standby configuration	Yes, ABB RTU560 supports this feature This is the preferred requirement across the globe for utilities for reliable systems Kindly let us know whether it should be considered or not	CPUs can be single or double,
114	Spare capacity for RTU	3.3.5.3		minimum of 25% spare capacity	Please refere to Section 1 - clause 1.4 with 20% spare capacity. Kindly confirm which one to follow	Please see the item no: 12 of addendum-1.
115	Dummy analogue module for RTU	3.3.5.13		One dummy analogue shall be provided for each analogue to digital converter in an RTU	Kindly explain or provide details. Dummy analogue is a module used for testing, but analogue to digital converters are not provided in RTU	As per BID Requirement.

116	Analog inputs for RTU				We understand that all the analogue inputs (MW, MVAR, Amp, kV and frequency for Transmission Line) for RTU will come from multifuction meter, please let us know the followings: 1) which substations under this tender scope have existing multifunction meter 2) and for which substations bidders need to consider new transducers and multifunction meters. Please also confirm whether new panel for multifunction meter is required or bidders can use existing panels.	Please see the reply of quarry no 74.
117	Digital Inputs for RTU				As all Digital Inputs (Single point/Double point) for RTU are coming from Relays (except DC fail / RTU fail), kindly provide the following information of the existing relays: 1) Relay manufacturer name & model 2) Communication Protocol of each relay, in case of IEC61850 relays – port details (Ethernet or FO)	Digital inputs have to be taken from control panel using auxiliary relays.
118					In order to prepare a comprehensive, complete and competitive bid the following issues are to be resolved/clarified, and after which considerable time will be necessary to verify by our team in the field: ➢ The layouts of the PGCB substations are needed, with indication of possible space for RTU and other necessary installations for each PGCB substation. ➢ The layouts of adjacent substations are needed for above. ➢ Above are more pertinent due to explicit and unknown requirement of the bid document (clause 1.5.1, point 07, page 1/7) stating that " For required data integration as per Data List existing control/relay SIC panel can be used, if not possible it has to be taken from of the Sub-Stations **field**." This entails considerable costly works. ➢ Also kindly indicate PGCB's intention to control Load Shed Feeders, for us to ascertain the cable routing, communication arrangements etc. To make a comprehensive survey of each of 13 (thirteen) PGCB substations and the adjacent other 16 (sixteen) substations, we need minimum 29 (twenty nine) working days to complete the survey. Furthermore, please note we find PGCB intends to have the quality equipment mainly from EU/USA, where offices will start getting closed for about four weeks in later half of December and first half of January. In view of above, we request you to kindly extend the bid submission date by at least 6 (six) weeks to enable us to prepare a meaningful bid.	The dead line for submission of BID has been extended, please reffer to see the notice of addendum-1.
119					**Conflict of Interest** In the bid document, we find that PGCB has mentioned some "makes" of "equipment" and even mentioned the requirement of some granular level "module cards" to be inserted in the existing "equipment slot"; and we also noted that representatives of same "makes" were present in the pre-bid meeting as potential bidders. This has created "Conflict of Interest" situation as "other bidders" are required to submit Manufacturers' Authorization from these "makes". We would appreciate if PGCB can ensure that these "makes" give us offer with necessary Manufacturers' Authorization.	Please see the reply of quarry no 17.
120					**Advance Income Tax and VAT**	

					Regarding Advance Income Tax, in Payment Terms, a 5% (five percent) deduction is indicated whereas in ITB 18.8 a 7.5% (seven point five percent) deduction is envisaged. Kindly advise what is the applicable percentage. Also please advise whether VAT will be deducted from Invoices and if needs to be deducted, at what percentage.	7.5% .
121					**AIT & VAT from PGCB Contractor** In the bid document "NLDC SCADA Integration – Unit Price Fixation Agreement" is attached. Please confirm whether there is precedence of deducting AIT & VAT as prescribed by NBR. It would be appreciated if you kindly provide us with copy of one such deduction document as in that case a bidder can avoid double-taxation, which could be a considerable percentage of the Invoice.	As per BID Requirement.
122					**Clause 3.3.5.2, Page 3/12 Interface to Field Devices** Kindly provide us with "Technical Appendix 2" with estimated I/O assignments for each RTU.	Please see the reply of quarry no 78
123					**Clause 3.3.5.3, Page 3/12, RTU Capacity** Please provide us with itemized I/O Schedule "To 2007+ in Technical Appendix – 3"	Please see the reply of quarry no 78
124					**Clause 1.4 Summary of BOQ, Page 1/6** RTU spare capacity is mentioned as 20%, whereas in Clause 3.3.5.3, page 3/12, RTU spare capacity is mentioned minimum 25%. Kindly clarify.	Please see the item no: 12 of addendum-1.
125					**Clause 1.4 Summary of BOQ (Point 3), Page 1/6** Quantity 12 (twelve) Lots has been mentioned for Integration of RTU and Telecom equipment to Master and Back Up Station's SCADA EMS and Telecom NMS system. In Price Schedule B3-2, quantity is mentioned as 13 Kindly clarify.	Please see the item no: 19 of addendum-1.
126					**Clause 1.5.1 (Point-02), Page 1/7, RTU, MC & SIC** Kindly provide us with existing sub-stations drawings (specifically for adjacent substations where PGCB intends to have 3 load-shed feeders) for adaptation of necessary signals, control and metering as required.	keep the facilities in the RTU to be supplied, take the location idea from the site visit and panel drawing will be provided later.
127					**Clause 1.5.1 (Point-12), Page 1/8** In this clause RTU is indicated to be ALSTOM T&D or ABB Ltd. make of latest model & version. Whereas, in Schedule-E Technical Particulars and Guarantees, RTU model is mentioned as Micom C264 and make Alstom T&D. Also note in Section-3, it is mentioned in Clause 2.6 Page 3-8, Item 1 (i) RTU make Alstom T&D (at present GE) / ABB / Siemens / Schneider. Kindly clarify.	Please see the reply of quarry no 7.
128					**Clause 1.5.1 (Point-13), Page 1/8** Three (3) Load Shed Feeder. Kindly clarify PGCB's identification of such Load Shed Feeders. If the 33KV Feeders are in separate building (For example, in SAVAR SS building to Polli-Biddut Building), what communication or link method should be followed?	For 3 (Three) load shead feeders solid coper wire can be used.
129					**Clause 1.5.2 (Point-06), Page 1/9** Regarding supply of necessary cards/modules for LAN/WAN services of existing telecom equipment. Kindly provide a list all actually needed cards to be supplied.	As per BID Requirement.
130					**Clause 1.5.2 (Point-12), Page 1/9** Regarding supply of one IP Phone with license and two 2W Telephone required or not? If yes, kindly provide the supported IP Phone model and CUCM version.	Required. CISCO 7912 or latest
131					**Clause 1.5.2, Page 1/8** Table – Information of Telecom equipment at remote S/S and No. of feeder to provided: No. of line/feeder to be protected by Tele-protection Daudkandi – 02	For Teleprotection please see the item no: 06 of addendum-1.

					Sonargaon – 04 Ponchogor – 01 Joypurhat – 01 Niamotpur – 01 Chuadanga – 01 Magura – 01 Please explain the scope of work for this eleven (11) number of feeders. Also clarify ETER1 supply for each of Savar, Munshiganj, Daudkandi, Sonargaon, B-Baria for Integration. For example, in 1.5.2 table, page 1/8, no telecom equipment needs to be supplied in Daudkandi, whereas in the next table teleprotection needs to be supplied for that substation. Kindly clarify.	
132					We understand that computer hardware and Display Mimic Panel etc. are not required. Kindly confirm.	Your understanding is correct.
133					48V new 14-sets batteries in 7 Grid Substations are required as per Clause 1.3, Page 1/5 (Table – Sub-Station Wise Required Main Equipment Details). We assume that other 6 Grid Substations are already equipped with 48V batteries 2 sets each, with sufficient back-up power and ready to be integrated with this new RTU system, which will be running in 48V DC. Kindly confirm.	Your understanding is correct.
134					48V battery new 12-sets chargers in 6 Grid Substations are required as per Clause 1.3, Page 1/5 (Table – Sub-Station Wise Required Main Equipment Details). We assume that other 7 Grid Substations are already equipped with 48V battery charger 2 sets each and ready to be integrated with this new RTU system which will be running in 48V DC. Kindly confirm.	Your understanding is correct.
135					**Clause 1.5.3, Page 1/10** Kindly clarify that Signal List of Analog Input – MW, MVAR, Amp, KV and Frequency can be carried with both transducers and meters.	Please see the reply of quarry no 74.
136					**Appendix 2.A.2 Communication Network with Services to be Transmitted.** Is all RED marked items in the drawings are under the scope of this project? Items such as – Hood Joint Box, 24 Cores ODF (FC-PC), Duplicate CPU/PSU, 16X2 Mbps (E1) Drop Card, 8X2 Mbps (E1) Elect. Card, 4X10/100 Base T LAN, 4X10/100 Base T ROUTER, 10X 2-w Voice for FXS, 2X4 Commands for Distance, 1X DTU-G Card is required for remote subscriber of marked SS to Existing marked PABX (SOPHOIS3030).	Yes.
137					In order to assess the links and hops between remote telecommunication devices and to ensure data reachability up to NLDC/ Biddut Bhaban, we need NMS architecture and remote site connectivity drawings. Kindly provide.	As per BID Requirement.
138					At Section Z, Page 2-1- (Rev-1), the number of the Invitation for Bids is: 01/PGCB/Sec(COM M)/2016/*** dated November 03, 2016. We understand that there should be some value replacing ?* * **. If our understanding is correct, kindly amend the Number of the Invitation for Bid.	Please see the item no: 01 of addendum-1.
139					a) As per Section 3, Clause 2.6, Page 3-8 of Volume 1, the manufacturer of RTU is Alstom T&D (at present GE)/ABB/Siemens/Schneider. As per Secl: Scope of Work (PaCe L/8 of Volume 2): as manufacturer of RTU only Alstom and ABB is mentioned. b) As per Section 3, Clause 2.6, Page 3-8 of Volume 1, the manufacturer of Huawei/Loop. As per Secl: Scope of	Please see the annexure no:05 of addendum-1.

					(Fibre Optic Communication Equipment) only Alstom and ABB is mentioned. considered as per Clause 2.6 understandings.	
140					Model and Manufacturer is mentioned as from any of the prospective 3 of Volume 1.	Please see the item no:14 of addendum-1, Annexure-5.
141	1 of 3	SEC 9: Contact Forms (Appendix - 1 : Terms & Procedure of Payment)	9-7	**For Integration of RTU & Telecom Equipment** "Ten Percent (10%) of the total design services amount as an advance.."	It shall be 10% of "integration of RTU and Telecom equipment services amount" in place of "Design Service"	Please see the item no:03 of addendum-1.
142	1 of 3	SEC 9: Contact Forms (Appendix - 1 : Terms & Procedure of Payment)	9-7	"Ninety percent (90%) of the total or pro rata integration of RTU and Telecom equipment services amount (and after deduction of 5% AIT on invoiced amount) upon completion and acceptance of integration of RTU and Telecom equipment by the project Manager within forty-five (45) days after receipt of Invoice."	We understand payment will be released on pro rata basis. For that purpose clear further breakup of price schedule items will be allowed during execution. Also "completion and acceptance of integration of RTU" will be issued in parts as the job progresses. Same modality will be applied for "Integration of telecom equipments also"	Your understanding is correct.
143	1 of 3	SEC 9: Contact Forms (Appendix - 1 : Terms & Procedure of Payment)	9-7	No Mention of Payment Terms for Design Service	There is no mention of Payment terms of Design serice , neither any breakup format given in price schedule. Please let us know if bidders are allowed to offer price for design service. In case bidders are allowed, please let us know the payment terms ofr the same and the revised price schedule	Please see the item no:03 of addendum-1.
144	3 of 3	Schedule B, Price Schedule	Not Mentioned	Soft Copy of Price Schedule	Please share & upload the soft copy of price schedule in excel	Please see in the PGCB's website
145	1 of 3	SEC 9: Contact Forms (Appendix - 1 : Terms & Procedure of Payment)	9-7	**For Plant & Equipment Supplied from Abroad:** "...(and after deduction of 5% AIT on Invoiced amount"..."	We understand that relevent certificate against deduction of AIT will be released along with the payment for respective deduction. And there will be no VAT deduction for VAT or any other taxes for foreign currency payment. Please confirm.	As per BID Requirement.
146	1 of 3 & 3 of 3	SEC 9: Contact Forms (Appendix - 1 : Terms & Procedure of Payment) & Price schedule	9-7 (of Volume 1 of 3)	**For Plant & Equipment Supplied from Abroad:** "...(and after deduction of 5% AIT on Invoiced amount"..." and your price schedule in Volume 3 of 3 Schedule B2-1	In the price schedule of B2 i.e for Plant & equipment from outside Employer's country, there is a local currency part i.e local transportation, local insurance, erection cost. We understand that the there will be no VAT or other deduction (Other than AIT) on the said amount in the local currency part of the price schedule. Please confirm.	As per BID Requirement.
147	3 of 3	Price Schedule B2-1	Not Mentioned	Item No 6 and 7 of the schedule B2-2 (i.e LVAC, Control Cable, Signal Cable & Civil Work) is not appearing in Schedule B2-1	Does this mean that item no 6 & 7 we need to supply only from Bangladesh? Please clarify	Yes, Your understanding is correct.
148	3 of 3	Price Schedule B2-2	Not Mentioned	In the price format of items to be supplied from Employer's country, there is a column for quoting in foreign currency	We understand that bidder is allowed to quote the locally sourced material and service in foreign currency too. Please confirm.	Yes.
149	3 of 3	Price Schedule B2-2	Not Mentioned	There is no mention of Local transport, handling and local insurance amount to be quoted	While in payment terms for local supplied items it is mentioned for payment of local transport, handling and insurance, Price schedule B2-2 does not accommodate the same. Please send us the revised price schedule.	CIF shall be up to site. Work insurance also required. All insurance shall be from "Sadharon Bima of Bangladesh."
150	1 of 3	SEC 9: Contact Forms (Appendix - 1 : Terms & Procedure of Payment)	9-7	Terms & Procedure of Payment	Terms and procedure of payment for "For integration of RTU and telocom equipment" & "For installation of Other Services" are repeated in page 9-8 and 9-9 with "foreign currency part" omitted. We understand that the repetation of the same in page 9-8 and 9-9 will be deleted. Please confirm.	Please see the item no:03 of addendum-1, Annexure-11.
151	1 of 3	BDS (ITB18.3 and 18.4)	2-3(Rev 1)	Taxes and duties	We understand VAT & all other loacl taxes will be paid by the employer directly and no deduction will be made from our invoice value on account of VAT. Bidder will raise invoice excluding VAT charges. Please confirm.	As per BID Requirement.
152	1 of 3	BDS (ITB18.4 (a)(i)	2-4(Rev 1)	INCOTERM	Incoterm mentioned is CIF for the tender in BDS but in Terms of Payment it is mentioned CIP, Request you to kindly amend the terms of payment to this effect	Terms of payment shall be as per BID Requirement.

153	1 of 3	BDS (ITB18.4 (b)(i)	2-4(Rev 1)	INCOTERM	Incoterm mentioned is EXW for supply within employer's country. Please let us know if the local transportation and insurance will be in employer's scope? In case the same is in bidder's scope, price format need to be ammended to quote price for the same.	As per BID Requirement.
154	1 of 3	BDS (ITB18.4 (b)(i)	2-4(Rev 1)	INCOTERM	Since we need to declare the VATamount as per Price schedule B2-2, Please clarify if the VAT price to be included for purpose of comparison and evaluation of the price bid.	As per BID Requirement.
155	1 of 3	BDS (ITB19.1 (b)(a)	2-4(Rev.01)	Bid Currency "Plant and equipment to be supplied from abroad shall be quoted entirely in USD or Euro"	We understand that the price can be quoted in combination of USD and EURO and the additional column can be insurted by the bidder to the price schedule to accommodate both the currency. Please confirm	Confirmed
156	1 of 3	GCC 7.3 and SCC 7.3	Spares Part	In addition to the supply of Mandatory Spare Parts included in the Contract, the Contractor agrees to supply spare parts required for the operation and maintenance of the Facilities for the period specified in the SCC and the provisions, if any, specified in the SCC. However, the identity, specifications and quantities of such spare parts and the terms and conditions relating to the supply thereof are to be agreed between the Employer and the Contractor, and the price of suih spare parts shall be that given in Price Schedule No. 5, which shall be added to the Contract Price. The price of such spare parts shall include the purchase price therefore and other costs and expenses (including the Contractor's fees) relating to the supply of spare parts.	We understand there is no "Mandatory Spare" to be supplied as a part of the scope under this tender document. Please confirm We also understand that we need to submit any price for any spare items for future reference as mentioned in the GCC in price schedule no. 5. There is no price schedule no 5 in the price schedule given in the tender document. Please confirm. Refer to the supplementary clause in SCC i.e "The contractor shall ensure the availibility of spare parts for the supplied items for a minimum period of three (3) years from operational acceptance by employer" - Liability of the bidder is limited to only ensuring the spare availibility, order for the same will be placed separately by the employer. Please confirm	Yes. Yes, Your understanding is correct It should be as per BID requirement.

Annexure-1

Section 4 - Bidding Forms

This Section contains the forms which are to be completed by the Bidder and submitted as part of his Bid.

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Letter of Technical Bid

(Issuing Authority's letterhead)

Date: .....

ICB No.: .....

Invitation for Bid No.: .....

To:

The Company Secretary
Power Grid Company of Bangladesh Limited
Institution of Engineers Bangladesh (IEB) Building,
4th Floor
8/A Ramna, Dhaka-1000, Bangladesh.

We, the undersigned, declare that:

(a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB) 8;

(b) We offer to design, manufacture, test, deliver, install, precommission and commission in conformity with the Bidding Document the following Plant and Services:

.....(*Name of Project*)..... .

(c) Our bid consisting of the Technical Bid and the Price Bid shall be valid for a period of . . . . . days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(d) We, including any subcontractors or manufacturers for any part of the contract, have or will have nationalities from eligible countries, in accordance with ITB-4.2;

(e) We, including any subcontractors or suppliers for any part of the contract, do not have any conflict of interest in accordance with ITB 4.3;

(f) We are not participating, as a Bidder or as a partner in joint venture or consortium, in more than one bid in this bidding process in accordance with ITB 4.3, other than alternative offers submitted in accordance with ITB 13;

(g) Our firm, its affiliates or subsidiaries, including any Subcontractors or Suppliers for any part of the contract, has not been declared ineligible by UN, under the Employer's country laws or official regulations or by an act of compliance with a decision of the United Nations Security Council;

(h) We are not a government owned entity / We are a government owned entity but meet the requirements of ITB 4.5;*

(i) We agree to permit the PGCB or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by the PGCB.

Name .....

In the capacity of .....

Signed .....

Duly authorized to sign the Bid for and on behalf of .....

Date .....

* *Use one of the two options as appropriate*

Letter of Price Bid

(Issuing Authority's letterhead)

Date: .....

ICB No.: .....

Invitation for Bid No.: .....

To:

The Company Secretary
Power Grid Company of Bangladesh Ltd.
Institution of Engineers Bangladesh (IEB) Building,
3rd & 4th Floor
Ramna, Dhaka-1000, Bangladesh.

We, the undersigned, declare that:

(a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB) 8;

(b) We offer to design, manufacture, test, deliver, install, precommission and commission in conformity with the Bidding Document the following Plant and Services:

.....(Project Name).....

(c) The total price of our Bid (excluding VAT on EXW), excluding any discounts offered in item (d) below is the sum of: .....

(d) The discounts offered and the methodology for their application are:.....

(e) Our bid shall be valid for a period of . . . . . days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(f) If our bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents;

(g) We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract**:

Name of Recipient	Address	Reason	Amount
.....	.....	.....	.....
.....	.....	.....	.....

(h) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and

(i) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

(j) We agree to permit PGCB or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by the PGCB.

Name .....

In the capacity of .....

Signed .....

Duly authorized to sign the Bid for and on behalf of .....

Date .....

*** If none has been paid or is to be paid, indicate "none"*

Price Schedules

Please refer to Schedule B: Schedule of Prices, Volume 3 of the Bidding Document.

Schedules of Rates and Prices

Please refer to Schedule B: Schedule of Prices, Volume 3 of the Bidding Document.

Bid Security

Bank Guarantee

.....*Bank's Name, and Address of Issuing Branch or Office* .....

Beneficiary:

Power Grid Company of Bangladesh Limited
Institution of Engineers Bangladesh (IEB) Building,
3rd and 4th Floor
8/A Ramna, Dhaka-1000, Bangladesh.

Date: .....

Bid Security No.: .....

We have been informed that . . . . . *name of the Bidder.* . . . . . (hereinafter called "the Bidder") has submitted to you its bid dated . . . . . (hereinafter called "the Bid") for the execution of . . . . . *name of contract* . . . . . under Invitation for Bids No. . . . . ("the IFB").

Furthermore, we understand that, according to your conditions, bids must be supported by a bid guarantee.

At the request of the Bidder, we . . . . . *name of Bank.* . . . . . hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of . . . . . *.amount in figures* . . . . . (. . . . . *.amount in words* . . . . .) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder:

(a) has withdrawn its Bid during the period of bid validity specified by the Bidder in the Form of Bid; or

(b) does not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter "the ITB") of the IFB; or

(c) having been notified of the acceptance of its Bid by the Employer during the period of bid validity,

(i) fails or refuses to execute the Contract Agreement, or

(ii) fails or refuses to furnish the Performance Security, in accordance with the ITB.

This guarantee will expire: (a) if the Bidder is the successful Bidder, upon our receipt of copies of the Contract Agreement signed by the Bidder, and (b) if the Bidder is not the successful Bidder, upon the earlier of (i) our receipt of a copy your notification to the bidder of the name of the successful Bidder; or (ii) twenty-eight (28) days after the expiration of the Bidder's bid.

Consequently, any demand for payment under this guarantee must be received by us at the office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 758.

. . . . . .*Bank's seal and authorized signature(s)*. . . . . .

Technical Proposal

Site Organization

Method Statement

Mobilization Schedule

Construction Schedule

Personnel

Equipment

Proposed Subcontractors for Major Items of Plant and Services

Time Schedule

Site Organization

Method Statement

Mobilization Schedule

Construction Schedule

Personnel

Bidders should provide the names of suitably qualified personnel to meet the requirements specified in Section 3 (Evaluation and Qualification Criteria). The data on their experience should be supplied using the Form below for each candidate.

Form PER – 1: Proposed Personnel

1.	**Title of position***
	Name
2.	**Title of position***
	Name
3.	**Title of position***
	Name
4.	**Title of position***
	Name

*As listed in Section 3 (Evaluation and Qualification Criteria).

Form PER – 2: Resume of Proposed Personnel

Position		
Personnel information	**Name**	**Date of birth**
	Professional qualifications	
Present employment	**Name of employer**	
	Address of employer	
	Telephone	**Contact (manager / personnel officer)**
	Fax	**E-mail**
	Job title	**Years with present employer**

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

From	To	Company / Project / Position / Relevant technical and management experience

Equipment

The Bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed in Section 3 (Evaluation and Qualification Criteria). A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Bidder.

Item of Equipment		
Equipment Information	**Name of manufacturer**	**Model and power rating**
	Capacity	**Year of manufacture**
Current Status	**Current location**	
	Details of current commitments	
Source	**Indicate source of the equipment** ☐ **Owned** ☐ **Rented** ☐ **Leased** ☐ **Specially manufactured**	

Omit the following information for equipment owned by the Bidder:

Owner	**Name of owner**	
	Address of owner	
	Telephone	**Contact name and title**
	Fax	**Telex**
Agreements	**Details of rental / lease / manufacture agreements specific to the project**	

Proposed Subcontractors/Manufacturers for Major Items of Plant and Services

Please refer to "Schedule-D", Volume 3 of the Bidding Document.

Manufacturer's Authorization

(to be filled by the manufacturer's/ their authorized agent on their official letter head)

[*The Bidder shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. This letter of authorization should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer. The Bidder shall include it in its bid, if so indicated in the BDS.]*

Date: [*insert date (as day, month and year) of Bid Submission*]

ICB No.: [*insert number of bidding process*]

To: [*insert complete name of Employer*]

WHEREAS

We [*insert complete name of Manufacturer or Manufacturer's authorized agent*], who are official manufacturers or agent authorized by the manufacturer of [*insert type of goods manufactured*], having factories at [insert full address of Manufacturer's factories], do hereby authorize [*insert complete name of Bidder*] to submit a bid the purpose of which is to provide the following goods, manufactured by us [*insert name and or brief description of the goods*], and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with Clause 27 of the General Conditions of Contract, with respect to the goods offered by the above firm.

Signed: [*insert signature(s) of authorized representative(s) of the Manufacturer*]

Name: [**insert complete name(s) of authorized representative(s) of the Manufacturer**]

Title: [*insert title*]

Duly authorized to sign this Authorization on behalf of: [*insert complete name of Bidder*]

Dated on _____ day of _____, _____ [*insert date of signing*]

Time Schedule

To be used by Bidder when alternative Time for Completion is invited in ITB 13.2.

Form ELI - 1: Bidder's Information Sheet

Bidder's legal name	
In case of JV, legal name of each partner	
Bidder's country of constitution	
Bidder's year of constitution	
Bidder's legal address in country of constitution	
Bidder's authorized representative (name, address, telephone numbers, fax numbers, e-mail address)	

Attached are copies of the following original documents.

- ☐ 1. In case of single entity, articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and 4.2.
- ☐ 2. Authorization to represent the firm or JV named in above, in accordance with ITB 22.2.
- ☐ 3. In case of JV, letter of intent to form JV or JV agreement, in accordance with ITB 4.1.
- ☐ 4. In case of a government-owned entity, any additional documents not covered under 1 above required to comply with ITB 4.5.

Form ELI - 2: JV Information Sheet

Each member of a JV must fill in this form

Bidder's legal name	
JV Partner's legal name	
JV Partner's country of constitution	
JV Partner's year of constitution	
JV Partner's legal address in country of constitution	
JV Partner's authorized representative information (name, address, telephone numbers, fax numbers, e-mail address)	

Attached are copies of the following original documents:

- ☐ 1. Articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and 4.2.
- ☐ 2. Authorization to represent the firm named above, in accordance with ITB 20.2.
- ☐ 3. In the case of government-owned entity, documents establishing legal and financial autonomy and compliance with commercial law, in accordance with ITB 4.5.

Form LIT - Pending Litigation

Each Bidder or member of a JV must fill in this form

☐ No pending litigation in accordance with Criteria 2.2 of Section 3 (Evaluation and Qualification Criteria)

☐ Pending litigation in accordance with Criteria 2.2 of Section 3 (Evaluation and Qualification Criteria)

Year	Matter in Dispute	Value of Pending Claim in US$ Equivalent	Value of Pending Claim as a Percentage of Net Worth

Form FIN - 1: Financial Situation

Each Bidder or member of a JV must fill in this form

Year 1:
Year 2:
Year 3:

Information from Balance Sheet

Total Assets	
Total Liabilities	
Net Worth	
Current Assets	
Current Liabilities	

Information from Income Statement

Total Revenues	
Profits Before Taxes	
Profits After Taxes	

❑ Attached are copies of financial statements (balance sheets including all related notes, and income statements) for the last three years, as indicated above, complying with the following conditions.

- All such documents reflect the financial situation of the Bidder or partner to a JV, and not sister or parent companies.
- Historic financial statements must be audited by a certified accountant.
- Historic financial statements must be complete, including all notes to the financial statements.
- Historic financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).

Form FIN - 2: Annual Turnover

Each Bidder or member of a JV must fill in this form

Year	Amount Currency	Exchange Rate	US$ Equivalent

The information supplied should be the Annual Turnover of the Bidder or each member of a JV in terms of the amounts billed to clients for each year for contracts in progress or completed, converted to US Dollars at the rate of exchange at the end of the period reported.

Form FIN – 3: Financial Resources

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as indicated in Section 3 (Evaluation and Qualification Criteria)

No.	Source of financing	Amount (US$ equivalent)
1		
2		
3		

Form FIN- 4: Current Contract Commitments

Bidders and each partner to a JV should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

No.	Name of Contract	Employer's Contact Address, Tel, Fax	Value of Outstanding Work [Current US$ Equivalent]	Estimated Completion Date	Average Monthly Invoicing Over Last Six Months [US$/month)]
1					
2					
3					
4					
5					

Form EXP – 1: General Experience

Each Bidder or member of a JV must fill in this form

Starting Month Year	Ending Month Year	Years	Contract Identification and Name Name and Address of Employer Brief Description of the Works Executed by the Bidder	Role of Bidder

User's certificate shall be submitted by the Bidder as evidence of the above. The certificates shall be issued by user in user's respective letter head stationery indicating address, telephone and fax numbers of the user, shall also be signed and sealed by the issuing authority and shall include the following details of each project that has been executed:

- Name, address and nationality of customer.
- Details of contract, voltage, equipment and line length for transmission line Contracts and transformer capacity, number of bays constructed, etc for substation Contracts.
- Completion period.
- Commissioning date/commercial operation.
- Contract value

Form EXP – 2(a): Specific Experience

Fill up one (1) form per contract

Contract No . . . . . of	Contract Identification		
Award Date		Completion Date	
Role in Contract	❑ Contractor	❑ Management Contractor	❑ Subcontractor
Total Contract Amount			US$
If partner in a JV or subcontractor, specify participation of total contract amount	Percent of Total	Amount	
Employer's Name Address Telephone/Fax Number E-mail			

User's certificate shall be submitted by the Bidder as evidence of the above. The certificates shall be issued by user in user's respective letter head stationery indicating address, telephone and fax numbers of the user, shall also be signed and sealed by the issuing authority and shall include the following details of each project that has been executed:

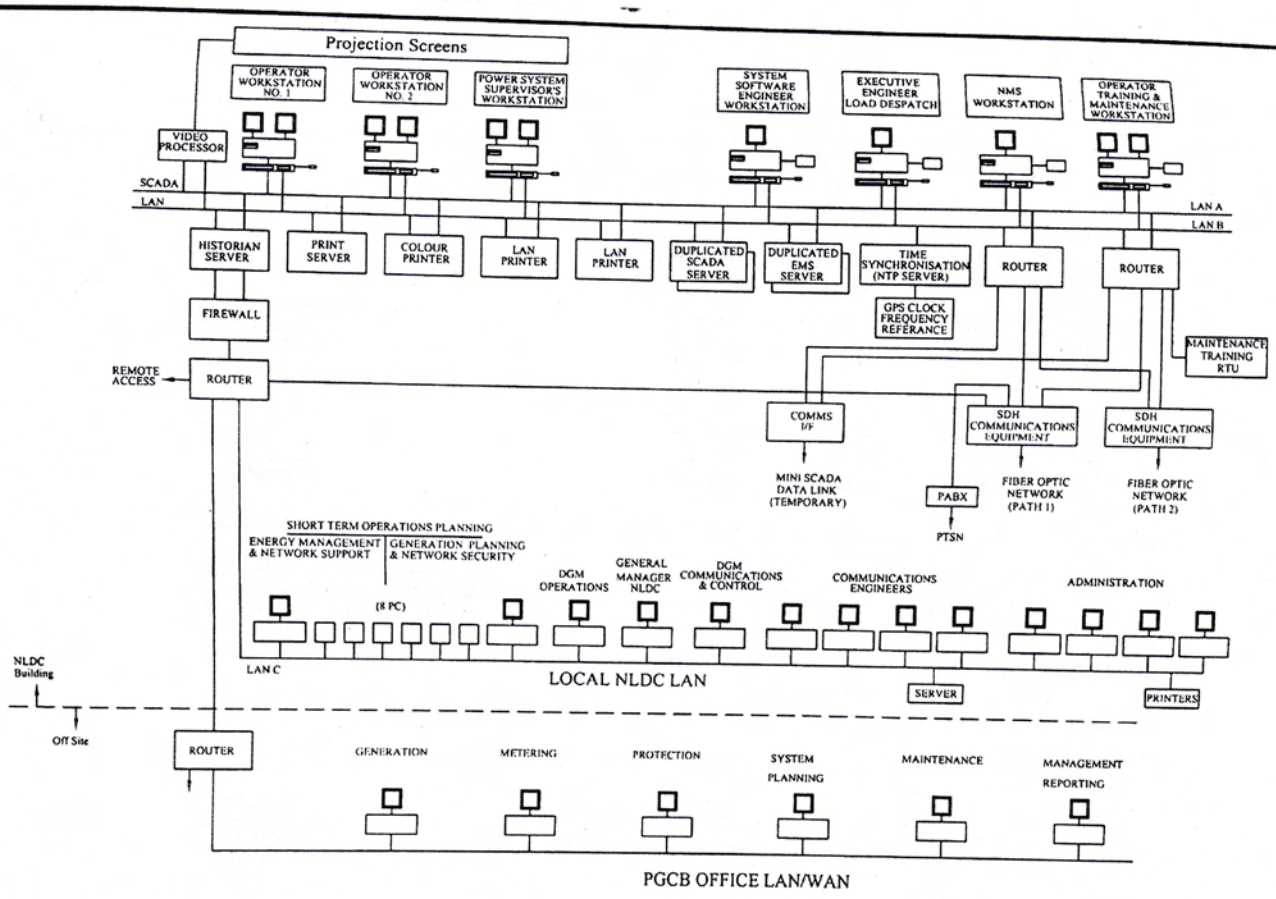
- Name, address and nationality of customer.
- Details of contract, voltage, equipment and line length for transmission line Contracts and transformer capacity, number of bays constructed, etc for substation Contracts.
- Completion period.
- Commissioning date/commercial operation.
- Contract value

Form EXP - 2(b): Specific Experience in Key Activities (Not Applicable)

Fill up one (1) form per contract

Contract No ..... of	Contract Identification	
Award Date		Completion Date
Role in Contract	❑ Contractor	❑ Management Contractor ❑ Subcontractor
Total Contract Amount		US$
If partner in a JV or subcontractor, specify participation of total contract amount	Percent of Total	Amount
Employer's Name Address Telephone Number Fax Number E-mail		
	Not applicable	

Annexure-2



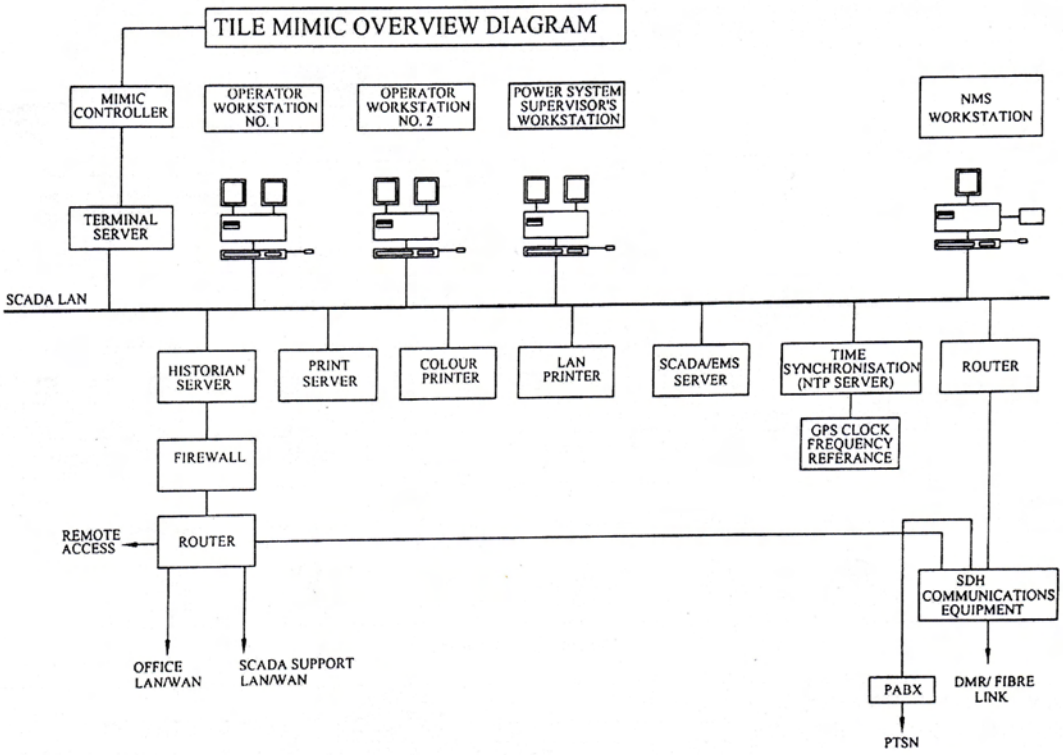
POWER GRID COMPANY OF BANGLADESH LTD.
NATIONAL LOAD DISPATCH CENTRE PROJECT

MERITEC LIMITED IN ASSOCIATION WITH
SMEC INTERNATIONAL Pty Ltd.
DEVELOPMENT DESIGN CONSULTANTS LIMITED

REV.	DATE	REVISION	DRN BY	CKD BY	APR BY
2	26/07/03		RIC	CST	JSK
1	01/06/03		RIC	CST	JSK
0	30/05/03		RIC	CST	JSK

MASTER STATION CONFIGURATION OVERVIEW

DRAWING NO. 11001T | SHEET 1 OF 1 | REV: 2



POWER GRID COMPANY OF BANGLADESH LTD.
NATIONAL LOAD DISPATCH CENTRE PROJECT

MERITEC LIMITED IN ASSOCIATION WITH
SMEC INTERNATIONAL Pty Ltd.
DEVELOPMENT DESIGN CONSULTANTS LIMITED

REV.	DATE	REVISION	DRN BY	CKD BY	APR BY
0	31/07/03		RIC	CST	JSK

STANDBY MASTER STATION CONFIGURATION OVERVIEW

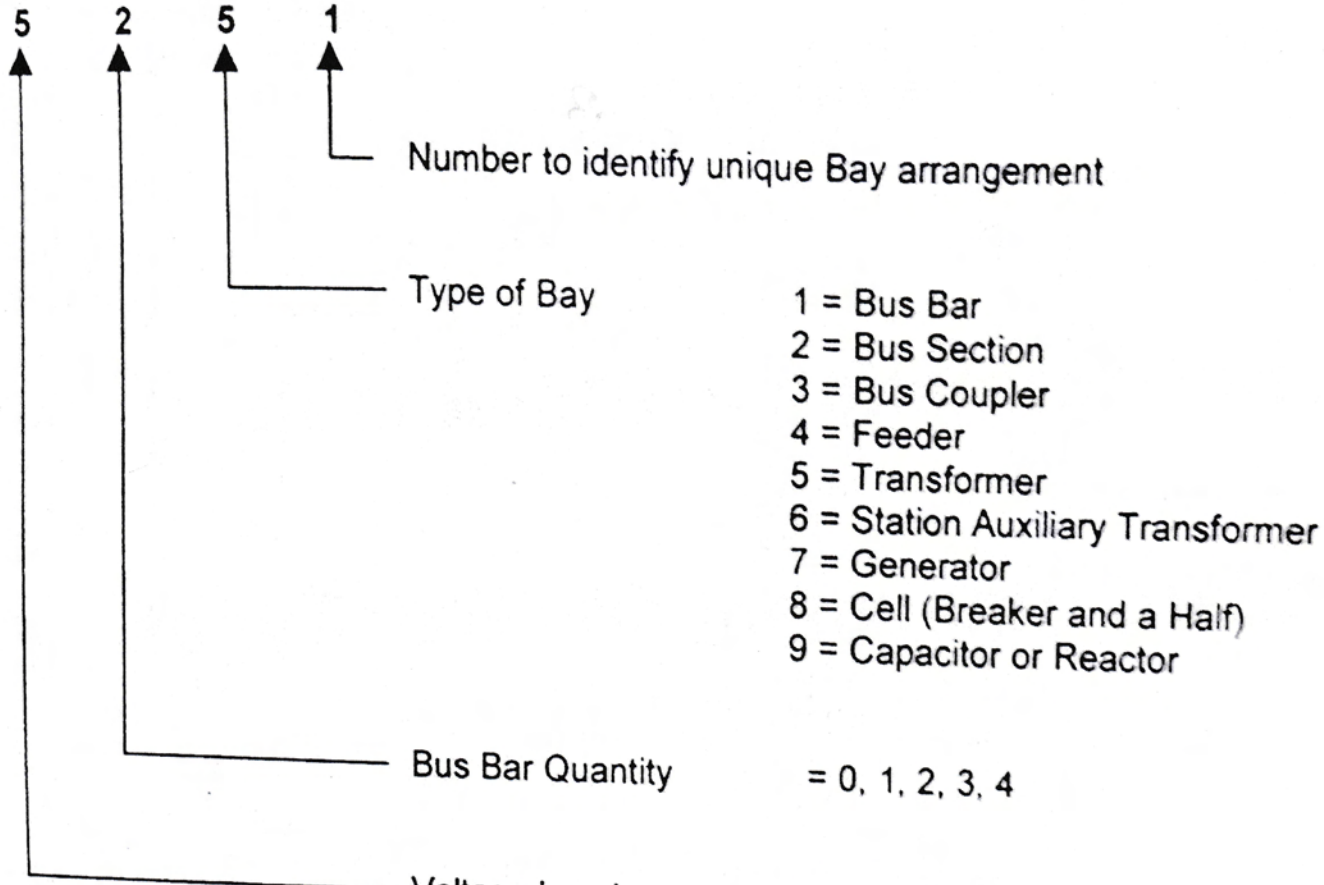
DRAWING NO. 11002T-1 | SHEET 1 OF 1 | REV: 0

Annex 3

Teleinformation Requirements for Standard Equipment and Bay Types

Bay Number Code to define SCADA 1/O requirements based on PGCB SCADA STANDARD

NUMBER CODE



Example:

5251 means

5 = 132kV
2 = Two Bus Bars
5 = Transformer
1 = Bay Arrangement 1

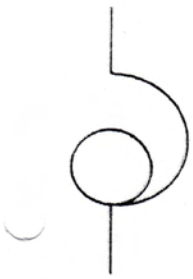
Drawing Symbols used in Typical Bay Arrangements



Generator



Power Transformer



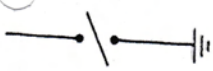
Auto Transformer



Circuit Breaker



Disconnector



Earth Switch



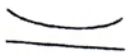
Voltage Transformer



Current Transformer



Reactor



Capacitor

A	Current Measurement Required
C	Control of adjacent equipment required by SCADA
S	Status Indication of adjacent equipment required by SCADA
V	Voltage measurement required by SCADA
LR	Local/Remote control selection required by SCADA
MW	Megawatt measurement required by SCADA
MX	Meggavar measurement required by SCADA
TCP	Tap Changer position indication required by SCADA

NLDC
SCADA STANDARD

NO.	MNEMONIC	FUNCTION	Dam	LFC	Stn.132kV	Stn.230kV	Circuit Breaker	Line Isolator	Line Isolator with ES	Bus Isolator	Circuit Breaker	Gen	Gen	Gen	Gen	Gen	33kV Load Shedding (NLDC RTU)	33kV Shedding (Mini SCADA)	BB	IES	IES	IES	HI Circuit Breaker Mesh	6 Circuit Breaker Mesh	Feeder	Feeder	Breaker & Half Feeder	Breaker & Half Feeder	Feeder	Mesh Feeder	Breaker & Half Trfmer	Trfmer	Trfmer	Trfmer	GnTfm.	Breaker & Half GnTfm.	GnTfm.	GnTfm.	GnTfm.	Trfmer 3 winding	Capacitor Bank Isolation	Capacitor Switching	BR	IES	BC	BC	Feeder	Feeder	Feeder	Feeder	Feeder	Feeder	Feeder
			1	2	3	4	5	6	7	8	9	1071	2070	2071	2072	2073	3141	3142	5111	5121	5122	5123	5126	5127	5141	5142	5143	5144	5145	5146	5150	5151	5152	5153	5154	5155	5156	5157	5158	5159	5181	5192	5211	5222	5231	5232	5240	5241	5242	5243	5244	5245	5246
1	TPI	Tap position Indication (analog)																													1	1	1	1																					
2	HZ	Frequency																	1				1	1																																	
3	KV	Volts										1	1	1	1	1			1				1	1	1	1	1	1		1	1	1	1	1						2		2													
4	MW	Megawatts										1	1	1	1	1									1	1	1	1		1	1	1	1	1						2															
5	MX	Megavars										1	1	1	1	1									1	1	1	1		1	1	1	1	1						2	1														
6	A	Amperes										1	1	1	1	1									1	1	1	1		1	1	1	1	1						2	1														
7	POI	Real power setting		1																																																			
8	F1	Water Inflow / Fuel Flow	1									1	1	1	1	1																																							
9	F2	Reservoir water level / Fuel Tank Level										1	1	1	1	1																																							
		Sub Total TM Inputs	1	1	0	0	0	0	0	0	0	8	8	8	8	8	0	0	2	0	0	0	2	2	4	4	4	4	0	4	5	5	5	5	0	0	0	0	0	9	2	0	4	0	0	0	4	4	4	4	4	4	4

SCADA STANDARD

NO.	MNEMONIC	FUNCTION	Dam	LFC	Stn 132kV	Stn 230kV	Circuit Breaker	Line isolator	Line isolator with ES	Bus isolator	Circuit Breaker	Gen	Gen	Gen	Gen	Gen	33kV Load Shedding (NLDC RTU)	33kV Shedding (Min SCADA)	BB	BS	BS	BS	1/2 Circuit Breaker Wash	3/4 Circuit Breaker Wash	Feeder	Feeder	Breaker & half Feeder	Breaker & half Feeder	Feeder	Mesh Feeder	Breaker & half Trimer	Trimer	Trimer	Trimer	Gn Trm.	Breaker & half Gn Trm.	Gn Trm.	Gn Trm.	Gn Trm.	Trimer 3 winding	Capacitor Bank isolator	Capacitor Switching	ES	ES	BC	BC	Feeder	Feeder	Feeder	Feeder	Feeder	Feeder	Feeder
1	TPI	Tap position indication (analog)																													1	1	1	1						1														
2	HZ	Frequency																1					1	1																			2												
3	KV	Volts										1	1	1	1	1		1					1	1	1	1	1	1		1	1	1	1	1						2			2				1	1	1	1	1	1	1
4	MW	Megawatts										1	1	1	1	1									1	1	1	1		1	1	1	1	1						2							1	1	1	1	1	1	1
5	MX	Megavars										1	1	1	1	1									1	1	1	1		1	1	1	1	1						2	1						1	1	1	1	1	1	1
6	A	Amperes										1	1	1	1	1									1	1	1	1		1	1	1	1	1						2	1						1	1	1	1	1	1	1
7	POI	Real power setting		1																																																		
8	F1	Water inflow / Fuel Flow	1									1	1	1	1	1																																						
9	F2	Reservoir water level / Fuel Tank Level										1	1	1	1	1																																						
		Sub Total TM Inputs	1	1	0	0	0	0	0	0	0	6	6	6	6	6	0	0	2	0	0	0	2	2	4	4	4	4	0	4	5	5	5	5	0	0	0	0	0	9	2	0	4	0	0	0	4	4	4	4	4	4	4

NLDC SCADA STANDARD

	NO.	MNEMONIC	FUNCTION	1	2	3	4	5	6	7	8	9	1071	2070	2071	2072	2073	3141	3142	5111	5121	5122	5123	5126	5127	5141	5142	5143	5144	5145	5146	5150	5151	5152	5153	5154	5155	5156	5157	5158	5159	5191	5192	5211	5222	5231	5232	5240	5241	5242	5243	5244	5245	5246
				Dam	LFC	Stn.132kV	Stn.230kV	Circuit Breaker	Line Isolator	Line Isolator with ES	Bus Isolator	Circuit Breaker	Gen	Gen	Gen	Gen	Gen	33kV Load Shedding (NLDC RTU)	33kV Shedding (Mini SCADA)	BB	BS	BS	BS	10 Circuit Breaker Mesh	8 Circuit Breaker Mesh	Feeder	Feeder	Breaker & Half Feeder	Breaker & Half Feeder	Feeder	Mesh Feeder	Breaker & Half Trfmer	Trfmer	Trfmer	Trfmer	GnTfm.	Breaker & Half GnTfm.	GnTfm.	GnTfm.	GnTfm.	Trfmer 3 winding	Capacitor Bank Isolation	Capacitor Switching	BB	BS	BC	BC	Feeder	Feeder	Feeder	Feeder	Feeder	Feeder	Feeder
	1	LRCB	Local / remote switch for CB & BI					1													1	1	1	10	6	1	1					1	2	2	1	1		1			2		1		2	1	1	1	1	1	1	1	1	1
	2	LRTC	Local / remote switch for TC																													1	1	1	1						1													
	3	LRG	Local / remote switch for generator										1	1	1	1	1																																						
	4	BF	Bay fault																		1	1	1	10	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			1	1	1	1	1	1	1	1	1	1
	5	BRF	Breaker fault					1															1	10	6	1	1					1	2	2	1	1		1			2	1	1			1	1	1	1	1	1	1	1	1	1
	6	P1	Protection class 1 trip																							1	1	1	1	1	1	1	1	1	1						1						1	1	1	1	1	1	1	1
TSS	7	AR	CB auto reclose																							1	1	1	1	1	1																1	1	1	1	1	1	1	1
	8	P2	Protection class 2 trip					1													1	1	1	10	6	1	1					1	2	2	1	1		1			2		1		2	1	1	1	1	1	1	1	1	1	1
	9	P3	Protection class 3 trip																	1																																				
	10	CPA	Cable pressure alarm																																											2									
	11	CPT	Cable pressure trip																																																			
	12	VS	Voltage status																	1																											2									
	13	TRA	Transformer alarm																													1	1	1	1						1													
	14	TRT	Transformer trip																													1	1	1	1						1													
	15	TEA	Transformer temperature alarm																													1	1	1	1						1													
	16	TET	Transformer temperature trip																													1	1	1	1						1													
	17	TCA	Tap changer alarm																													1	1	1	1						1													
	18	TCT	Tap changer trip																													1	1	1	1						1													
	19	TCH	Tap changer high limit																													1	1	1	1						1													
	20	TCL	Tap changer low limit																													1	1	1	1						1													
	21	CD	Control disable switch			1	1																																														
	22	RTU	RTU Fault alarm			1	1																																													
	23	COM	Station Communication alarm			1	1																																													
	24	MPS	Main substation LVAC power supply			1	1																																												
	25	SPS	Station DC Fault Alarm			1	1																																												
	26	FDC	Fault data capture			1	1																																													
	27	RT	Capacitor Trip																																										1									
	28	RF	Capacitor Fault																																									1									
	29	ARO	Auto reclose blocked																								1	1	1	1	1	1																1	1	1	1	1	1	1
	30	SP	Synchronizing in progress										1	1	1	1	1																																				
	31	TUT	Turbine trip										1	1	1	1	1																																				
	32	GRT	Generator trip										1	1	1	1	1																																				
	33	GTT	Generator transformer trip																																		1	1	1	1	1													
	34	GTF	Generator transformer fault																																		1	1	1	1	1													
	35	SUF	Substation urgent fault			1	1																																													
	36	SNF	Substation non-urgent fault			1	1																																												
	37	F3	Accumulated Fuel/Water Flow (Pulse accumulator)										1	1	1	1	1																																				
	38	CPC	Communication DC Fault alarm			1	1																																												
	39	MWHO	Megawatt Hours (Pulse accumulator)										1	1	1	1	1																																				
	40	MXHO	Megavar Hours (Pulse accumulator)										1	1	1	1	1																																				
	41	GUT	Generator Unit Stopping										1	1	1	1	1																																				
	42	GUA	Generator Unit Available										1	1	1	1	1																																				
	43	GUR	Generator unit Running										1	1	1	1	1																																				
	44	GUS	Generator unit Stopped										1	1	1	1	1																																				
	45	CSO	Check synchronizing over-ride			1	1																																												
	46	LFC	Load freq. control on /off switch		1																																															
	47	PSO	Power set on / off switch		1																																															
	48	LFF	Load freq. control unit fault		1																																															
	49	CBBI	Circuit breaker ready for SCADA control															1																																		
			Sub Total TSS inputs:	0	0	8	8	3	0	0	0	0	5	5	5	5	5	0	0	2	3	3	4	40	24	7	7	4	4	7	4	14	17	17	14	6	3	6	3	3	17	2	5	4	5	4	3	7	7	7	7	7	7	7

NLDC SCADA STANDARD

	NO.	MNEMONIC	FUNCTION	1 Dam	2 LFC	3 Stn.132kV	4 Stn.230kV	5 Circuit Breaker	6 Line Isolator	7 Line Isolator with ES	8 Bus Isolator	9 Circuit Breaker	1071 Gen	2070 Gen	2071 Gen	2072 Gen	2073 Gen	3141 33kV Load Shedding (NLDC RTU)	3142 33kV Shedding (Mini SCADA)	5111 BB	5121 BS	5122 BS	5123 BS	5126 10 Circuit Breaker Mesh	5127 6 Circuit Breaker Mesh	5141 Feeder	5142 Feeder	5143 Breaker & Half Feeder	5144 Breaker & Half Feeder	5145 Feeder	5146 Mesh Feeder	5150 Breaker & Half Trfmer	5151 Trfmer	5152 Trfmer	5153 Trfmer	5154 GnTfm.	5155 Breaker & Half GnTfm.	5156 GnTfm.	5157 GnTfm.	5158 GnTfm.	5159 Trfmer 3 winding	5191 Capacitor Bank Isolation	5192 Capacitor Switching	5211 BB	5222 BS	5231 BC	5232 BC	5240	5241 Feeder	5242 Feeder	2243 Feeder	5244 Feeder	5245 Feeder
	1	CBCI	Circuit breaker closed					1				1		1	1			1	1				1	10	6	1	1			1		1	2	2	1	1		1			2		1		2	1		1	1	1	1	1
	1	CBOI	Circuit breaker opened					1				1		1	1			1					1	10	6	1	1			1		1	2	2	1	1		1			2		1		2	1		1	1	1	1	1
	2	BICI	Motorized isolator switch closed								1										1	2	2	20	12	1																				4	2	2	3	2	3	1	3
	2	BIOI	Motorized isolator switch opened								1										1	2	2	20	12	1																				4	2	2	3	2	3	1	3
	3	TCSI	Tap changer Station Control																													1	1	1	1						1										
	3	TCRI	Tap changer remote SCADA control																													1	1	1	1						1										
SD	4	LICI	Isolator switch closed						1	1				1			1									2	2	1		2	1	3	2	3	2		1	1		2	3	1						2	1	3	3	1
	4	LIOI	Isolator switch opened						1	1				1			1									2	2	1		2	1	3	2	3	2		1	1		2	3	1						2	1	3	3	1
	5	ESCI	Earth switch closed							1																1	1	1	1		1																1	1	1	1	1
	5	ESOI	Earth switch opened							1																1	1	1	1		1																1	1	1	1	1
			Sub Total TSD Inputs:	0	0	0	0	2	2	4	2	2	0	4	2	0	2	2	1	0	2	4	6	60	36	10	8	4	2	6	4	10	10	12	8	2	2	4	0	4	12	2	4	0	12	6	4	14	10	16	12	12
	1	CBCO	Circuit breaker close					1										1	1				1	10	6	1	1			1		1	2	2	1	1		1			2		1		2	1		1	1	1	1	1
	1	CBOO	Circuit breaker open					1										1	1				1	10	6	1	1			1		1	2	2	1	1		1			2		1		2	1		1	1	1	1	1
	2	BICO	Motorized isolator switch close								1										1	2	2			1	1			1		1	2	2	1	1		1			2		1		2	1		1	1	1	1	1
	2	BIOO	Motorized isolator switch open								1										1	2	2			1																				4	2	2	3	2	3	1	3
																																														4	2	2	3	2	3	1	3
:O	3	GURO	Generator unit Start										1	1	1	1	1																																				
	3	GUSO	Generator unit Stop										1	1	1	1	1																																				
	4	CSOO	Check synchronizing over-ride (For Dead Bus/Line C		1	1																																														
	5	TCRO	Tap changer Raise																													1	1	1	1						1										
	5	TCLO	Tap changer Lower																													1	1	1	1						1										
	6	ARBO	Auto reclose block																							1	1	1	1	1	1																						
	7	LMWP	Lower MW Set Point Pulse		1																																															
	8	RMWP	Raise MW Set Point Pulse		1																																															
			Sub Total TCO Outputs:	0	2	1	1	2	0	0	2	0	2	2	2	2	2	2	2	0	2	4	6	20	12	5	3	1	1	3	1	4	6	6	4	2	0	2	0	0	6	0	2	0	12	6	4	9	7	9	5	9
	1	PO	Real power set point		1																																															
:A																																																				
			Sub Total TCA Outputs:	0	1	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NLDC SCADA STANDARD

132 KV

	NO.	MNEMONIC	FUNCTION	Dam	LFC	Sin.132kV	Sin.230kV	Circuit Breaker	Line Isolator	Line Isolator with ES	Bus Isolator	Circuit Breaker	Gen	Gen	Gen	Gen	Gen	33kV Load Shedding (NLDC RTU)	33kV Shedding (Mini SCADA)	BB	BS	BS	BS	10 Circuit Breaker Mesh	6 Circuit Breaker Mesh	Feeder	Feeder	Breaker & Half Feeder	Breaker & Half Feeder	Feeder	Mesh Feeder	Breaker & Half Trfmer	Trfmer	Trfmer	Trfmer	GnTfm.	Breaker & Half GnTfm.	GnTfm.	GnTfm.	GnTfm.	Trfmer 3 winding	Capacitor Bank Isolation	Capacitor Switching	BB	BS	BC	BC	Feeder	Feeder	Feeder	Feeder	Feeder
	1	CBCI	Circuit breaker closed					1				1		1	1			1	1				1	10	6	1	1			1		1	2	2	1	1		1			2		1	2	1		1	1	1	1	1
	1	CBOI	Circuit breaker opened					1				1		1	1			1					1	10	6	1	1			1		1	2	2	1	1		1			2		1	2	1		1	1	1	1	1
	2	BICI	Motorized isolator switch closed								1										1	2	2	20	12	1																			4	2	2	3	2	3	1	3
	2	BIOI	Motorized isolator switch opened								1										1	2	2	20	12	1																			4	2	2	3	2	3	1	3
	3	TCSI	Tap changer Station Control																													1	1	1	1					1											
	3	TCRI	Tap changer remote SCADA control																													1	1	1	1					1											
SD	4	LICI	Isolator switch closed						1	1				1			1									2	2	1		2	1	3	2	3	2		1	1		2	3	1						2	1	3	3	1
	4	LIOI	Isolator switch opened						1	1				1			1									2	2	1		2	1	3	2	3	2		1	1		2	3	1						2	1	3	3	1
	5	ESCI	Earth switch closed							1																1	1	1	1		1																	1	1	1	1	1
	5	ESOI	Earth switch opened							1																1	1	1	1		1																	1	1	1	1	1
			Sub Total TSD Inputs:	0	0	0	0	2	2	4	2	2	0	4	2	0	2	2	1	0	2	4	6	60	36	10	8	4	2	6	4	10	10	12	8	2	2	4	0	4	12	2	4	0	12	6	4	14	10	16	12	12
	1	CBCO	Circuit breaker close					1										1	1				1	10	6	1	1			1		1	2	2	1	1		1			2		1	2	1		1	1	1	1	1
	1	CBOO	Circuit breaker open					1										1	1				1	10	6	1	1			1		1	2	2	1	1		1			2		1	2	1		1	1	1	1	1
	2	BICO	Motorized isolator switch close								1										1	2	2			1																			4	2	2	3	2	3	1	3
	2	BIOO	Motorized isolator switch open								1										1	2	2			1																			4	2	2	3	2	3	1	3
CO	3	GURO	Generator unit Start										1	1	1	1	1																																				
	3	GUSO	Generator unit Stop										1	1	1	1	1																																				
	4	CSOO	Check synchronizing over-ride (For Dead Bus/Line C		1	1																																													
	5	TCRO	Tap changer Raise																													1	1	1	1						1										
	5	TCLO	Tap changer Lower																													1	1	1	1						1										
	6	ARBO	Auto reclose block																							1	1	1	1	1	1																	1	1	1	1	1
	7	LMWP	Lower MW Set Point Pulse		1																																														
	8	RMWP	Raise MW Set Point Pulse		1																																														
			Sub Total TCO Outputs:	0	2	1	1	2	0	0	2	0	2	2	2	2	2	2	2	0	2	4	6	20	12	5	3	1	1	3	1	4	6	6	4	2	0	2	0	0	6	0	2	0	12	6	4	9	7	9	5	9
	1	PO	Real power set point		1																																														
TCA																																																					
			Sub Total TCA Outputs:	0	1	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NLDC
SCADA STANDARD

	NO.	MNEMONIC	FUNCTION	5247 Feeder	5248 Feeder	5249 Feeder	5251 Trfmer	5252 Trfmer	5253 GnTfm.	5254 Trfmer	5256 Trfmer	5258 Trfmer	5281 Breaker & Half Cell	5282 Breaker & Half Cell	5283 Breaker & Half Cell	5311 BB	5331 BC	5342 Feeder	5351 Trfmer	5352 GnTfm.	6111 BB	6121 BS	6122 BS	6140 Breaker & Half Feeder	6150 Breaker & Half GnTfm.	6157 GnTfm.	6159 Trfmer 3 winding
	1	TPI	Tap position indication (analog)				1	1		1	1	1							1								1
	2	HZ	Frequency													3					1						
	3	kV	Volts	1	1	1	1	1		1	1	1				3		1	1		1			1			2
	4	MW	Megawatts	1	1	1	1	1		1	1	1						1	1					1			2
TM	5	MX	Megavars	1	1	1	1	1		1	1	1						1	1					1			2
	6	A	Amperes	1	1	1	1	1		1	1	1						1	1					1			2
	7	POI	Real power setting																								
	8	F1	Water Inflow / Fuel Flow																								
	9	F2	Reservoir water level / Fuel Tank Level																								
			Sub Total TM Inputs:	4	4	4	5	5	0	5	5	5	0	0	0	6	0	4	5	0	2	0	0	4	0	0	9

230 KV

	NO.	MNEMONIC	FUNCTION	6211 BB	6222 BS	6223 BS	6231 BC	6232 BC	6241 Feeder	6242 Feeder	6243 Feeder	6250 GnTfm.	6251 Trfmer	6252 Trfmer	6253 GnTfm.	6254 GnTfm.	6255 Breaker & Half Trfmer	6256 Breaker & Half Trfmer	6257 Breaker & Half Trfmer	6258 Trfmer	6259 Trfmer	6281 Breaker & Half Cell	6282 Breaker & Half Cell	6283 Breaker & Half Cell	6311 BB	6334 BC	6341
	1	TPI	Tap position indication (analog)										1	1			1	1	1	1	1						
	2	HZ	Frequency	2																					3		
	3	kV	Volts	2					1	1	1		1	1			1	1	1	1	1				3		
	4	MW	Megawatts						1	1	1		1	1			1	1	1	1	1						
TM	5	MX	Megavars						1	1	1		1	1			1	1	1	1	1						
	6	A	Amperes						1	1	1		1	1			1	1	1	1	1						
	7	POI	Real power setting																								
	8	F1	Water Inflow / Fuel Flow																								
	9	F2	Reservoir water level / Fuel Tank Level																								
			Sub Total TM Inputs:	4	0	0	0	0	4	4	4	0	5	5	0	0	5	5	5	5	5	0	0	0	6	0	

NLDC SCADA STANDARD

	NO.	MNEMONIC	FUNCTION	5247 Feeder	5248 Feeder	5249 Feeder	5251 Trfmer	5252 Trfmer	5253 GnTfm.	5254 Trfmer	5256 Trfmer	5258 Trfmer	5281 Breaker & Half Cell	5282 Breaker & Half Cell	5283 Breaker & Half Cell	5311 BB	5331 BC	5342 Feeder	5351 Trfmer	5352 GnTfm.	6111 BB	6121 BS	6122 BS	6140 Breaker & Half Feeder	6150 Breaker & Half GnTfm.	6157 GnTfm.	6159 Trfmer 3 winding	6211 BB	6222 BS	6223 BS	6231 BC	6232 BC	230 KV 6241 Feeder	6242 Feeder	6243 Feeder	6250 GnTfm.	6251 Trfmer	6252 Trfmer	6253 GnTfm.	6254 GnTfm.	6255 Breaker & Half Trfmer	6256 Breaker & Half Trfmer	6257 Breaker & Half Trfmer	6258 Trfmer	6259 Trfmer	6281 Breaker & Half Cell	6282 Breaker & Half Cell	6283 Breaker & Half Cell	6311 BB	6334 BC	6341 Feeder
	1	LRCB	Local / remote switch for CB & BI	1	1	1	2	2	1	2	1	2	1	1	1		1	1	2	1		1	1				2		2	2	1	1	1	1	1	2	1	1	1	1			1	1			1	1
	2	LRTC	Local / remote switch for TC				1	1		1	1	1							1									1									1	1										
	3	LRG	Local / remote switch for generator																																													
	4	BF	Bay fault	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1		1	1	1	1	1	1		2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	5	BRF	Breaker fault	1	1	1	2	2	1	2	1	2	1	1	1		1	1	2	1							2		2		1	1	1	1	1	2	1	1	1	1			1	1	1	1	1	1
	6	P1	Protection class 1 trip	1	1	1	1	1		1	1	1						1	1					1			1						1	1	1		1	1			1	1				1	1
TSS	7	AR	CB auto reclose	1	1	1																		1									1	1	1												1
	8	P2	Protection class 2 trip	1	1	1	2	2	1	2	1	2	1	1	1		1	1	2			1	1					2		2		1	1	1	1	1	2	1	1	1	1			1	1	1	1	1	1
	9	P3	Protection class 3 trip													3					1							2																				3		
	10	CPA	Cable pressure alarm																																														
	11	CPT	Cable pressure trip																																														
	12	VS	Voltage status													3					1							2																				3		
	13	TRA	Transformer alarm				1	1		1	1	1							1								1									1	1			1	1	1	1	1					
	14	TRT	Transformer trip				1	1		1	1	1							1								1									1	1			1	1	1	1	1					
	15	TEA	Transformer temperature alarm				1	1		1	1	1							1								1									1	1			1	1	1	1	1					
	16	TET	Transformer temperature trip				1	1		1	1	1							1								1									1	1			1	1	1	1	1					
	17	TCA	Tap changer alarm				1	1		1	1	1							1								1									1	1			1	1	1	1	1					
	18	TCT	Tap changer trip				1	1		1	1	1							1								1									1	1			1	1	1	1	1					
	19	TCH	Tap changer high limit				1	1		1	1	1							1								1									1	1			1	1	1	1	1					
	20	TCL	Tap changer low limit				1	1		1	1	1							1								1									1	1			1	1	1	1	1					
	21	CD	Control disable switch																																														
	22	RTU	RTU Fault alarm																																														
	23	COM	Station Communication alarm																																														
	24	MPS	Main substation LVAC power supply																																														
	25	SPS	Station DC Fault Alarm																																														
	26	FDC	Fault data capture																																														
	27	RT	Capacitor Trip																																														
	28	RF	Capacitor Fault																																														
	29	ARO	Auto reclose blocked	1	1	1												1						1																										
	30	SP	Synchronizing In progress																														1	1	1														1
	31	TUT	Turbine trip																																														
	32	GRT	Generator trip																																														
	33	GTT	Generator transformer trip						1											1					1	1																								
	34	GTF	Generator transformer fault						1											1					1	1										2			1	1									
	35	SUF	Substation urgent fault																																2			1	1									
	36	SNF	Substation non-urgent fault																																														
	37	F3	Accumulated Fuel/Water Flow (Pulse accum																																														
	38	CPC	Communication DC Fault alarm																																														
	39	MWHO	Megawatt Hours (Pulse accumulator)																																														
	40	MXHO	Megavar Hours (Pulse accumulator)																																														
	41	GUT	Generator Unit Stopping																																														
	42	GUA	Generator Unit Available																																														
	43	GUR	Generator unit Running																																														
	44	GUS	Generator unit Stopped																																														
	45	CSO	Check synchronizing over-ride																																														
	46	LFC	Load freq. control on /off switch																																														
	47	PSO	Power set on / off switch																																														
	48	LFF	Load freq. control unit fault																																														
	49	CBBI	Circuit breaker ready for SCADA control																																														
			Sub Total TSS Inputs:	7	7	7	17	17	6	17	14	17	4	4	4	6	6	7	17	5	2	3	3	4	3	3	17	4	8	3	4	4	7	7	7	8	17	14	6	6	14	11	10	14	14	4	4	4	6	5	1

NLDC SCADA STANDARD

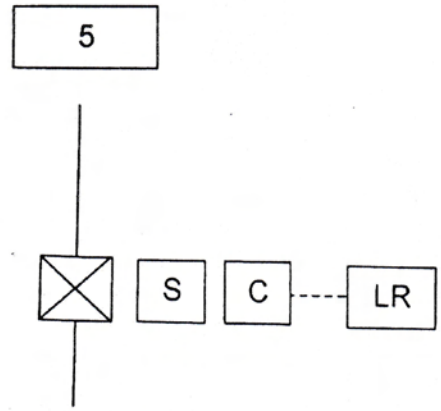
	NO.	MNEMONIC	FUNCTION	5247 Feeder	5248 Feeder	5249 Feeder	52[illegible] Trfmer	5252 Trfmer	5253 GnTfm.	5254 Trfmer	5256 Trfmer	5258 Trfmer	5281 Breaker & Half Cell	5282 Breaker & Half Cell	5283 Breaker & Half Cell	5311 BB	5312 BC	5342 Feeder	5351 Trfmer	5352 GnTfm.	6111 BB	6121 BS	6122 BS	6140 Breaker & Half Feeder	6150 Breaker & Half GnTfm.	6157 GnTfm.	6159 Trfmer 3 winding	6211 BB	6212 BS	6223 BS	6231 BC	6232 BC	6241 Feeder	6242 Feeder	6243 Feeder	6250 GnTfm.	6251 Trfmer	6252 Trfmer	6253 GnTfm.	6254 GnTfm.	6255 Breaker & Half Trfmer	6256 Breaker & Half Trfmer	6257 Breaker & Half Trfmer	6258 Trfmer	6259 Trfmer	6281 Breaker & Half Cell	6282 Breaker & Half Cell	6283 Breaker & Half Cell	6311 BB	6334 BC	6341 Feeder	6351 Trfmer	6352 GnTfm.
	1	LRCB	Local / remote switch for CB & BI	1	1	1	2	2	1	2	1	2	1	1	1		1	1	2	1	1	1				2		2	2	1	1	1	1	1	1	2	1	1	1	1				1	1	1	1	1	1	1	1
	2	LRTC	Local / remote switch for TC				1	1		1	1	1							1							1										1	1							1	1						
	3	LRG	Local / remote switch for generator																																																
	4	BF	Bay fault	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1		1	1	1	1	1		2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	5	BRF	Breaker fault	1	1	1	2	2	1	2	1	2	1	1	1		1	1	2	1							2		2		1	1				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	6	P1	Protection class 1 trip	1	1	1	1	1		1	1	1					1	1					1			1						1	1	1		1	1			1	1						1	1	1	1
TSS	7	AR	CB auto reclose	1	1	1												1	1					1			1						1	1	1						1	1						1	1	1	
	8	P2	Protection class 2 trip	1	1	1	2	2	1	2	1	2	1	1	1		1	1	2	1		1	1	1				2		2		1	1				1	1											1		
	9	P3	Protection class 3 trip													3				1							2	2		1	1	1	1	1	1	2	1	1	1	1				1	1	1			1	1	1	
	10	CPA	Cable pressure alarm																																																
	11	CPT	Cable pressure trip																																																
	12	VS	Voltage status													3				1							2																									
	13	TRA	Transformer alarm				1	1		1	1	1							1							1										1	1			1	1	1	1	1						1	
	14	TRT	Transformer trip				1	1		1	1	1							1							1										1	1			1	1	1	1	1						1	
	15	TEA	Transformer temperature alarm				1	1		1	1	1							1							1										1	1			1	1	1	1	1						1	
	16	TET	Transformer temperature trip				1	1		1	1	1							1							1										1	1			1	1	1	1	1						1	
	17	TCA	Tap changer alarm				1	1		1	1	1							1							1										1	1			1	1	1	1	1						1	
	18	TCT	Tap changer trip				1	1		1	1	1							1							1										1	1			1	1	1	1	1						1	
	19	TCH	Tap changer high limit				1	1		1	1	1							1							1										1	1			1	1	1	1	1						1	
	20	TCL	Tap changer low limit				1	1		1	1	1							1							1										1	1			1	1	1	1	1						1	
	21	CD	Control disable switch				1	1		1	1	1							1							1										1	1			1	1	1	1	1						1	
	22	RTU	RTU Fault alarm																																																
	23	COM	Station Communication alarm																																																
	24	MPS	Main substation LVAC power supply																																																
	25	SPS	Station DC Fault Alarm																																															
	26	FDC	Fault data capture																																															
	27	RT	Capacitor Trip																																															
	28	RF	Capacitor Fault																																															
	29	ARO	Auto reclose blocked																																															
	30	SP	Synchronizing in progress	1	1	1												1						1									1	1	1															
	31	TUT	Turbine trip																																															
	32	GRT	Generator trip																																															
	33	GTT	Generator transformer trip						1												1				1																									
	34	GTF	Generator transformer fault						1												1				1												2												
	35	SUF	Substation urgent fault																		1				1												2			1	1								2
	36	SNF	Substation non-urgent fault																		1				1												2			1	1								2
	37	F3	Accumulated Fuel/Water Flow (Pulse accum																																															
	38	CPC	Communication DC Fault alarm																																															
	39	MWHO	Megawatt Hours (Pulse accumulator)																																															
	40	MXHO	Megavar Hours (Pulse accumulator)																																															
	41	GUT	Generator Unit Stopping																																															
	42	GUA	Generator Unit Available																																															
	43	GUR	Generator unit Running																																															
	44	GUS	Generator unit Stopped																																															
	45	CSO	Check synchronizing over-ride																																															
	46	LFC	Load freq. control on /off switch																																															
	47	PSO	Power set on / off switch																																															
	48	LFF	Load freq. control unit fault																																															
	49	CBBI	Circuit breaker ready for SCADA control																																															
			Sub Total TSS Inputs:	7	7	7	17	17	6	17	14	17	4	4	4	6	6	7	17	5	2	3	3	4	3	3	17	4	8	3	4	4	7	7	7	8	17	14	6	6	14	11	10	14	14	4	4	4	6	5	7	14	7

NLDC SCADA STANDARD

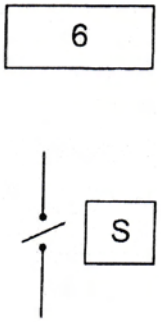
	NO.	MNEMONIC	FUNCTION	230 KV: 5247	5248	5249	5251	5252	5253	5254	5256	5258	5281	5282	5283	5311	5331	5342	5351	5352	6111	6121	6122	6140	6150	6157	6159	6211	6222	6223	6231	6232	6241	6242	6243	6250	6251	6252	6253	6254	6255	6256	6257	6258	6259	6281	6282	6283	6311	6334	6341	6351	6352
				Feeder	Feeder	Feeder	Trfmer	Trfmer	GnTfm.	Trfmer	Trfmer	Trfmer	Breaker & Half Cell	Breaker & Half Cell	Breaker & Half Cell	BB	BC	Feeder	Trfmer	GnTfm.	BB	BS	BS	Breaker & Half Feeder	Breaker & Half GnTfm.	GnTfm.	Trfmer 3 winding	BB	BS	BS	BC	BC	Feeder	Feeder	Feeder	GnTfm.	Trfmer	Trfmer	GnTfm.	GnTfm.	Breaker & Half Trfmer	Breaker & Half Trfmer	Breaker & Half Trfmer	Trfmer	Trfmer	Breaker & Half Cell	Breaker & Half Cell	Breaker & Half Cell	BB	BC	Feeder	Trfmer	GnTfm.
	1	CBCI	Circuit breaker closed	1	1	1	2	2	1	2	1	2	1	1	1		1	1	2	1							2		2		1	1	1	1	1	2	1	1	1	1			1	1	1	1	1		1	1	1	1
	1	CBOI	Circuit breaker opened	1	1	1	2	2	1	2	1	2	1	1	1		1	1	2	1							2		2		1	1	1	1	1	2	1	1	1	1			1	1	1	1	1		1	1	1	1
	2	BICI	Motorized isolator switch closed	1	2	1	2	1	2	1	1	3					3	3	3	3		1	2						4	2	3	4	3	2	3	2	3	3	2	3				2	2					4	3	3	3
	2	BIOI	Motorized isolator switch opened	1	2	1	2	1	2	1	1	3					3	3	3	3		1	2						4	2	3	4	3	2	3	2	3	3	2	3				2	2					4	3	3	3
	3	TCSI	Tap changer Station Control				1	1		1	1	1							1								1										1	1			1	1	1	1	1							1	
	3	TCRI	Tap changer remote SCADA control				1	1		1	1	1							1								1										1	1			1	1	1	1	1							1	
TSD	4	LICI	Isolator switch closed	2		2	1	3		3	2	3	2	2	2			2	2	1				1	1		3						3	1	2	5	3	2	1	2	2	1	2	1	2	2			1	1	1	1
	4	LIOI	Isolator switch opened	2		2	1	3		3	2	3	2	2	2			2	2	1				1	1		3						3	1	2	5	3	2	1	2	2	1	2	1	2	2			1	1	1	1
	5	ESCI	Earth switch closed			1												1	1	1				1									1	1	1						1	1	1	1	1							1	1	1
	5	ESOI	Earth switch opened			1												1	1	1				1									1	1	1						1	1	1	1	1							1	1	1
			Sub Total TSD Inputs:	8	6	10	12	14	6	14	10	18	6	6	6	0	8	14	18	12	0	2	4	4	2	0	12	0	12	4	8	10	16	10	14		18	14		12	10	4	8	12	8	6	6	6	0	12	12	14	12
	1	CBCO	Circuit breaker close	1	1	1	2	2	1	2	1	2	1	1	1		1	1	2	1							2		2		1	1	1	1	1	2	1	1	1	1			1	1	1	1	1		1	1	1	1
	1	CBOO	Circuit breaker open	1	1	1	2	2	1	2	1	2	1	1	1		1	1	2	1							2		2		1	1	1	1	1	2	1	1	1	1			1	1	1	1	1		1	1	1	1
	2	BICO	Motorized isolator switch close	1	2	1	2	1	2	1	1	3					3	3	3	3		1	2						4	2	3	4	3	2	3	2	3	3	2	3				2	2					4	3	3	3
	2	BIOO	Motorized isolator switch open	1	2	1	2	1	2	1	1	3					3	3	3	3		1	2						4	2	3	4	3	2	3	2	3	3	2	3				2	2					4	3	3	3
TCO	3	GURO	Generator unit Start																																																		
	3	GUSO	Generator unit Stop																																																		
	4	CSOO	Check synchronizing over-ride (For Dead Bu																																																	
	5	TCRO	Tap changer Raise				1	1		1	1	1							1								1										1	1			1	1	1	1	1							1	
	5	TCLO	Tap changer Lower				1	1		1	1	1							1								1										1	1			1	1	1	1	1							1	
	6	ARBO	Auto reclose block	1	1	1											1							1									1	1	1																1		
	7	LMWP	Lower MW Set Point Pulse																																																		
	8	RMWP	Raise MW Set Point Pulse																																																		
			Sub Total TCO Outputs:	5	7	5	10	8	6	8	6	12	2	2	2	0	8	9	12	8	0	2	4	1	0	0	6	0	12	4	8	10	9	7	9	6	12	10	6	8	4	2	2	8	8	2	2	2	0	10	9	10	8
TCA	1	PO	Real power set point																																																		
			Sub Total TCA Outputs:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

System Components

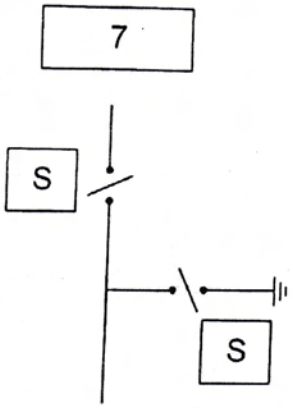
Circuit Breaker



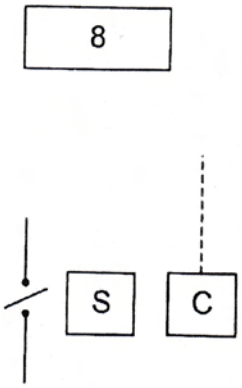
Line Isolator



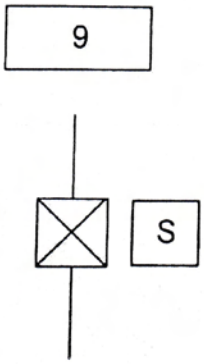
Line Isolator with Earth Switch



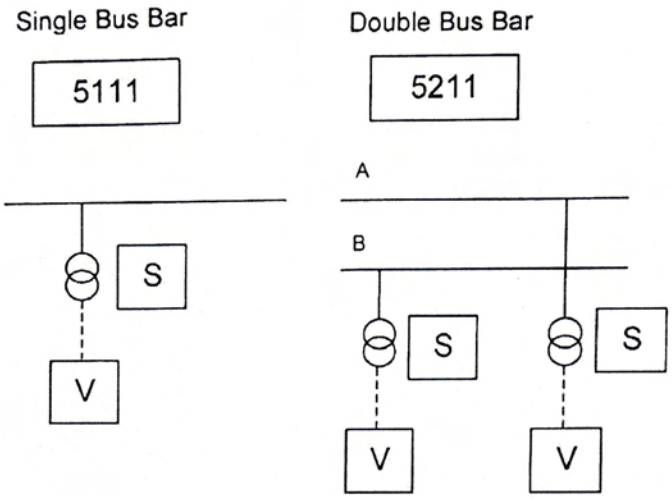
Bus Isolator



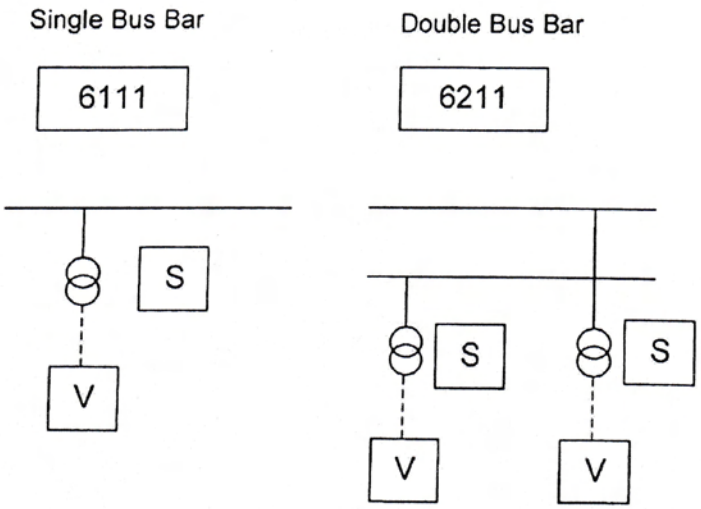
Circuit Breaker



132kV Bus Bars

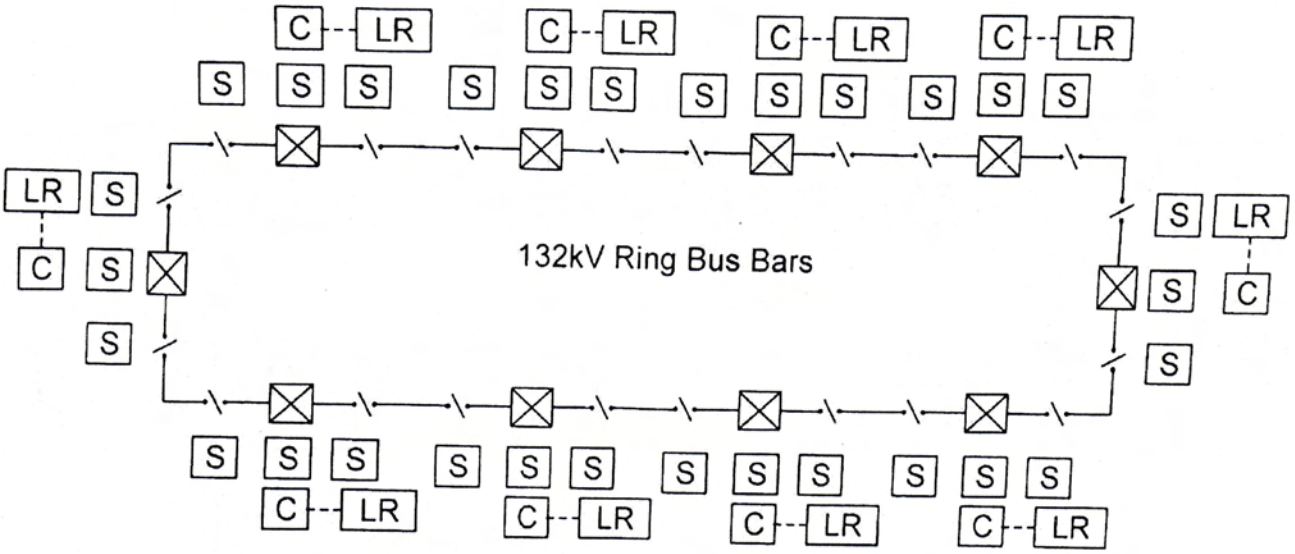


230kV Bus Bars

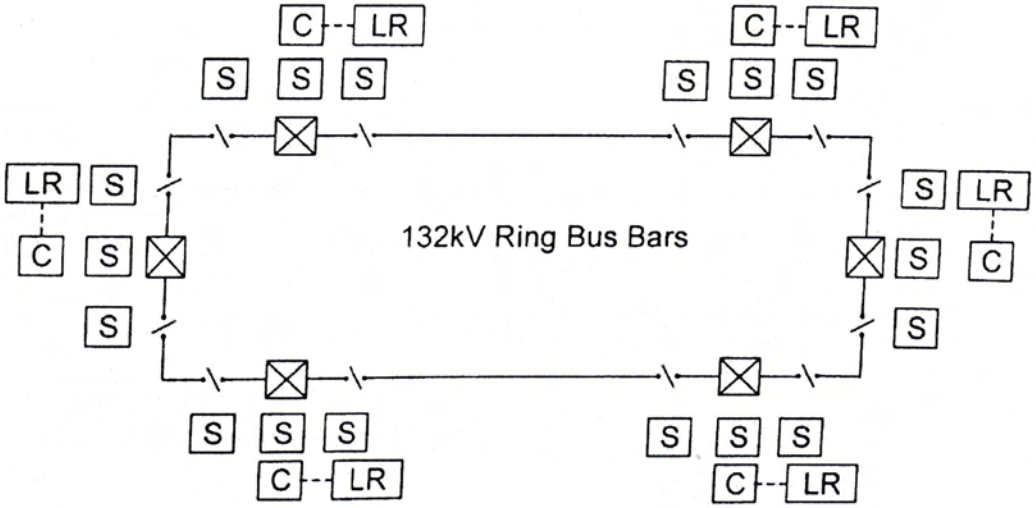


132kV Ring Bus Bars

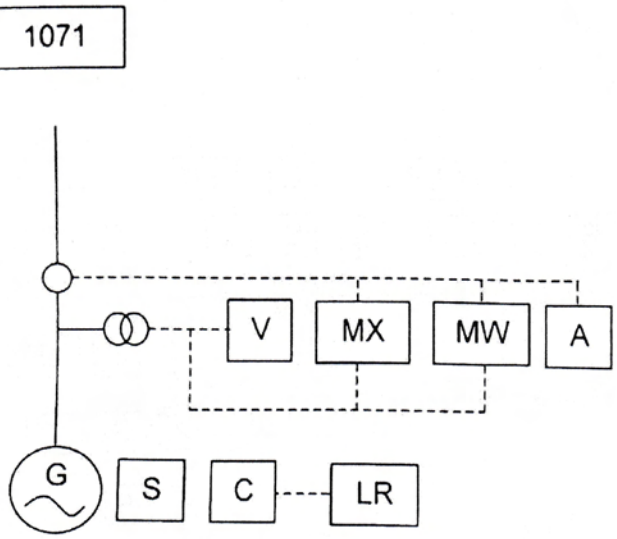
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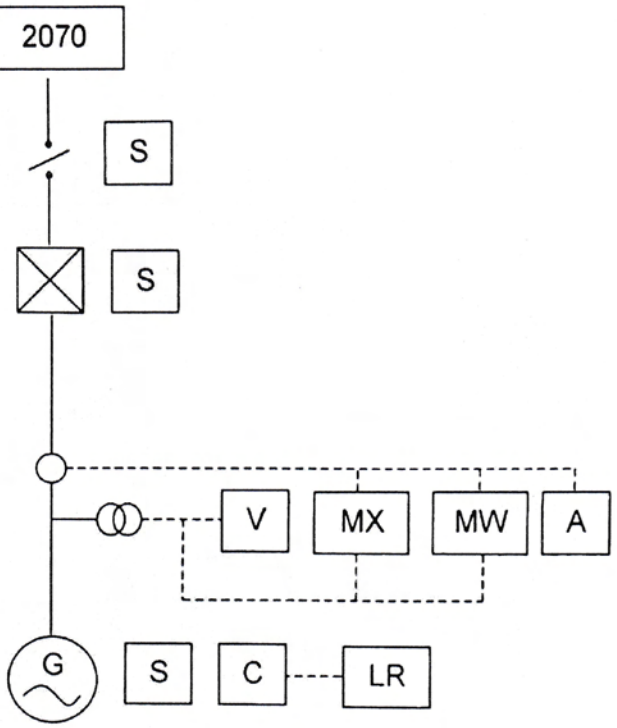
5127



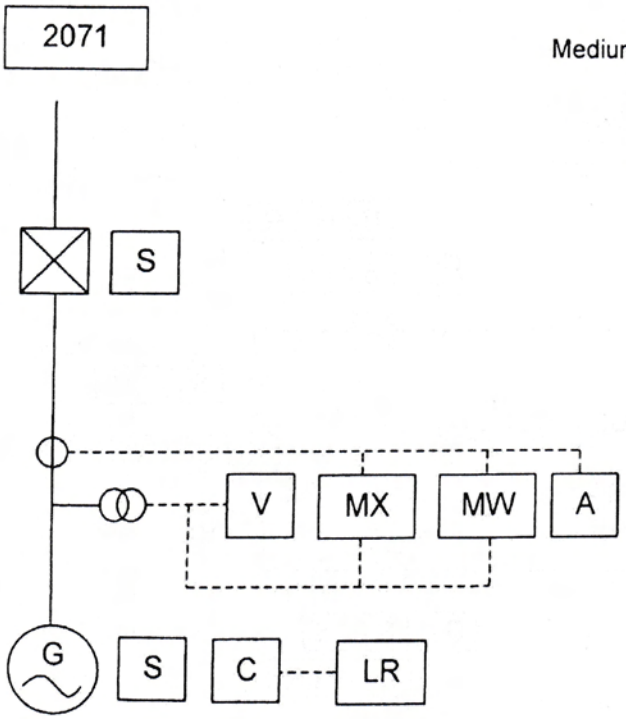
Low Voltage Generator



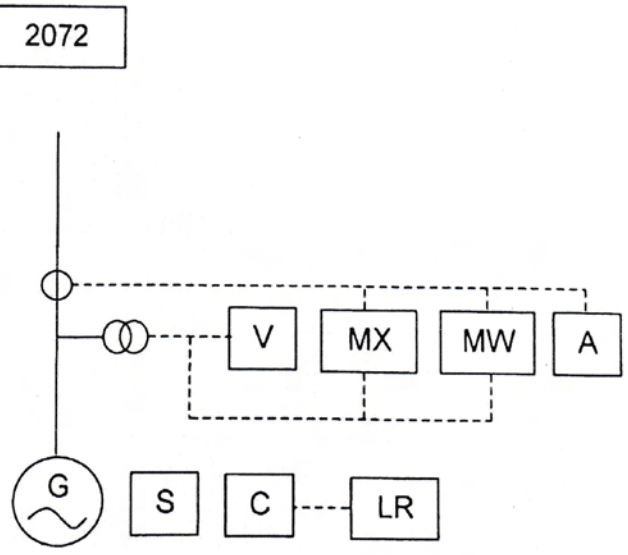
Medium Voltage Generator



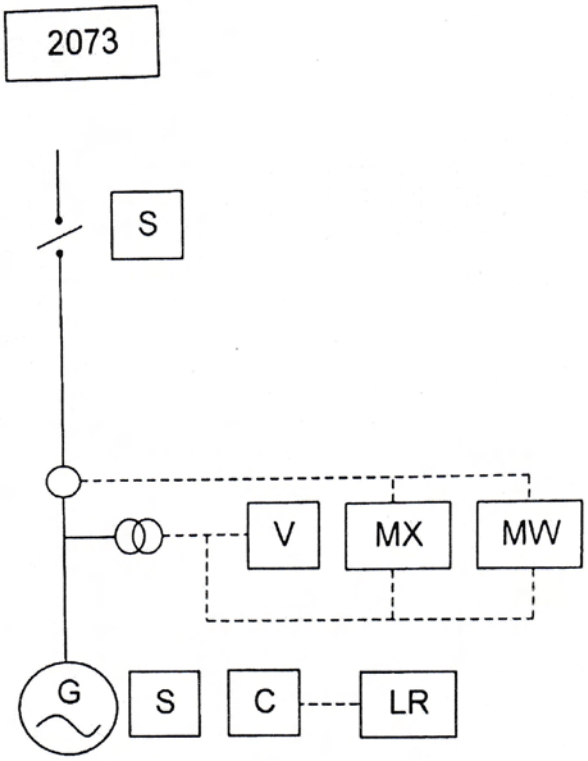
Medium Voltage Generator



Medium Voltage Generator

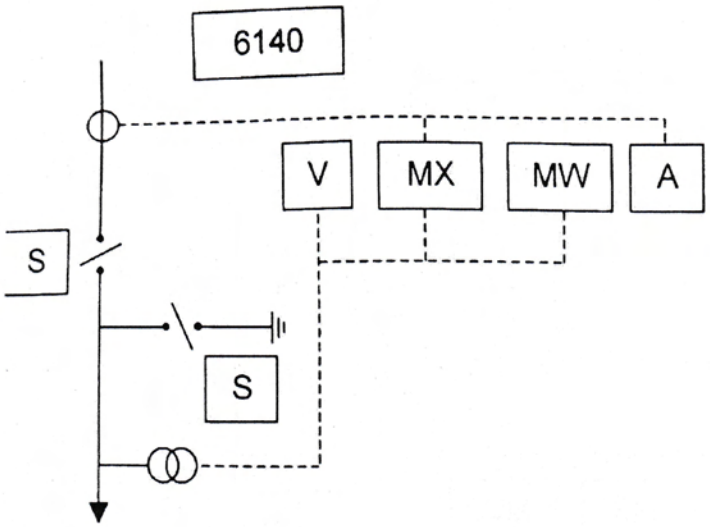


Medium Voltage Generator

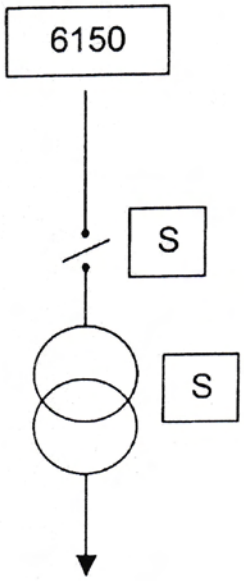


230kV Breaker and a Half

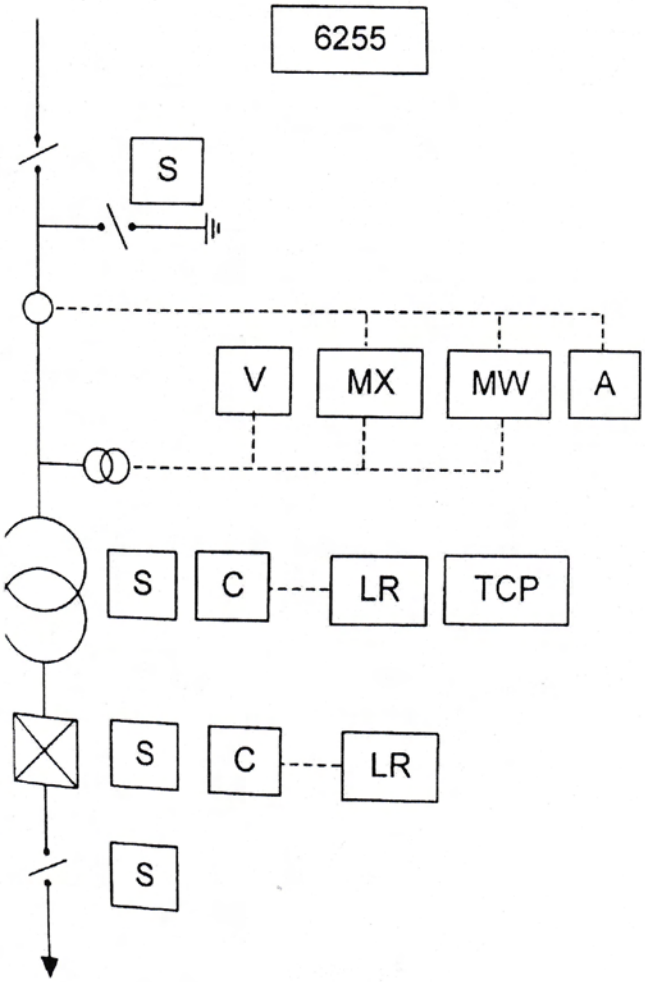
Feeder



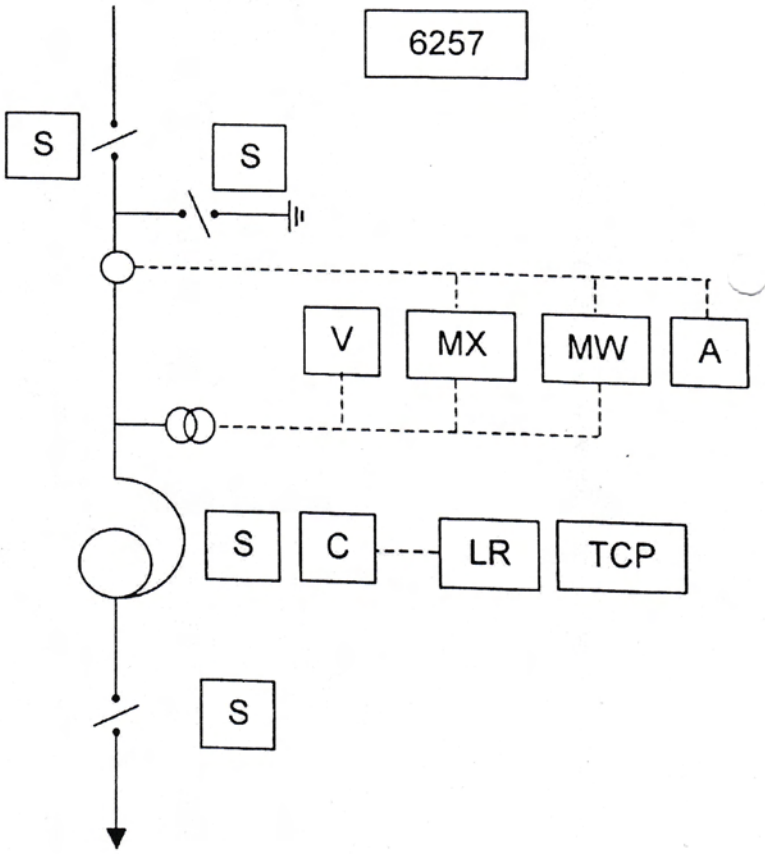
Generator Transformer Feeder



Transformer Feeder



Transformer Feeder



Annexure-4

Feeder wise estimated IO List

NO.	FUNCTION	TOTAL	STN. 132kV	BUS	BUS COUPLER-BC	Transmission Line	Transformer	Load Shed Feeder (33kV)	33 kV Capacitor Bank
	Analog Point								
	Frequency			x					
	Volts			x		x			
	Volts TRFR LV side						x		
	Megawatts					x			
	Megawatts TRFR LV SIDE						x		
	Megavars					x			x
	Megavars TRFR LV SIDE						x		
	Amperes					x			x
	Amperes LV side						x		
	Tap Position Indication						x		
TSS				2		4	5		2
	Single Point Digital Input								
	RTU Local/ Remote		x						
	Local / Remote Switch for CB & BI				x	x	x		x
	Local / Remote Switch for TRFR LV CB						x		
	Local / Remote Switch for TC						x		
	Bay Fault (VT fail)					x			
	Breaker Fault				x	x	x		x
	Protection Class 1 Trip (Main Protection Trip)					x	x		
	CB Auto Reclose					x			
TSS	Protection Class 2 Trip (Backup Protection Trip)				x	x	x		x
	Protection Class 3 Trip (Bus Differential Trip)			x					
	Voltage Status			x					
	Station Communication Alarm		x						

Feeder wise estimated IO List

NO.	FUNCTION	TOTAL	STN. 132kV	BUS	BUS COUPLER-BC	Transmission Line	Transformer	Load Shed Feeder (33kV)	33 kV Capacitor Bank
	Main Substation LVAC Power Supply		x						
	Station DC Fault Alarm		x						
	Auto Reclose Blocked					x			
	Transformer Alarm						x		
	Transformer Trip						x		
	Transformer Temparature Alarm						x		
	Transformer Temparature Trip						x		
	Tap Changer Alarm						x		
	Tap Changer Trip						x		
	Capacitor Trip								x
	CB Ready						x	x	
			4	2	3	7	12	1	**4**
	Double Point Digital Input								
	Circuit Breaker Open/Close				x	x	x	x	x
	Circuit Breaker Open/Close LV Side						x		
	Bus-1 Isolator Switch Open/Close				x	x	x		x
TSD	Bus-2 Isolator Switch Open/Close					x	x		
	Line Isolaaator Isolator Switch Open/Close				x	x	x		
	LV Side Isolator Switch Open/Close						x		
	Bypass Isolator					x	x		
	Tap changer Station/Remote SCADA Control						x		
	Earth Switch Open/Close					x	x		x
					6	**12**	**18**	**2**	**6**
	Double Point Digital Output								

Feeder wise estimated IO List

NO.	FUNCTION	TOTAL	STN. 132kV	BUS	BUS COUPLER-BC	Transmission Line	Transformer	Load Shed Feeder (33kV)	33 kV Capacitor Bank
TCD	Circuit Breaker Open/Close				x	x	x		x
	Circuit Breaker Open/Close LV Side						x	x	
	Bus-1 Isolator Switch Open/Close				x	x	x		
	Bus-2 Isolator Switch Open/Close				x	x	x		
	Isolator Switch Open/Close					x	x		
	Bypass Isolator					x	x		
	Tap Raise/ Lower						x		
					6	**10**	**14**	**2**	**2**

Summery

Device Name	IED	DI point	DO point
Busbar	1	2	Nill
Transmission Line	1	19	10
Transformer	2	30	14
Bus Couplar	Nill	9	6
Load Shed Fedder (33 kV)	Nill	3	2
Capacitor Bank	1	10	2
Sub Station Comon Signal	Nill	4	Nill

Annexure-5

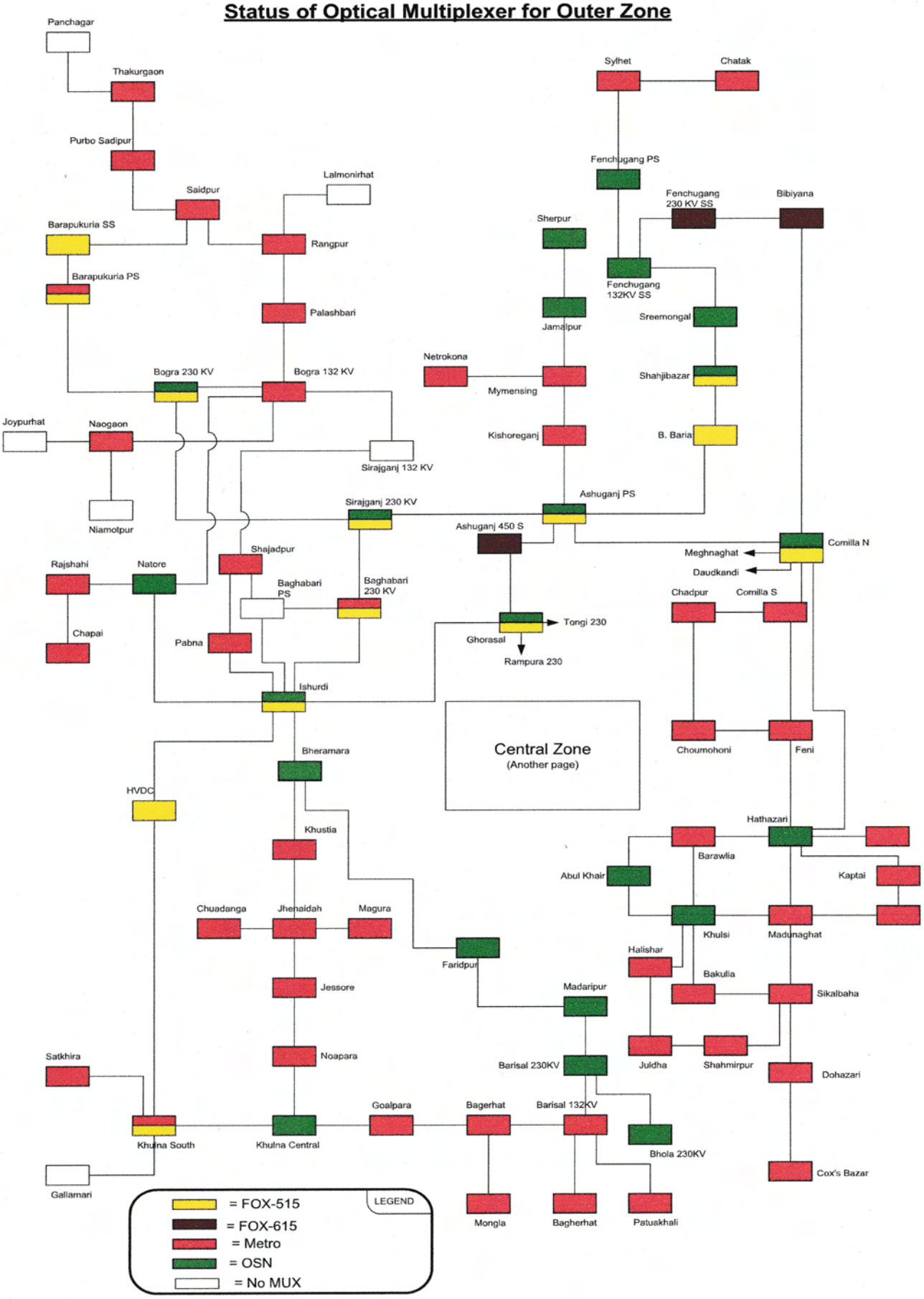
Part 3-Remote Terminal Unit (RTU)

1			Item	Response
			RTU (General)	
	a.		Manufacturer	
	b.		Model Number	
	c.		CPU	
		i.	Processor Make/Model	
		ii.	Clock Speed	
		iii.	Read/Write/Memory size	
		iv.	Program Memory Size	
		v.	Firmware Field Upgrade Method	
	d.		Maximum Capacities	
			Digital Inputs	
			Analog Inputs	
			Digital Outputs	
			Analog Outputs	
	e		Master Station Communications	
		i.	Number of Ethernet LAN Ports	
		ii.	Number of Serial Ports	
		iii.	Multiple Number of Master stations Supported	
			Dual Redundant Paths Supported?	
			Protocols Supplied	
	f.		IED Communications	
		i.	Maximum Number of Serial Ports	
		ii.	Is This Independent of Number of Master Station Ports?	
		iii.	Protocols Supplied	
	g.		Power Supply	
		i.	Voltage Input Range	
		ii.	Capacity or Supply	
		iii.	Isolation on Input	

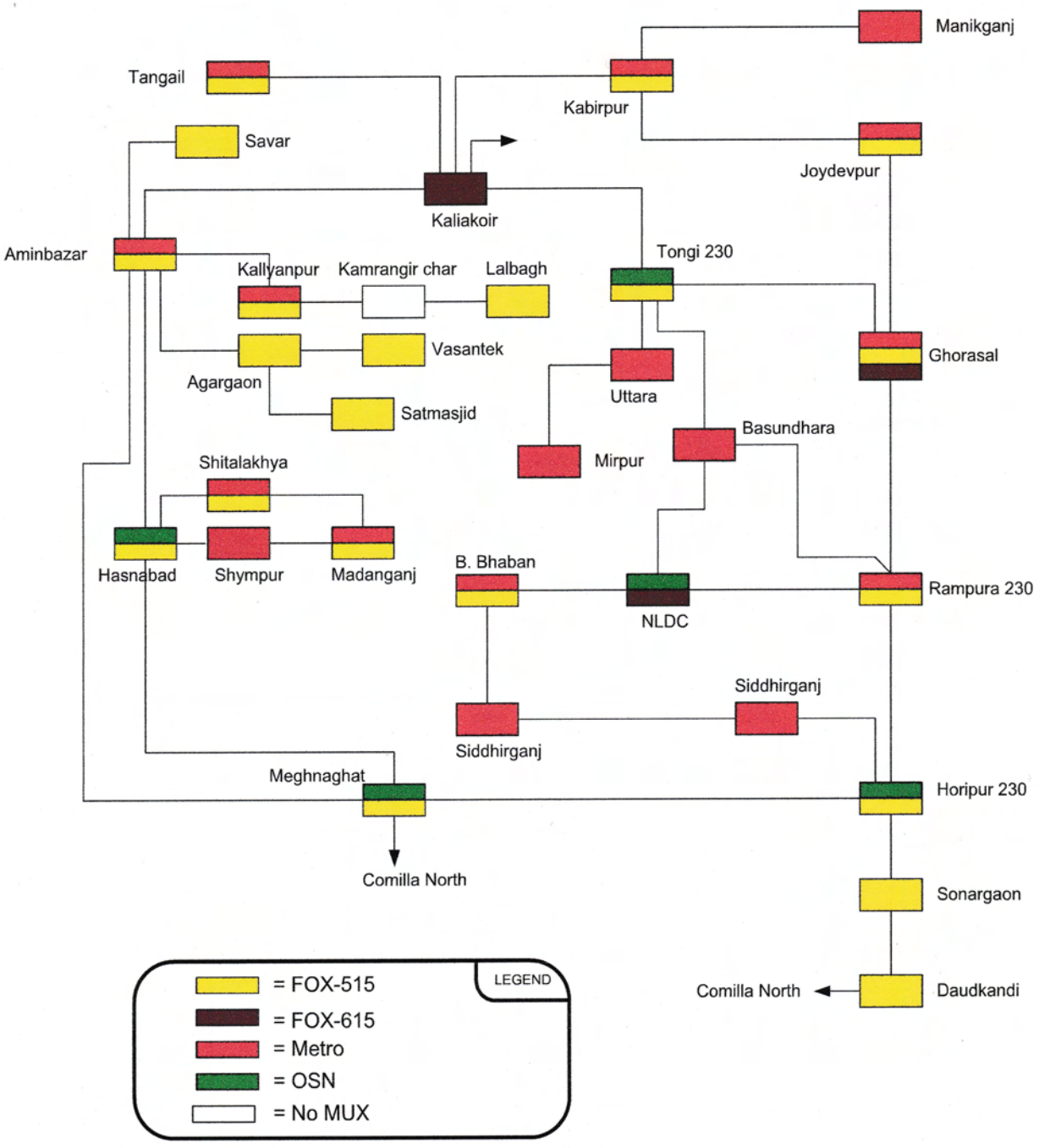
			Item	Response
	h.		Environment	
		i.	Operating Temperature Range	
		ii.	Operating Relative Humidity Range	
	i.		Remote I/O	
		i.	Supported?	
		ii.	Characteristics of RTU to Remote I/O Link (Media, Speed...)	
	j.		Cubicle Dimensions	
2			I/O Modules	
	a.		Digital Inputs	
		i.	Number of Points/Module	
		ii.	Input Voltage Range	
		iii.	Isolation	
	b.		Digital Outputs	
		i.	Number of Points/Module	
		ii.	Isolation	
	c.		Analog Inputs	
		i.	Number of Points/Module	
		ii.	Input Ranges Supported	
		iii.	A to D Converter Resolution	
		iv.	Isolation	
3.			Configuration	
	a.		RTU Configuration System	
		i.	Name of Configuration System	
		ii.	Version	
	b.		Custom Programming Capability	
		i.	Programming Language	

Annexure-6

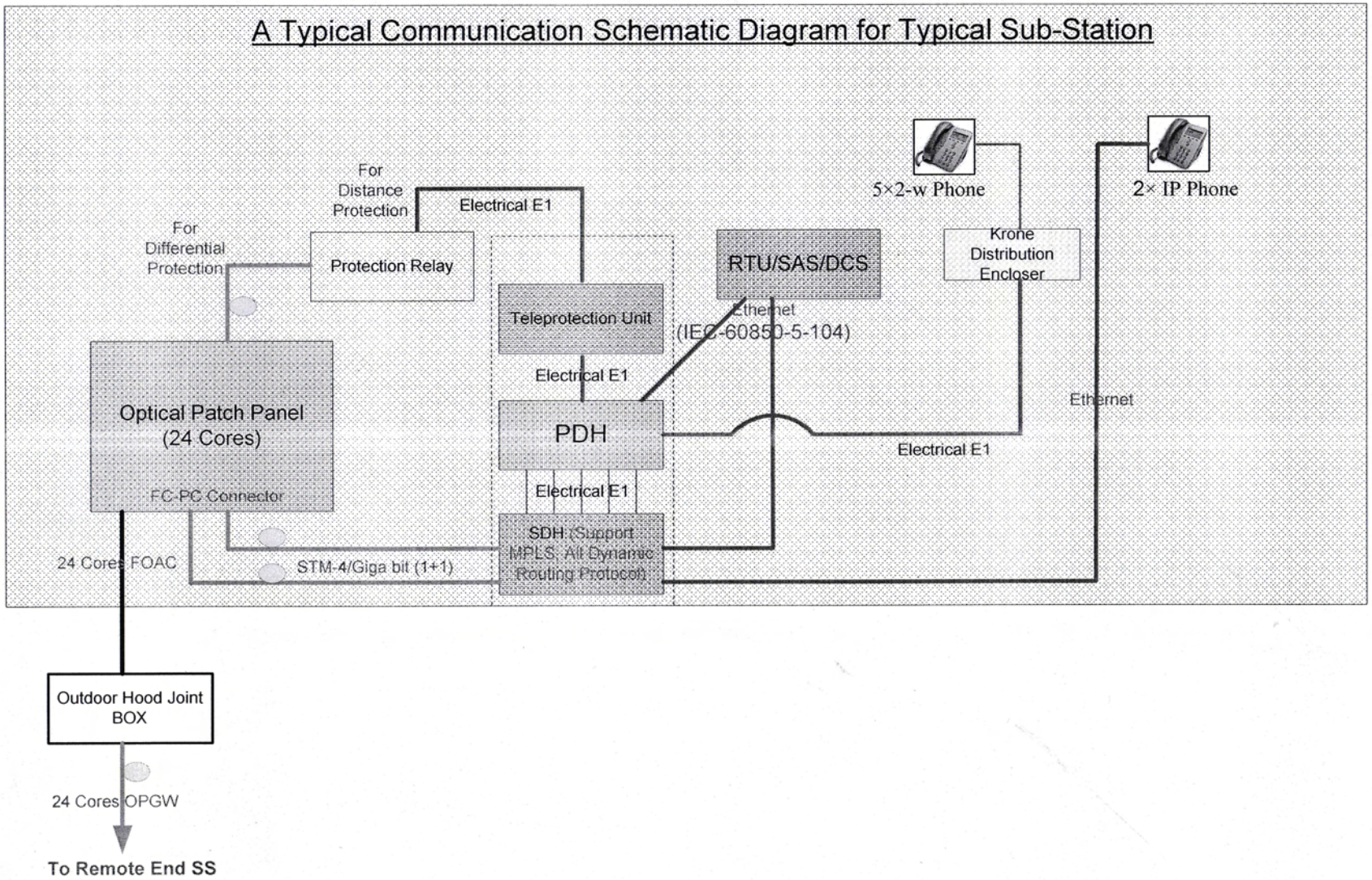
Status of Optical Multiplexer for Outer Zone

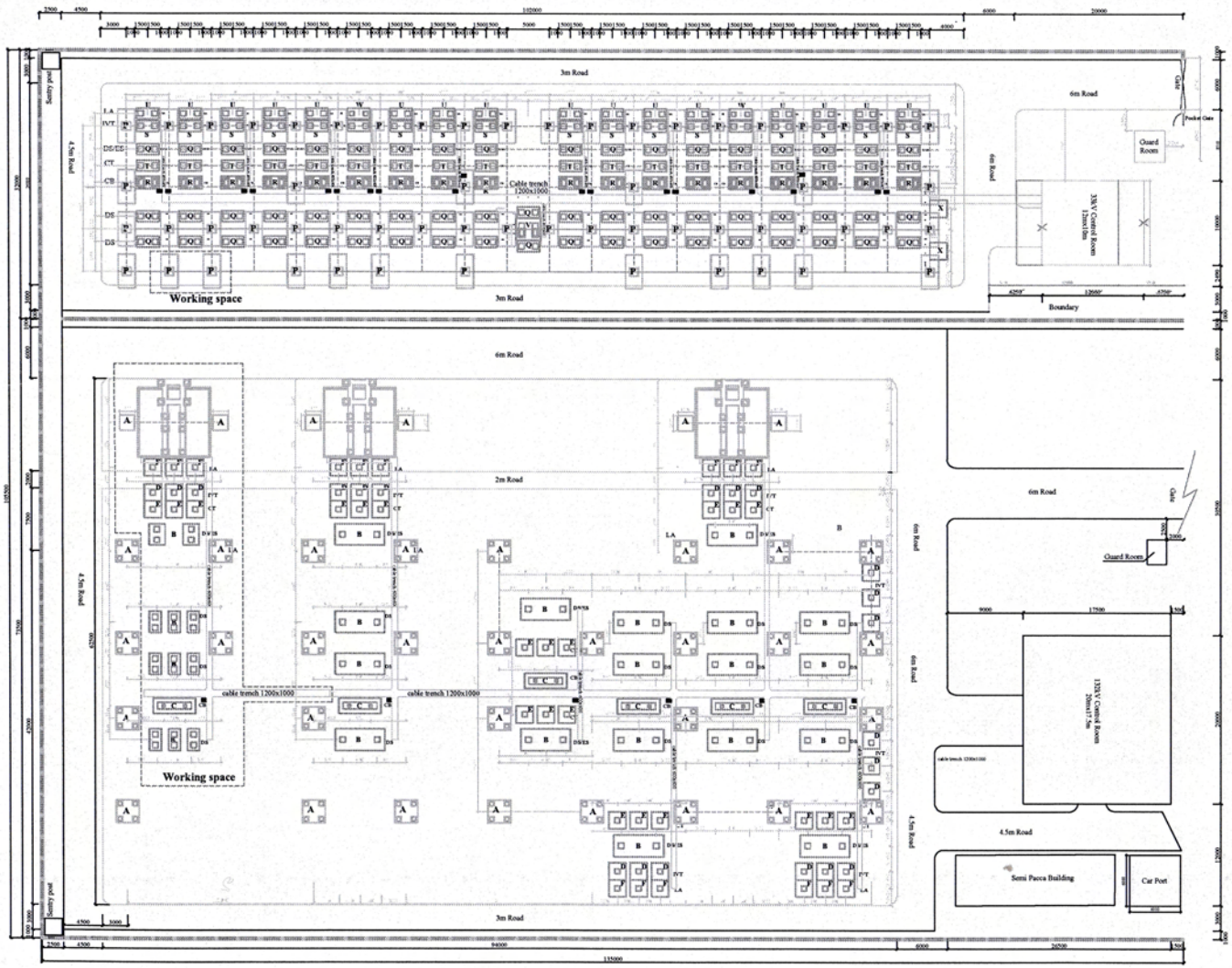


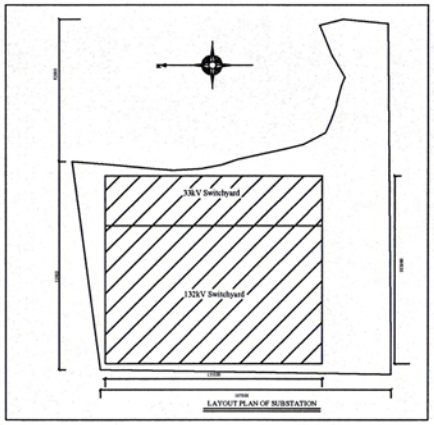
Status of Optical Multiplexer for Central Zone



Annexure-7


A Typical Communication Schematic Diagram for Typical Sub-Station
For Distance Protection
Electrical E1
For Differential Protection
Protection Relay
Teleprotection Unit
RTU/SAS/DCS
Ethernet (IEC-60850-5-104)
5×2-w Phone
Krone Distribution Encloser
2× IP Phone
Ethernet
Electrical E1
Optical Patch Panel (24 Cores)
FC-PC Connector
PDH
Electrical E1
Electrical E1
SDH (Support MPLS, Alt Dynamic Routing Protocol)
24 Cores FOAC
STM-4/Giga bit (1+1)
Outdoor Hood Joint BOX
24 Cores OPGW
To Remote End SS





FOUNDATION SCHEDULE FOR 132kV SWITCHYARD BAY EXTENSION

Item	Gantry	DS& DS/ES	CB	IVT	CT	LA	PI	TX
Foundation Type	A	B	C	D	E	F	G	H
Quantity	04 Nos	04 Sets	01 Sets	03 Nos	03 Nos	03 Nos		1 No

FOUNDATION SCHEDULE FOR 33kV SWITCHYARD BAY MODIFICATION

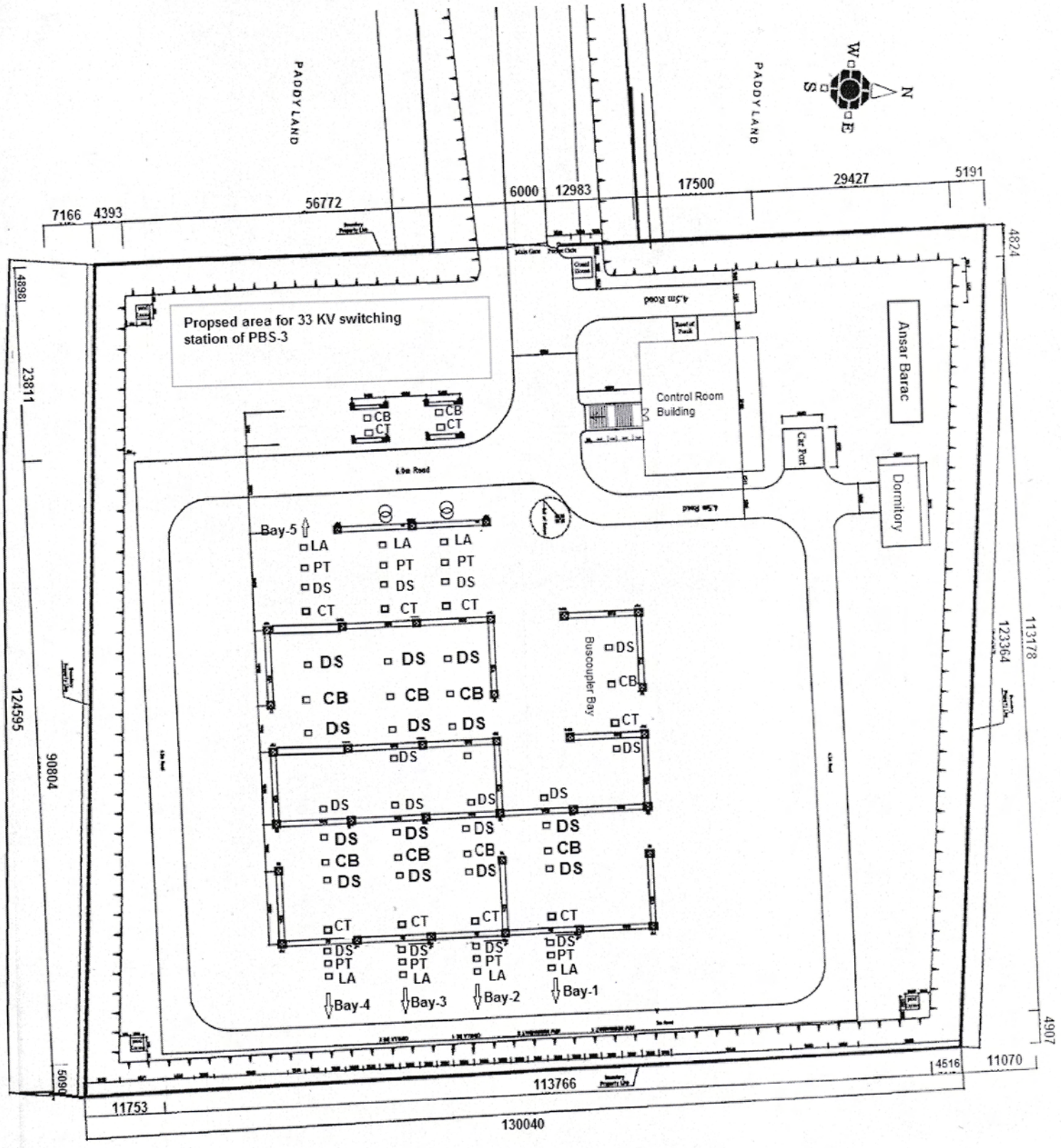
Item	Gantry	DS& DS/ES	CB	IVT	CT	LA	CB&CT	VT	STN
Foundation Type	P	Q	R	S	T	U	V	W	X
Quantity	02 Nos								

Revision	Content	Designed	Approved	Date
Employer	Power Grid Company of Bangladesh Limited(PGCB)			
Project	Bay extension work, Installation, Testing & commissioning of 50/75MVA, T-3 Transformer at Savar 132/33kV Grid Substation			
Engineer				
Designer				
Substation	Savar 132/33kV Grid Substation			
Title	LAYOUT OF CIVIL WORKS			
Drawn	Designed	Checked	Approved	Date
				30 July 16
Scale	1:250	Dwg. No.	SAVA/T3/01	Rev. 00

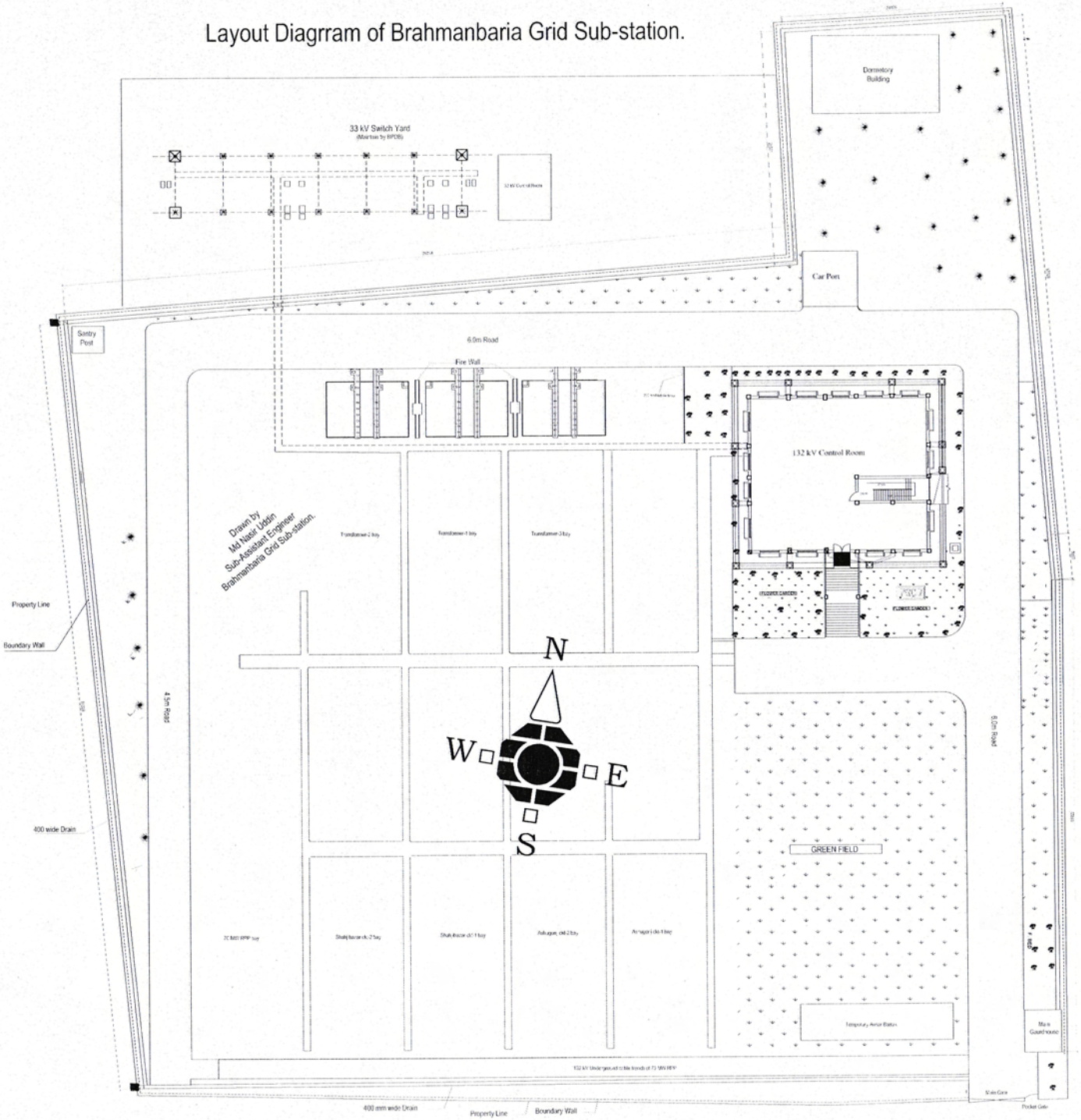
SAVAR S/S

Annexure-8

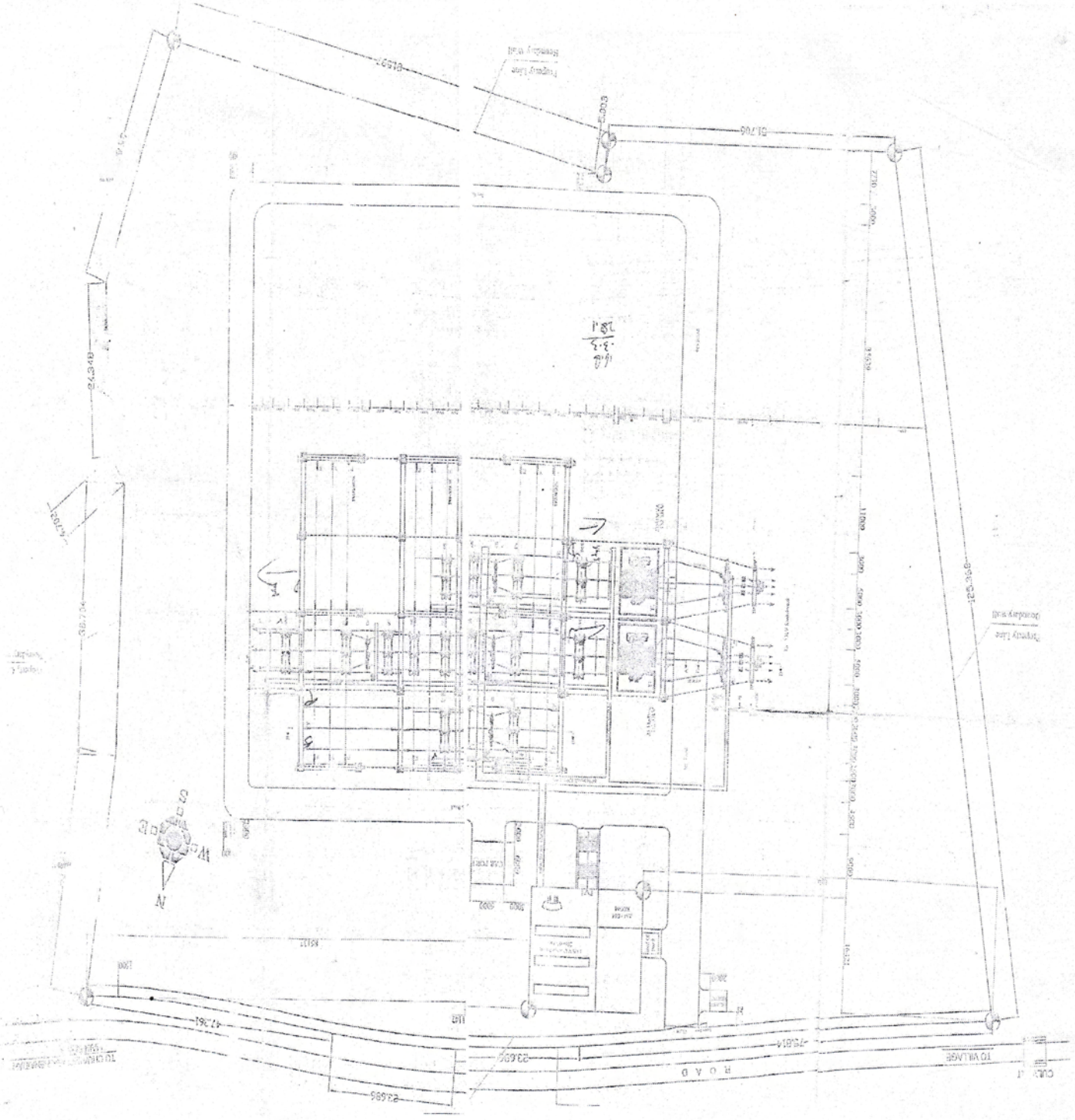
Daudkandi 132/33 KV Grid Substation
Substation Layout



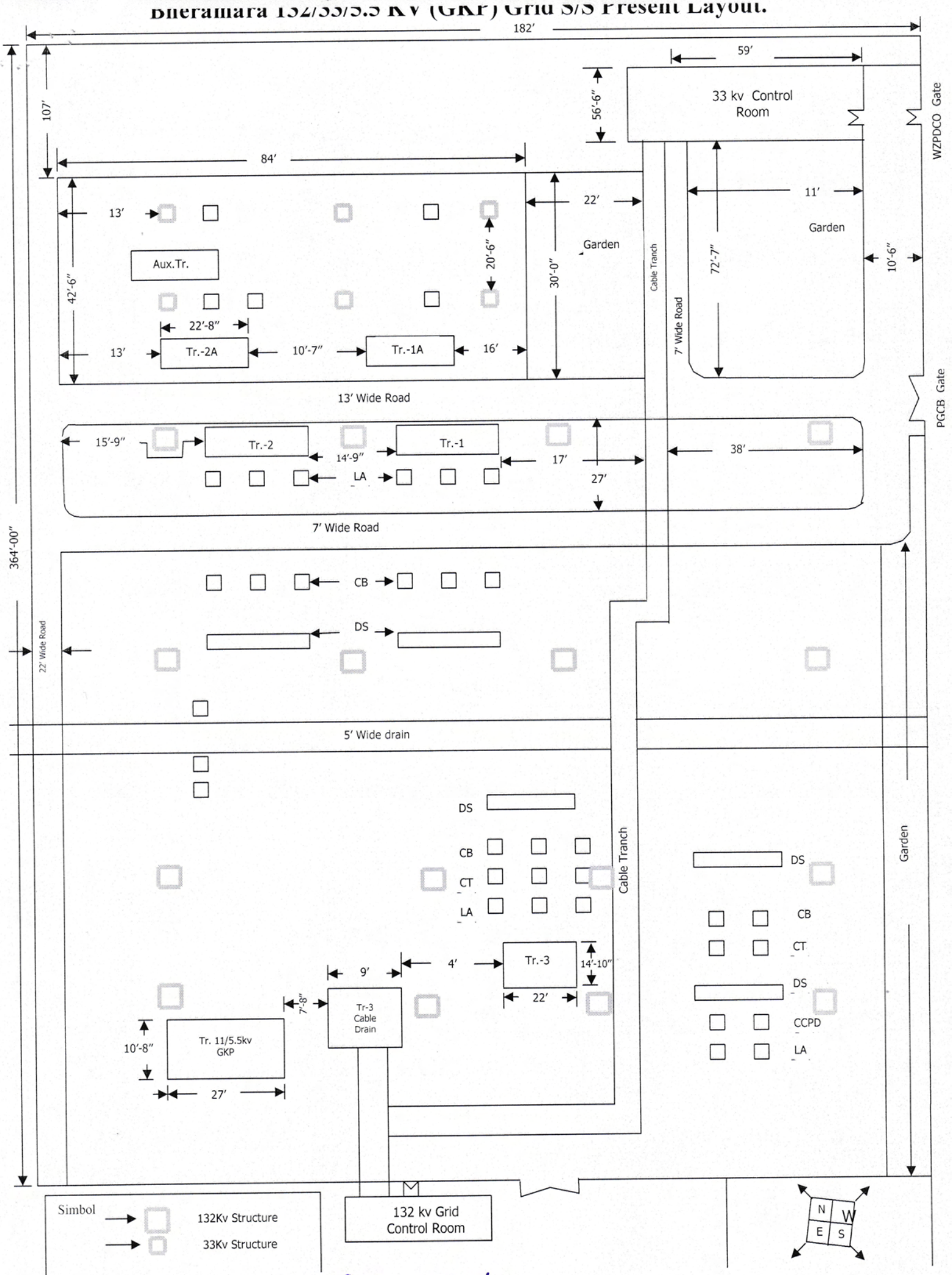
Layout Diagrram of Brahmanbaria Grid Sub-station.



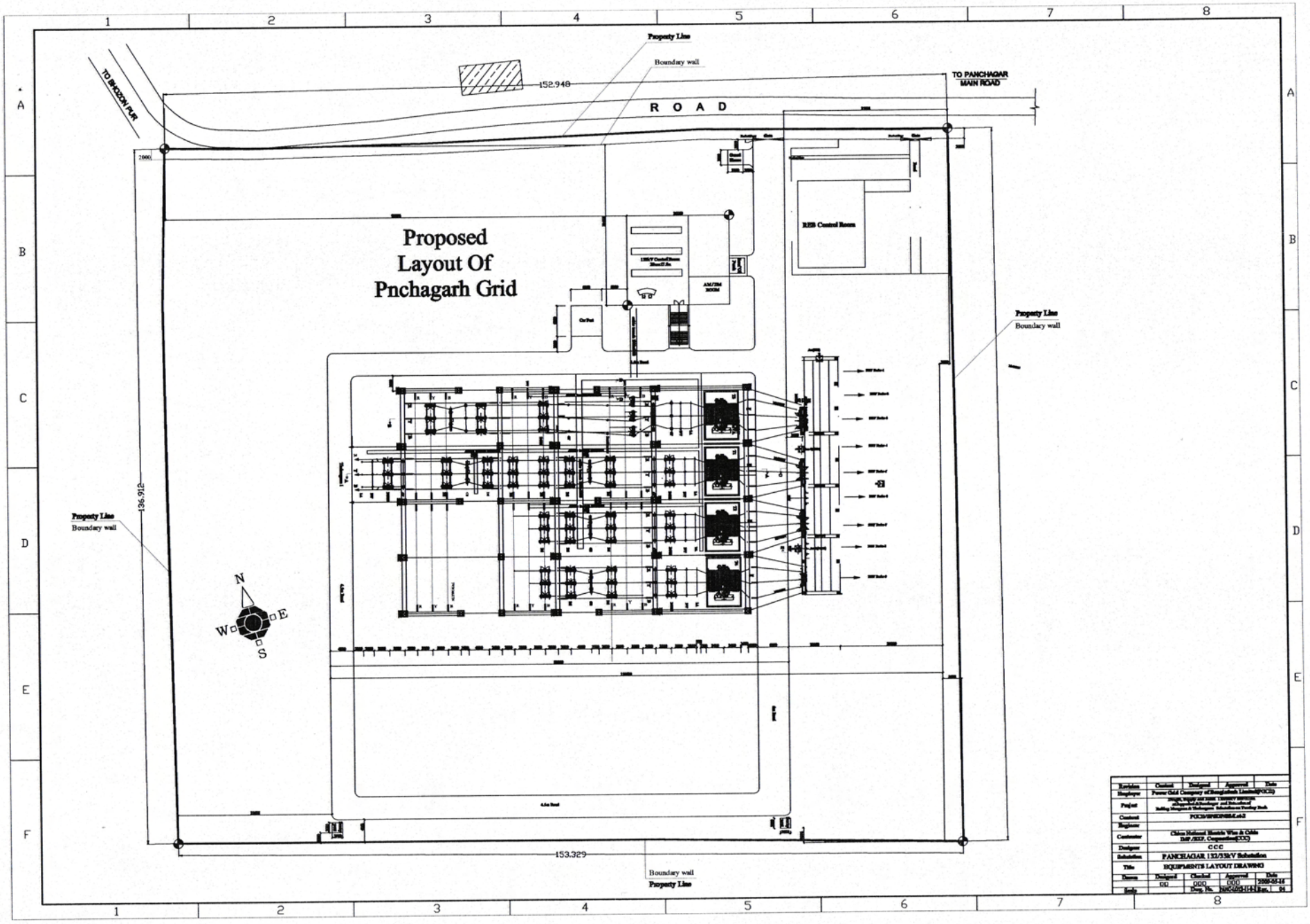
CHUADANGA 132 KV GRID S/S

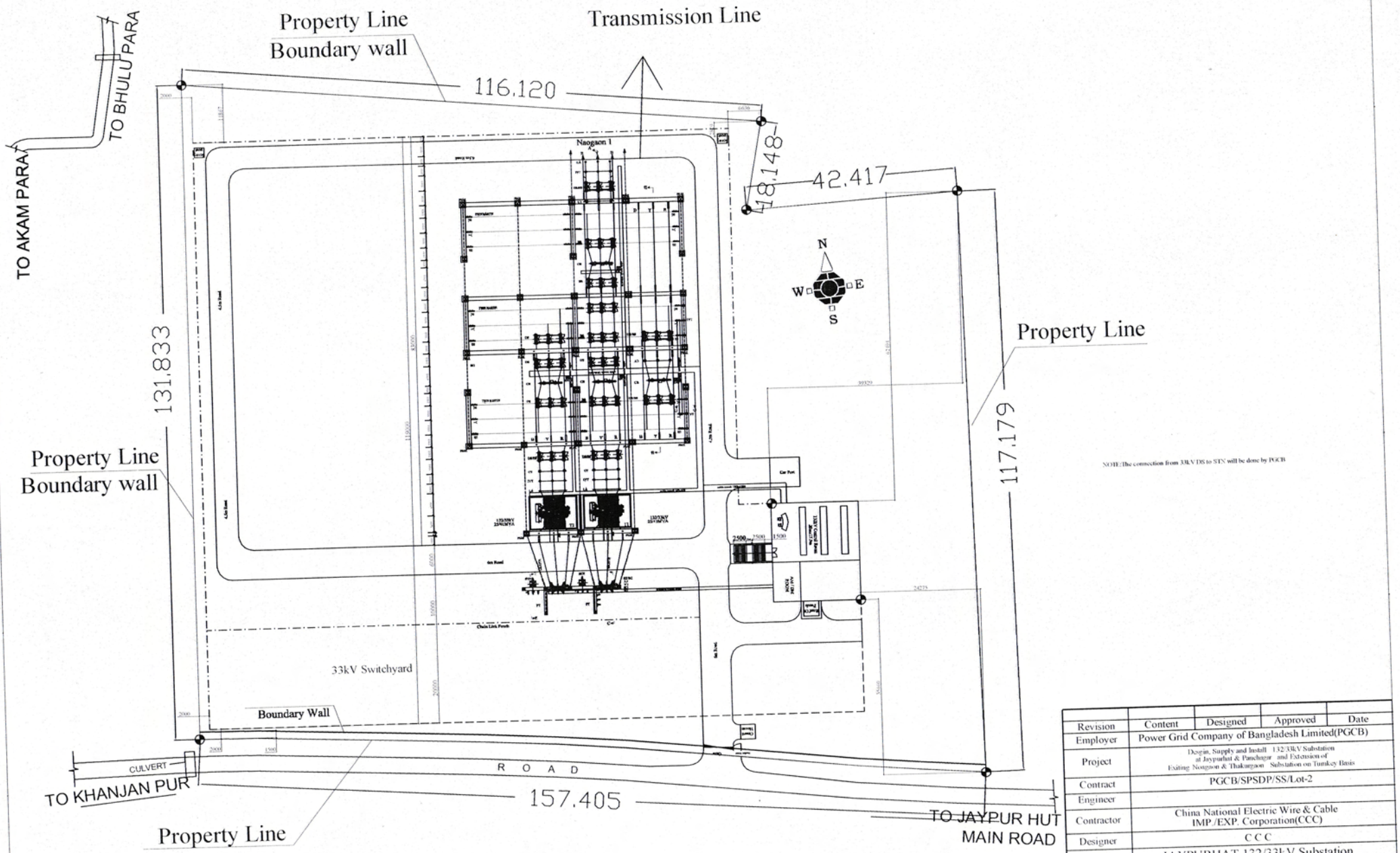


Bheramara 132/33/5.5 kV (GKP) Grid S/S Present Layout.

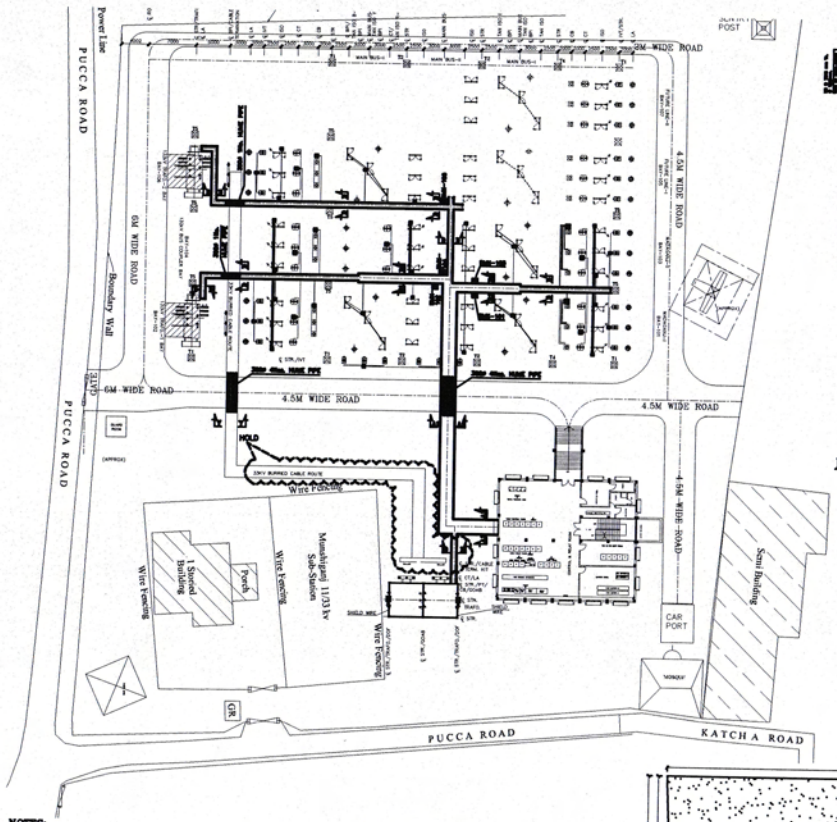


GR S/S


Property Line
Boundary wall
TO SHIDDIN PUR
152.948
ROAD
TO PANCHAGAR
MAIN ROAD
Proposed
Layout Of
Pnchagarh Grid
RRB Control Room
Property Line
Boundary wall
Property Line
Boundary wall
136.912
N
W
E
S
153.329
Boundary wall
Property Line
FANCHAGAR 132/33kV Substation
EQUIPMENTS LAYOUT DRAWING



Revision	Content	Designed	Approved	Date
Employer	Power Grid Company of Bangladesh Limited(PGCB)			
Project	Design, Supply and Install 132/33kV Substation at Jaypurhat & Panchagar and Extension of Exiting Noagaon & Thakurgaon Substation on Turnkey Basis			
Contract	PGCB/SPSDP/SS/Lot-2			
Engineer				
Contractor	China National Electric Wire & Cable IMP./EXP. Corporation(CCC)			
Designer	C C C			
Substation	JAYPURHAT 132/33kV Substation			
Title	EQUIPMENTS LAYOUT DRAWING			
Drawn	Designed	Checked	Approved	Date
				2009-04-2(
Scale		Dwg. No.	JAYP-LOT2-11-2-1	Rev. 0

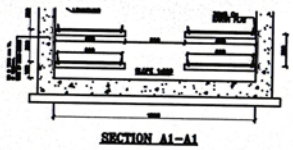


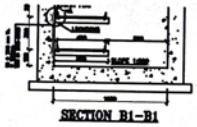
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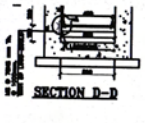
1) ALL DIMENSIONS/LEVELS ARE IN MM UNLESS OTHERWISE SPECIFIED.
2) A TRANSVERSE SLOPE OF 1:200 SHALL BE PROVIDED IN THE BASE SLAB OF CABLE TRENCH AND A LONGITUDINAL SLOPE OF 1:500 ALONG LONGITUDINAL DIRECTION.
3) FIXING ARRANGEMENT OF CABLE RACKS SHALL BE KEPT ON THE INSIDE FACE OF THE TRENCH.
4) CABLE RACKS SHOULD BE SPACED @ 300mm, UNLESS OTHERWISE STATED. RACKS ON OPPOSITE WALL OF TRENCH SHOULD BE STAGGERED TO FACILITATE CABLE LAYING.
5) LIFTING HOOKS TO BE PROVIDED ON EVERY 10 TN. OF COVER SLAB.

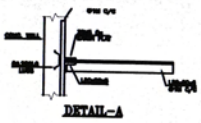
REFERENCE DRAWING:-

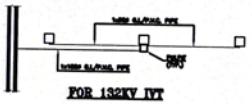
1) REFER SWITCHYARD LAYOUT PLAN AND SECTION DRG. NO. 3HN100445D1102.
2) 75MVA TRANSFORMER GA & RC DETAILS DRG. NO. 1ZX0460200-A6982.

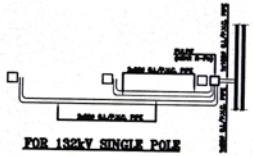

SECTION A1-A1

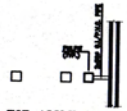

SECTION B1-B1

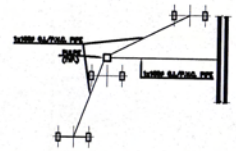

SECTION D-D

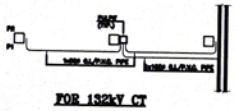

DETAIL-A

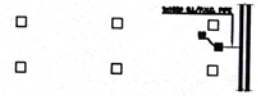

FOR 132KV IVT

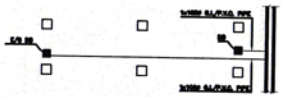

FOR 132kV SINGLE POLE OPERATED CB

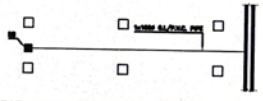

FOR 132kV GANG OPERATED CB

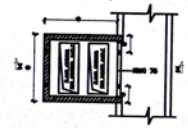

FOR 132kV TANDEM ISO. WITHOUT E/S


FOR 132kV CT

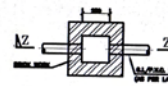

FOR 132kV NORMAL ISO. WITHOUT E/S (FOR DB NEAR TRENCH)

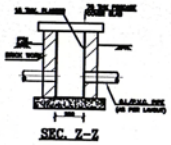

FOR 132kV NORMAL ISO. WITH E/S

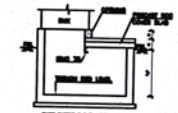

FOR 132kV NORMAL ISO. WITHOUT E/S (FOR DB AWAY FROM TRENCH)


RMK MOUNTING DETAILS BESIDE TRNCH

* @ * MARKED DIMENSIONS ARE DETERMINED BY APPROVED RMK DRAWING

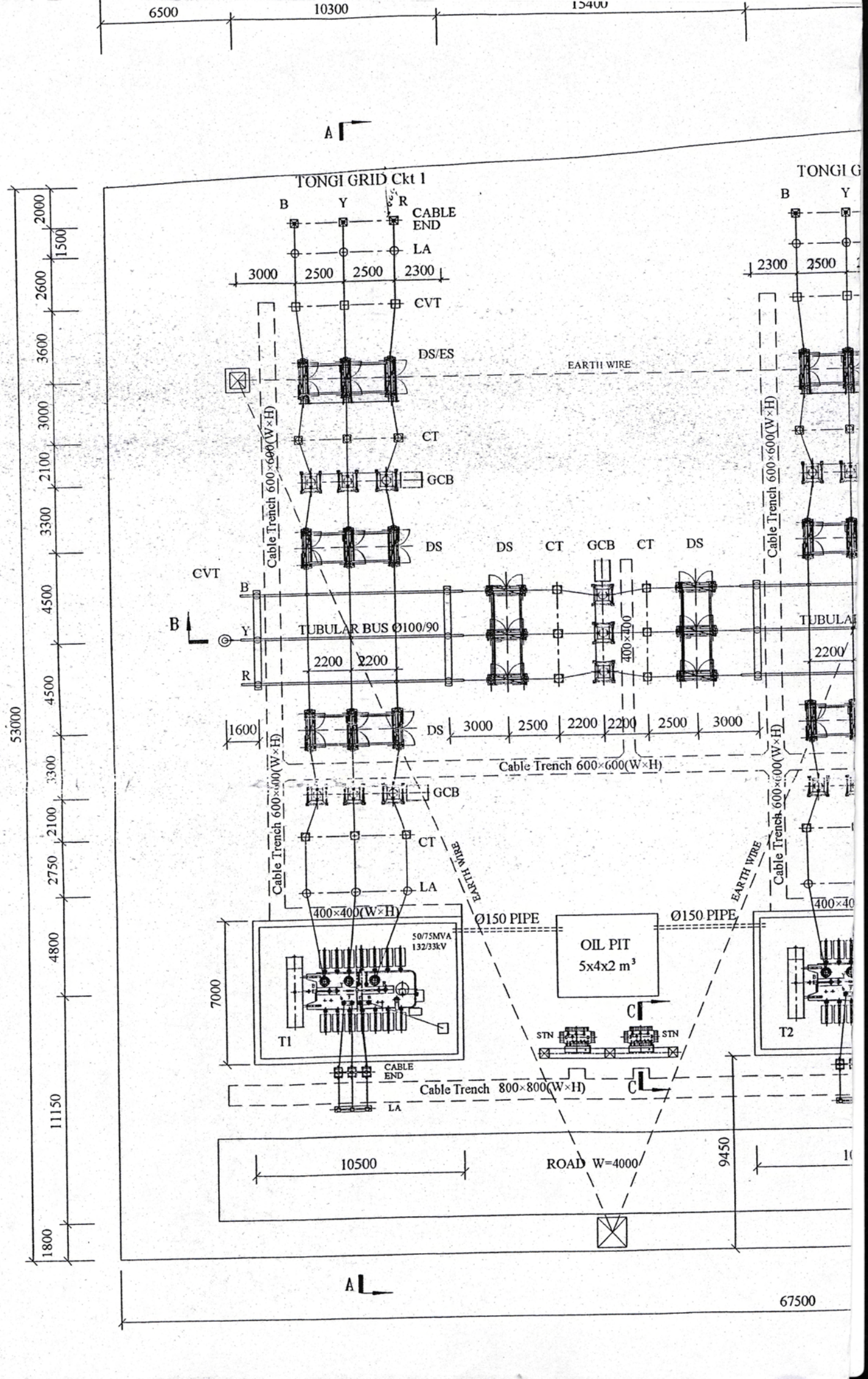

PLAN OF PULPIT

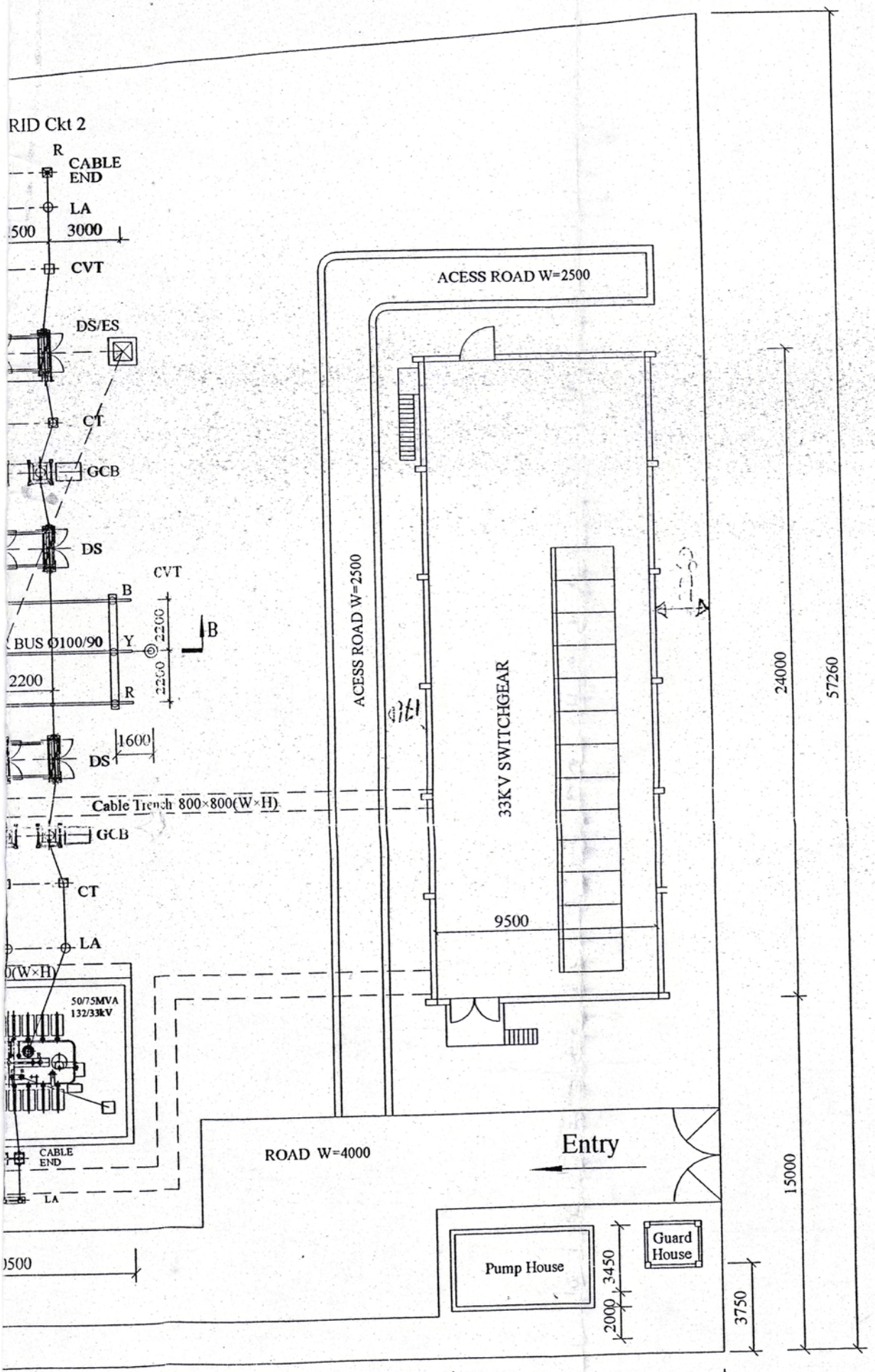

SEC. Z-Z


SECTION X-X SEC. OF RMK FDN. NEAR CABLE TRENCH

* @ * MARKED DIMENSIONS ARE DETERMINED BY APPROVED RMK DRAWING




6500
10300
15400
A
TONGI GRID Ckt 1
TONGI G
B
Y
R
CABLE END
LA
CVT
DS/ES
EARTH WIRE
CT
GCB
DS
CVT
TUBULAR BUS Ø100/90
TUBULAR
Cable Trench 600×600(W×H)
400×400
2200
3000
2500
2300
1600
2750
4800
11150
1800
53000
7000
9450
50/75MVA
132/33kV
T1
T2
OIL PIT
5x4x2 m³
Ø150 PIPE
STN
Cable Trench 800×800(W×H)
ROAD W=4000
10500
67500



NOTES:

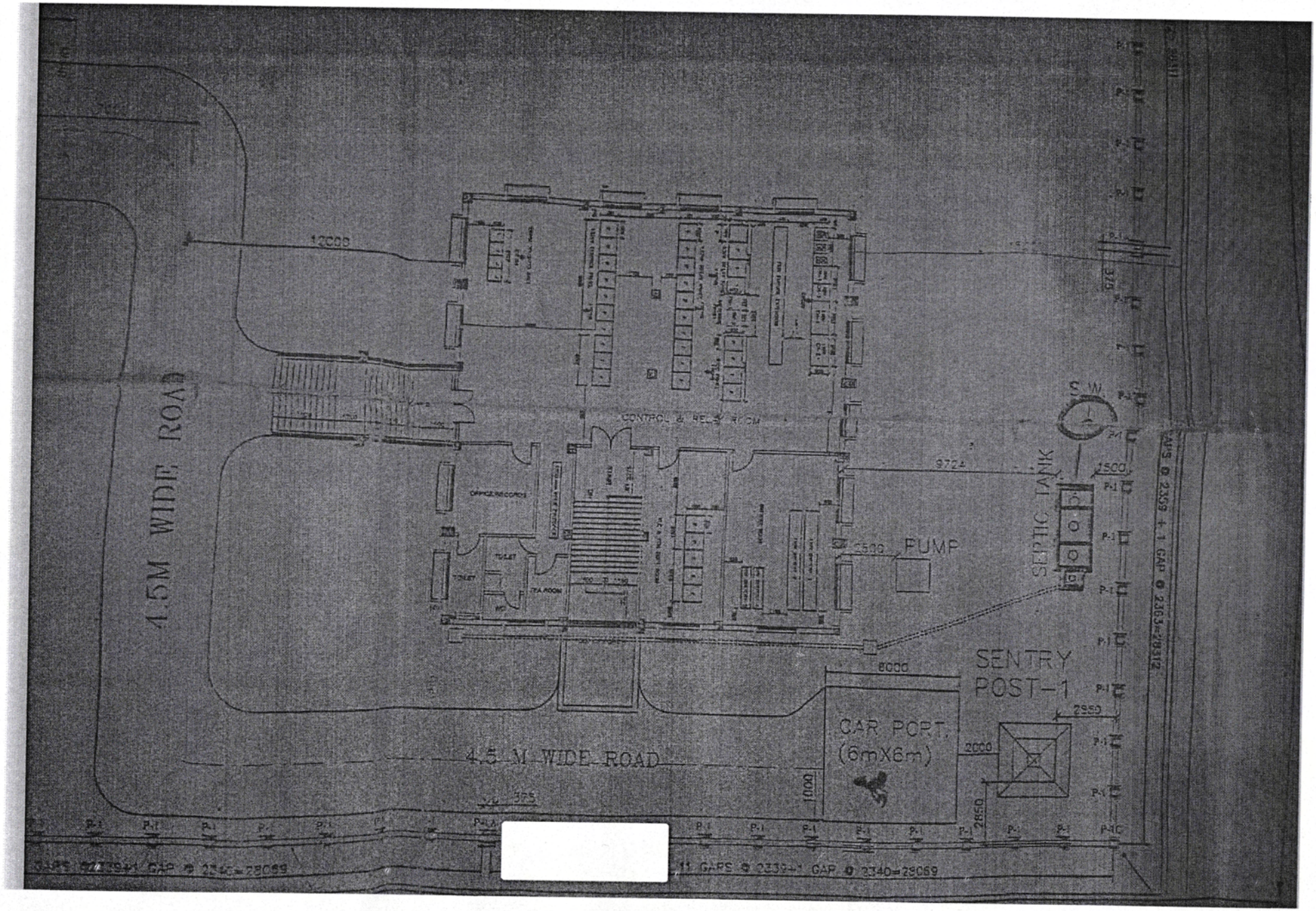
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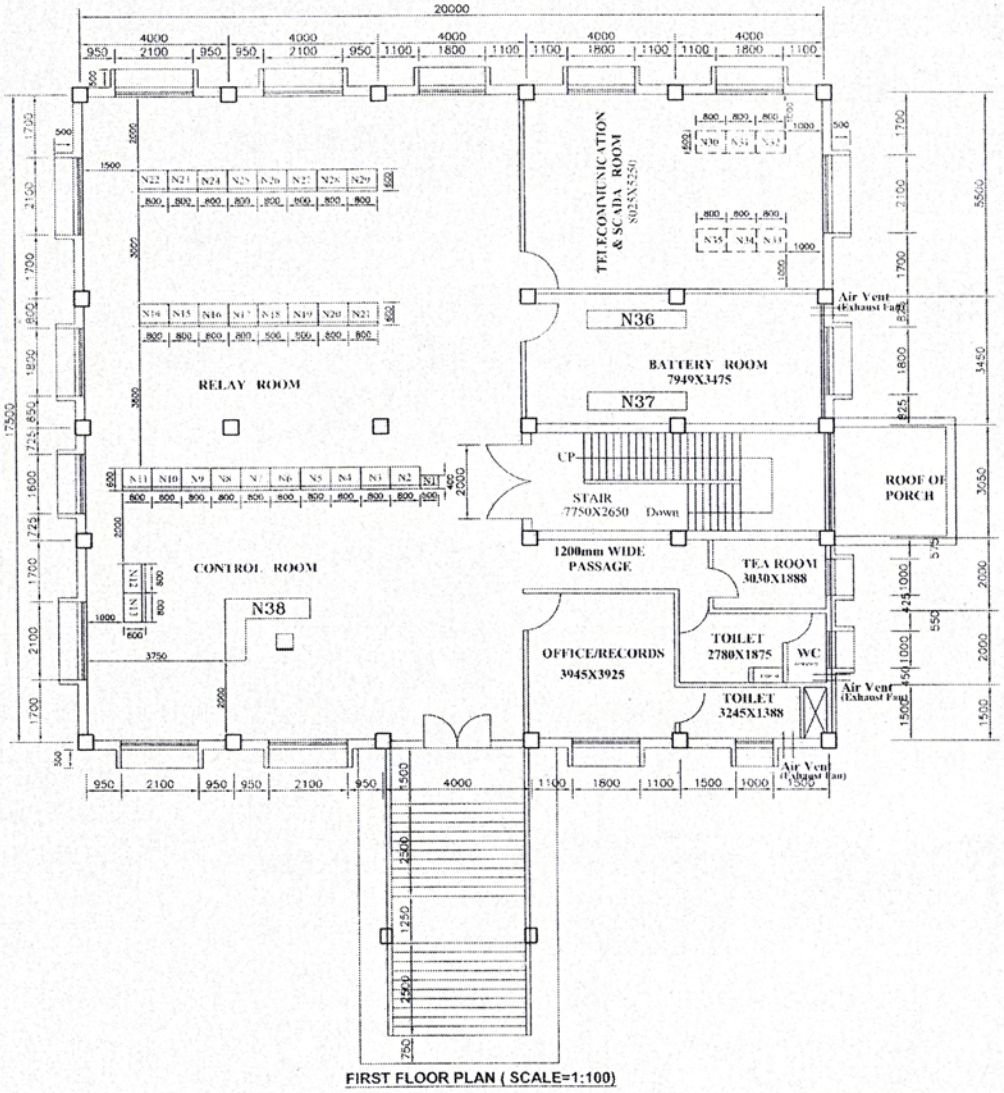
2, THE CIVIL

New Tongi 132/33kV S/S
Scale 1:150

Rev	
Emp	
Pro	
Cor	
Eng	

20161207_202909.jpg





FIRST FLOOR PLAN (SCALE=1:100)

THE LIST OF CONTROL BUIDING EQUIPMENTS

EQUIPMENT NO.	EQUIPMENT NAME	EQUIPMENT CODE
N1	132KV SYNCHRONISER PANEL	+ESYP
N2	132KV BUS COUPLER BT1 CONTROL PANEL	=E01+W
N3	132KV LINE FEEDER L2 CONTROL PANEL	=E02+W
N4	132KV TRANSFORMER T1 CONTROL PANEL	=E03+W
N5	SPARE	=E04+W
N6	132KV TRANSFORMER T2 CONTROL PANEL	=E05+W
N7	SPARE	=E06+W
N8	SPARE	=E07+W
N9	SPARE	=E08+W
N10	132KV TRANSFORMER T1 TAP CHANGER PANEL	=E02+TAPW
N11	132KV TRANSFORMER T2 TAP CHANGER PANEL	=E06+TAPW
N12	33KV INCOMING FEEDER T1A CONTROL & RELAY PANEL	=H01+WR
N13	33KV INCOMING FEEDER T2A CONTROL & RELAY PANEL	=H02+WR
N14	SPARE	=E08+R
N15	SPARE	=E07+R
N16	SPARE	=E06+R
N17 N20	132KV BUS COUPLER BT1 RELAYL PANEL	=E05+R
N18 N19	132KV LINE FEEDER L2 RELAY PANEL	=E04+R
N19 N16	132KV TRANSFORMER T1 RELAY PANEL	=E03+R
N20 N21	SPARE	=E02+R
N21 N17	132KV TRANSFORMER T2 RELAY PANEL	=E01+R
N22 N25	132KV TARIFF METER PANEL	=E+TMP
N23 N24	33KV TARIFF METER PANEL (FOR TRANSFORMER)	=H+TMP
N24 N23	SPARE	
N25 N22	SPARE	
N26	415V A.C DISTRIBUTION PANEL	+NU1
N27	110V D.C BATTERY CHARGER PANEL #1	+G11
N28	110V D.C DISTRIBUTION PANEL	+NK1
N29	110V D.C BATTERY CHARGER PANEL #2	+G12
N30	SPARE	
N31	SPARE	
N32	SPARE	
N33	SPARE	
N34	SPARE	
N35	SPARE	
N36	110V DC BATTERY CELLS SUSTAIN STRUCTURE #1	
N37	110V DC BATTERY CELLS SUSTAIN STRUCTURE #2	
N38	DESK AND CHAIR FOR OPERATERS	

Approved location of Control Room Relay Panel Only
15 JUN 2009

REV.	DATE	BY	DESCRIPTION

ENGINEER:
DESIGNER:

CLIENT & PROJECT:
POWER GRID COMPANY OF BANGLADESH LIMITED(PGCB)
DESIGN,SUPPLY AND INSTALL 132/33kV SUBSTATIONS AT JAYPURHAT & PANCHAGAR AND EXTENSION OF EXISTING NOAGAON & THAKURGAON SUBSTATION ON TURNKEY BASIS
CLIENT DWG NO.

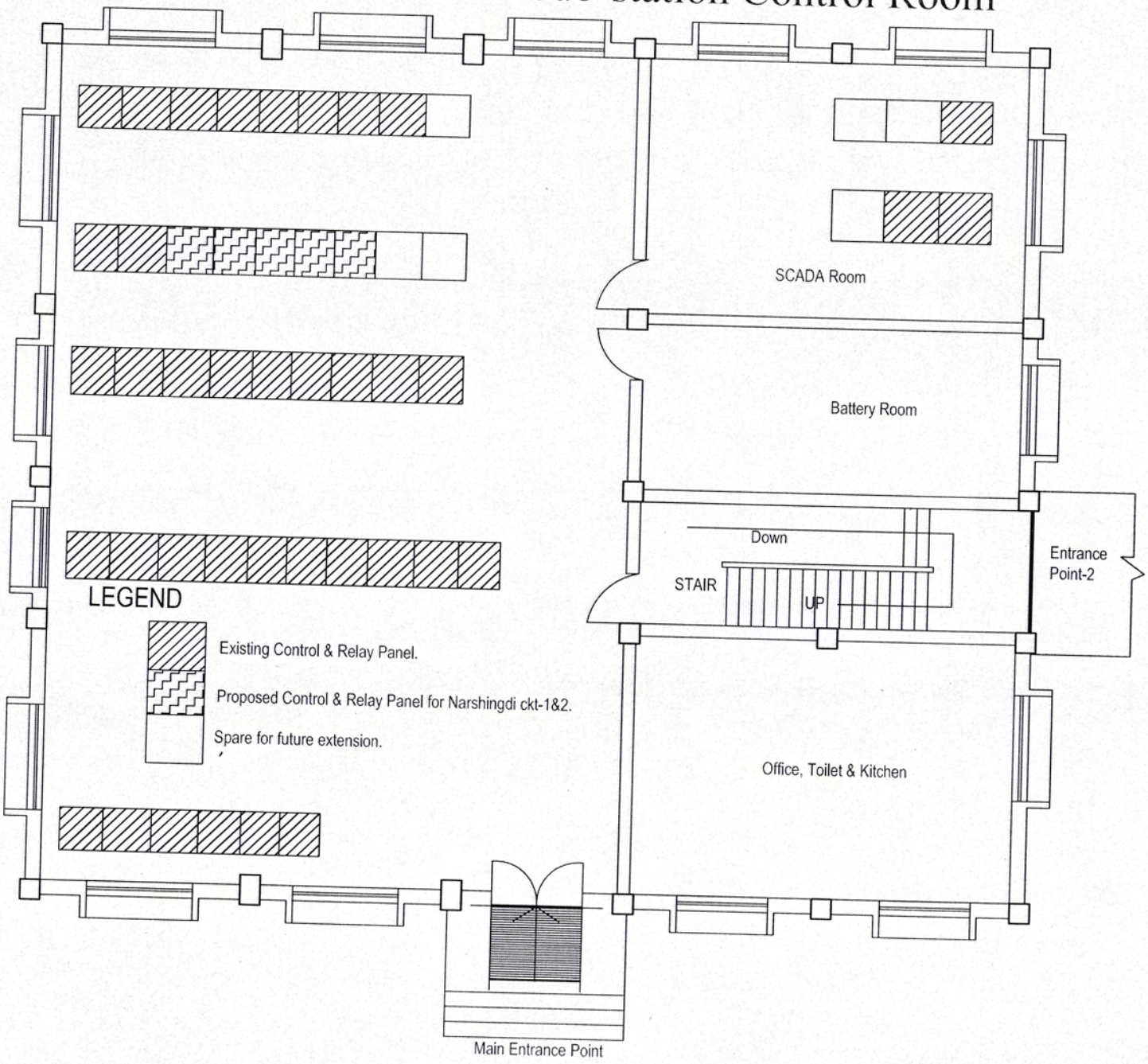
CONTRACTOR:
CHINA NATIONAL ELECTRIC WIRE & CABLE IMP./EXP. CORPORATION (CCC)
CONTRACT NO. PGCB/SPSDP/SS/LOT-2

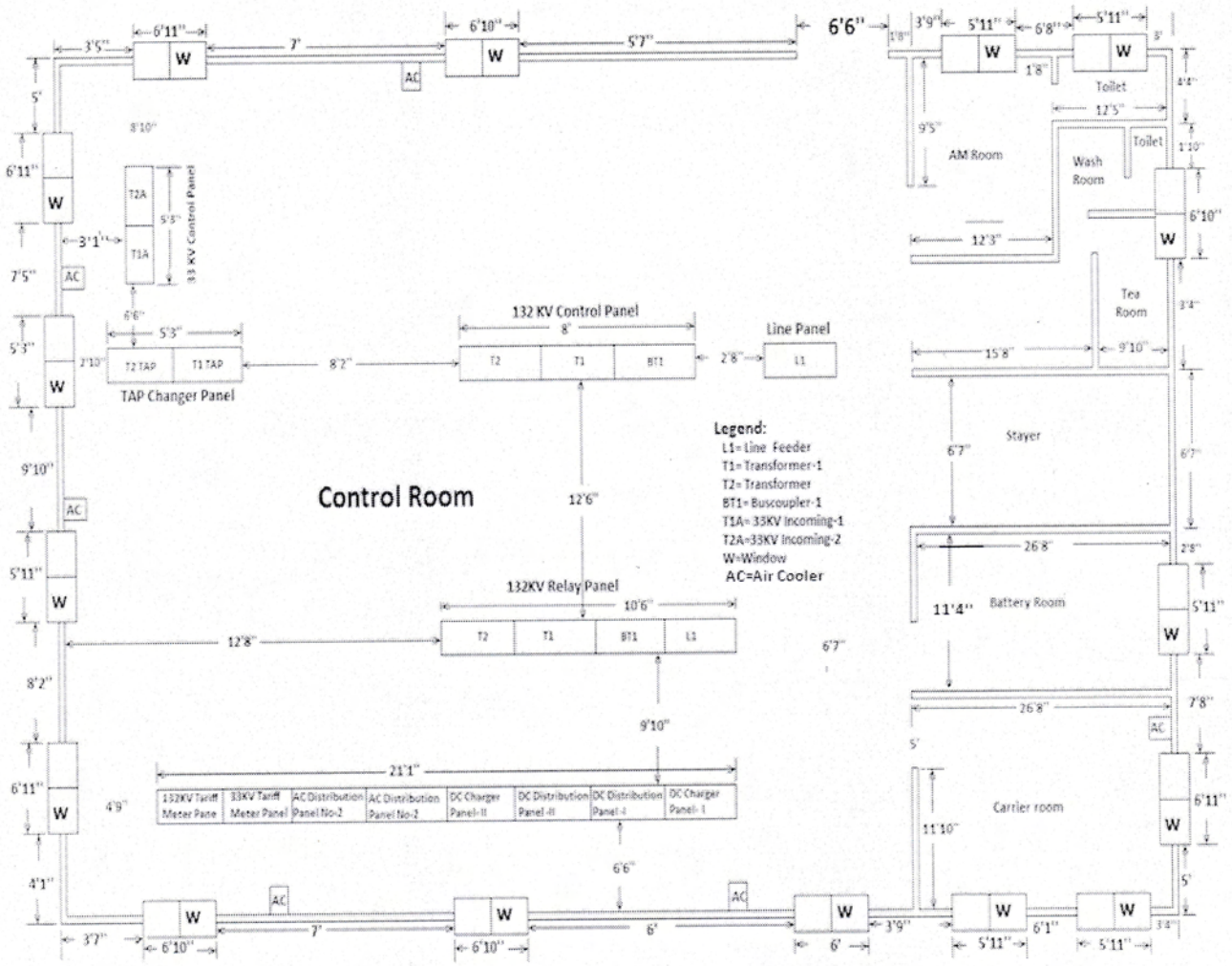
	NAME	DATE
DESIGNED		2009-06-15
CHECKED		
APPROVED		

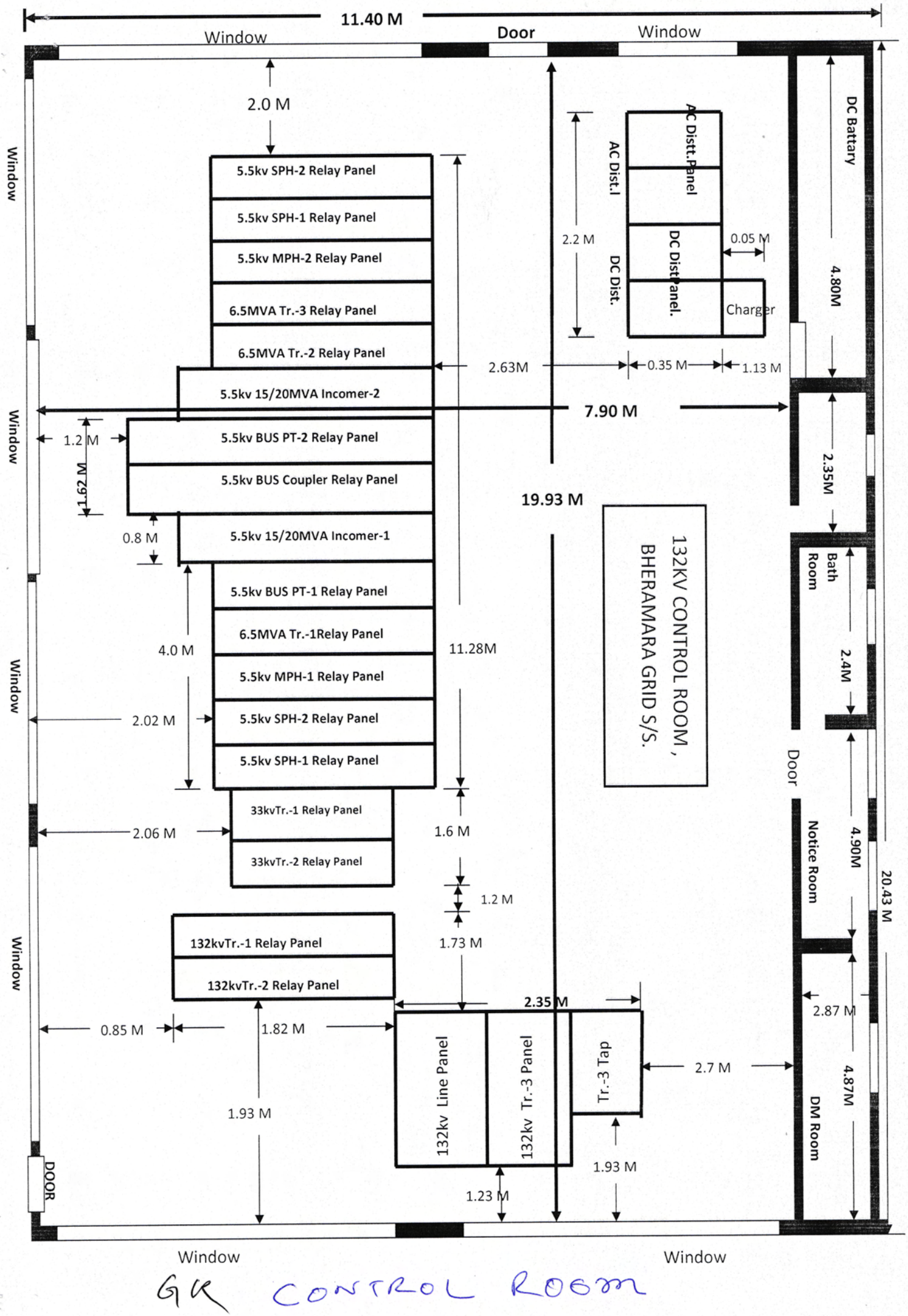
TITLE: PANC 132/33KV SUBSTATION
LAYOUT OF 132KV CONTROL BUILDING (FIRST FLOOR)
DWG NO. PANC-DD-ES-DW-0211
REV. 03
SHEET 03

Annexure-9

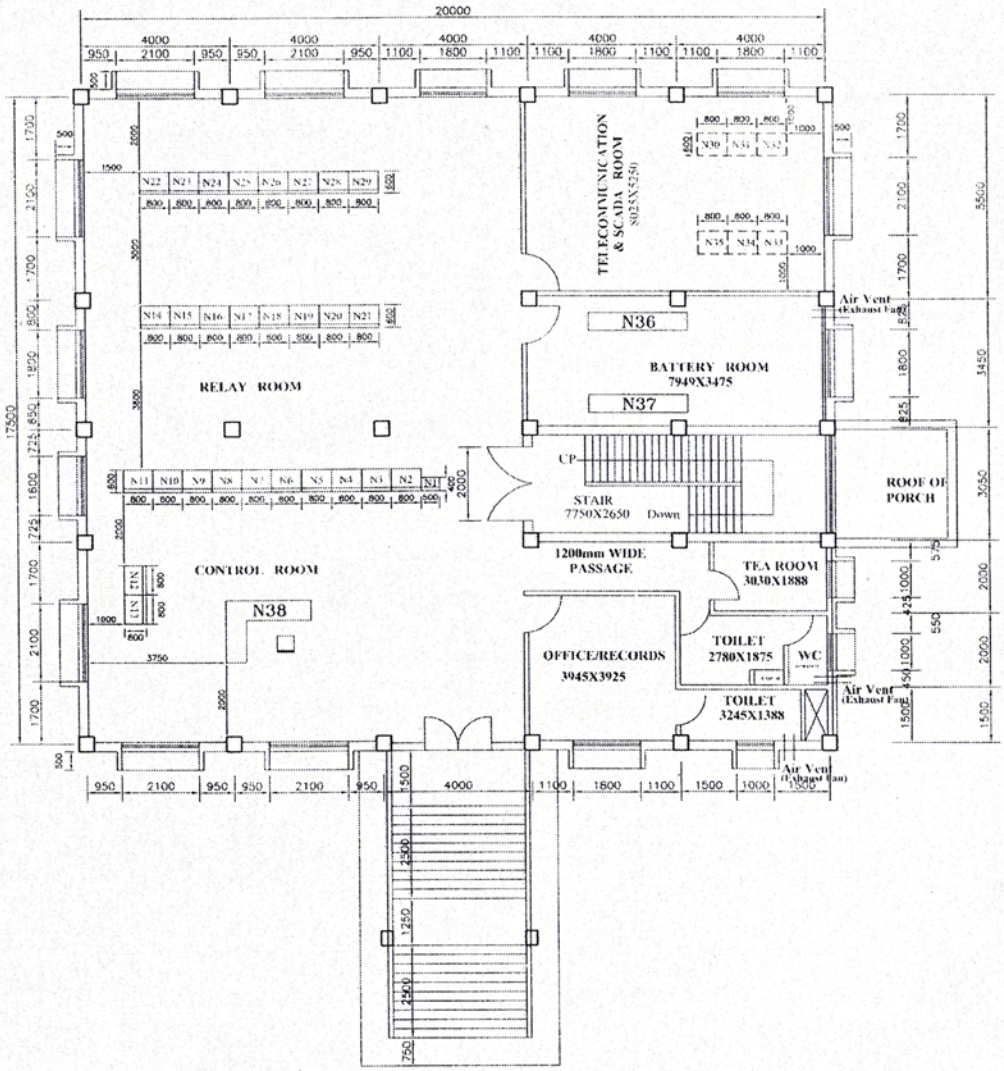
Brahmanbaria Grid Sub-station Control Room




Control Room
132 KV Control Panel
Line Panel
TAP Changer Panel
132KV Relay Panel
T2 TAP
T1 TAP
T2
T1
BT1
L1
T1A
T2A
33 KV Control Panel
Legend:
L1= Line Feeder
T1= Transformer-1
T2= Transformer
BT1= Buscoupler-1
T1A= 33KV Incoming-1
T2A=33KV Incoming-2
W=Window
AC=Air Cooler
AM Room
Wash Room
Toilet
Tea Room
Stayer
Battery Room
Carrier room
132KV Tariff Meter Pane
33KV Tariff Meter Panel
AC Distribution Panel No-2
AC Distribution Panel No-2
DC Charger Panel-II
DC Distribution Panel -II
DC Distribution Panel -I
DC Charger Panel- I
W
AC



GR CONTROL ROOM



FIRST FLOOR PLAN (SCALE=1:100)

THE LIST OF CONTROL BUIDING EQUIPMENTS

EQUIPMENT NO.	EQUIPMENT NAME	EQUIPMENT CODE
N1	132KV SYNCHRONISER PANEL	+ESYP
N2	132KV BUS COUPLER BT1 CONTROL PANEL	=E01+W
N3	132KV LINE FEEDER L2 CONTROL PANEL	=E02+W
N4	132KV TRANSFORMER T1 CONTROL PANEL	=E03+W
N5	SPARE	=E04+W
N6	132KV TRANSFORMER T2 CONTROL PANEL	=E05+W
N7	SPARE	=E06+W
N8	SPARE	=E07+W
N9	SPARE	=E08+W
N10	132KV TRANSFORMER T1 TAP CHANGER PANEL	=E02+TAPW
N11	132KV TRANSFORMER T2 TAP CHANGER PANEL	=E05+TAPW
N12	33KV INCOMING FEEDER T1A CONTROL & RELAY PANEL	=H01+WR
N13	33KV INCOMING FEEDER T2A CONTROL & RELAY PANEL	=H02+WR
N14	SPARE	=E06+R
N15	SPARE	=E07+R
N16	SPARE	=E08+R
N17 N20	132KV BUS COUPLER BT1 RELAYL PANEL	=E05+R
N18 N19	132KV LINE FEEDER L2 RELAY PANEL	=E04+R
N19 N18	132KV TRANSFORMER T1 RELAY PANEL	=E03+R
N20 N21	SPARE	=E02+R
N21 N17	132KV TRANSFORMER T2 RELAY PANEL	=E01+R
N22 N25	132KV TARIFF METER PANEL	=E+TMP
N23 N24	33KV TARIFF METER PANEL (FOR TRANSFORMER)	=H+TMP
N24 N23	SPARE	
N25 N22	SPARE	
N26	415V A.C DISTRIBUTION PANEL	+NU1
N27	110V D.C BATTERY CHARGER PANEL #1	+G11
N28	110V D.C DISTRIBUTION PANEL	+NK1
N29	110V D.C BATTERY CHARGER PANEL #2	+G12
N30	SPARE	
N31	SPARE	
N32	SPARE	
N33	SPARE	
N34	SPARE	
N35	SPARE	
N36	110V DC BATTERY CELLS SUSTAIN STRUCTURE #1	
N37	110V DC BATTERY CELLS SUSTAIN STRUCTURE #2	
N38	DESK AND CHAIR FOR OPERATERS	

Approved location of Control Room Relay Panel Only
15 JUN 2009

MAGURA

REV.	DATE	BY	DESCRIPTION

ENGINEER:

DESIGNER:

CLIENT & PROJECT:
POWER GRID COMPANY OF BANGLADESH LIMITED(PGCB)
DESIGN,SUPPLY AND INSTALL 132/33kV SUBSTATIONS AT JAYPURHAT & PANCHAGAR AND EXTENSION OF EXISTING NOAGAON & THAKURGAON SUBSTATION ON TURNKEY BASIS

CLIENT DWG NO.

CONTRACTOR:
CHINA NATIONAL ELECTRIC WIRE & CABLE IMP./EXP. CORPORATION (CCC)

CONTRACT NO. PGCB/SPSDP/SS/LOT-2

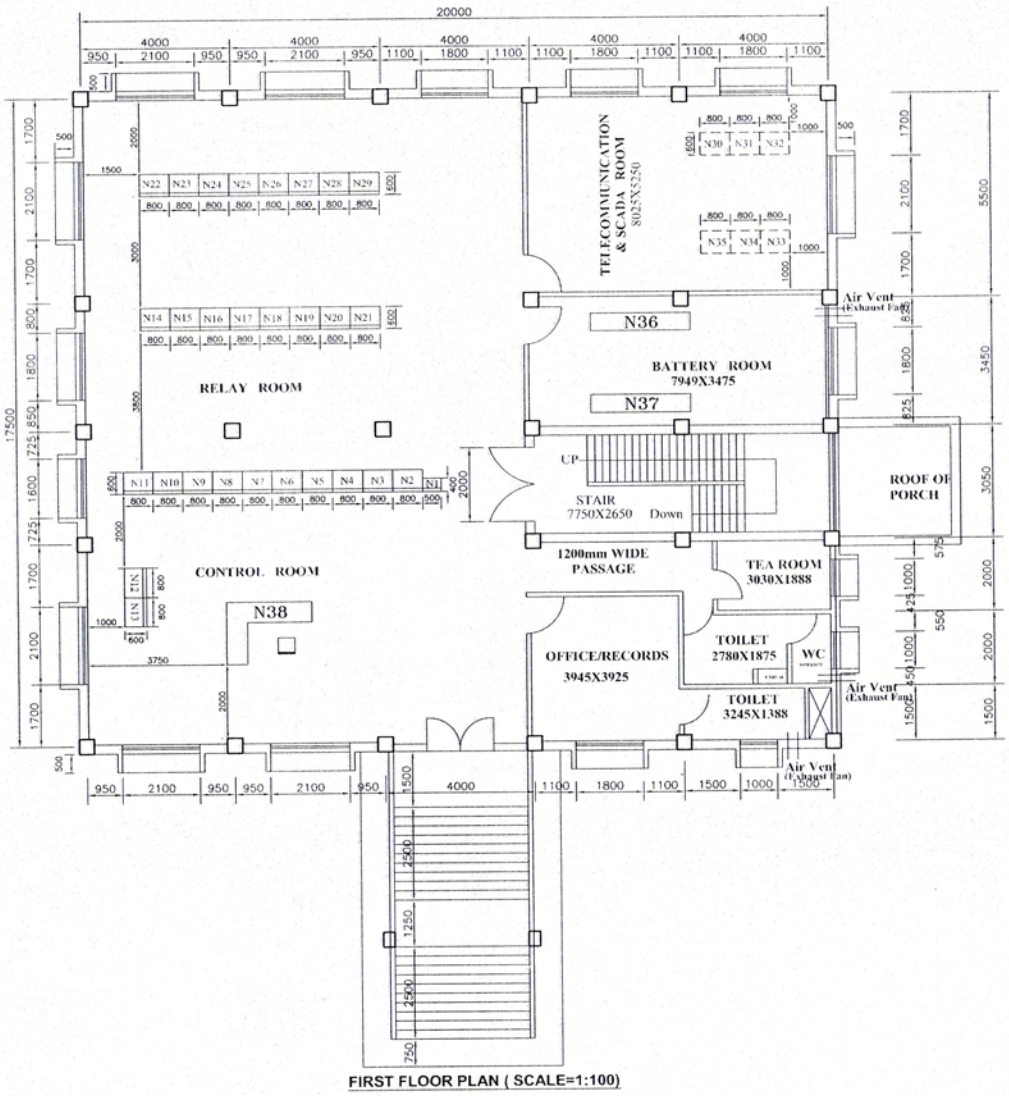
BY	NAME	DATE
DESIGNED		2009-06-15
CHECKED		
APPROVED		

TITLE: PANC 132/33KV SUBSTATION
LAYOUT OF 132KV CONTROL BUILDING (FIRST FLOOR)

DWG NO. PANC-DD-ES-DW-0211

REV. 03

SHEET 03



FIRST FLOOR PLAN (SCALE=1:100)

THE LIST OF CONTROL BUIDING EQUIPMENTS

EQUIPMENT NO.	EQUIPMENT NAME	EQUIPMENT CODE
N1	132KV SYNCHRONISER PANEL	+ESYP
N6 N2	132KV BUS COUPLER BT1 CONTROL PANEL	=E01+W
N5 N3	132KV LINE FEEDER L2 CONTROL PANEL	=E02+W
N2 N4	132KV TRANSFORMER T1 CONTROL PANEL	=E03+W
N3 N5	SPARE	=E04+W
N4 N6	132KV TRANSFORMER T2 CONTROL PANEL	=E05+W
N7	SPARE	=E06+W
N8	SPARE	=E07+W
N9	SPARE	=E08+W
N10	132KV TRANSFORMER T1 TAP CHANGER PANEL	=E02+TAPW
N11	132KV TRANSFORMER T2 TAP CHANGER PANEL	=E06+TAPW
N12	33KV INCOMING FEEDER T1A CONTROL & RELAY PANEL	=H01+WR
N13	33KV INCOMING FEEDER T2A CONTROL & RELAY PANEL	=H02+WR
N14	SPARE	=E08+R
N15	SPARE	=E07+R
N16	SPARE	=E06+R
N17 N20	132KV BUS COUPLER BT1 RELAYL PANEL	=E05+R
N18 N19	132KV LINE FEEDER L2 RELAY PANEL	=E04+R
N19 N18	132KV TRANSFORMER T1 RELAY PANEL	=E03+R
N20 N21	SPARE	=E02+R
N21 N17	132KV TRANSFORMER T2 RELAY PANEL	=E01+R
N22 N25	132KV TARIFF METER PANEL	=E+TMP
N23 N24	33KV TARIFF METER PANEL (FOR TRANSFORMER)	=H+TMP
N24 N23	SPARE	
N25 N22	SPARE	
N26	415V A.C DISTRIBUTION PANEL	+NU1
N27	110V D.C BATTERY CHARGER PANEL #1	+G11
N28	110V D.C DISTRIBUTION PANEL	+NK1
N29	110V D.C BATTERY CHARGER PANEL #2	+G12
N30	SPARE	
N31	SPARE	
N32	SPARE	
N33	SPARE	
N34	SPARE	
N35	SPARE	
N36	110V DC BATTERY CELIS SUSTAIN STRUCTURE #1	
N37	110V DC BATTERY CELIS SUSTAIN STRUCTURE #2	
N38	DESK AND CHAIR FOR OPERATERS	

Approved location of Control Room Relay Panel Only
15 JUN 2009

PANCHAGAR S/S C/R

REV.	DATE	BY	DESCRIPTION

ENGINEER:

DESIGNER:

CLIENT & PROJECT:
POWER GRID COMPANY OF BANGLADESH LIMITED(PGCB)
DESIGN,SUPPLY AND INSTALL 132/33kV SUBSTATIONS AT JAYPURHAT & PANCHAGAR AND EXTENSION OF EXISTING NOAGAON & THAKURGAON SUBSTATION ON TURNKEY BASIS
CLIENT DWG NO.

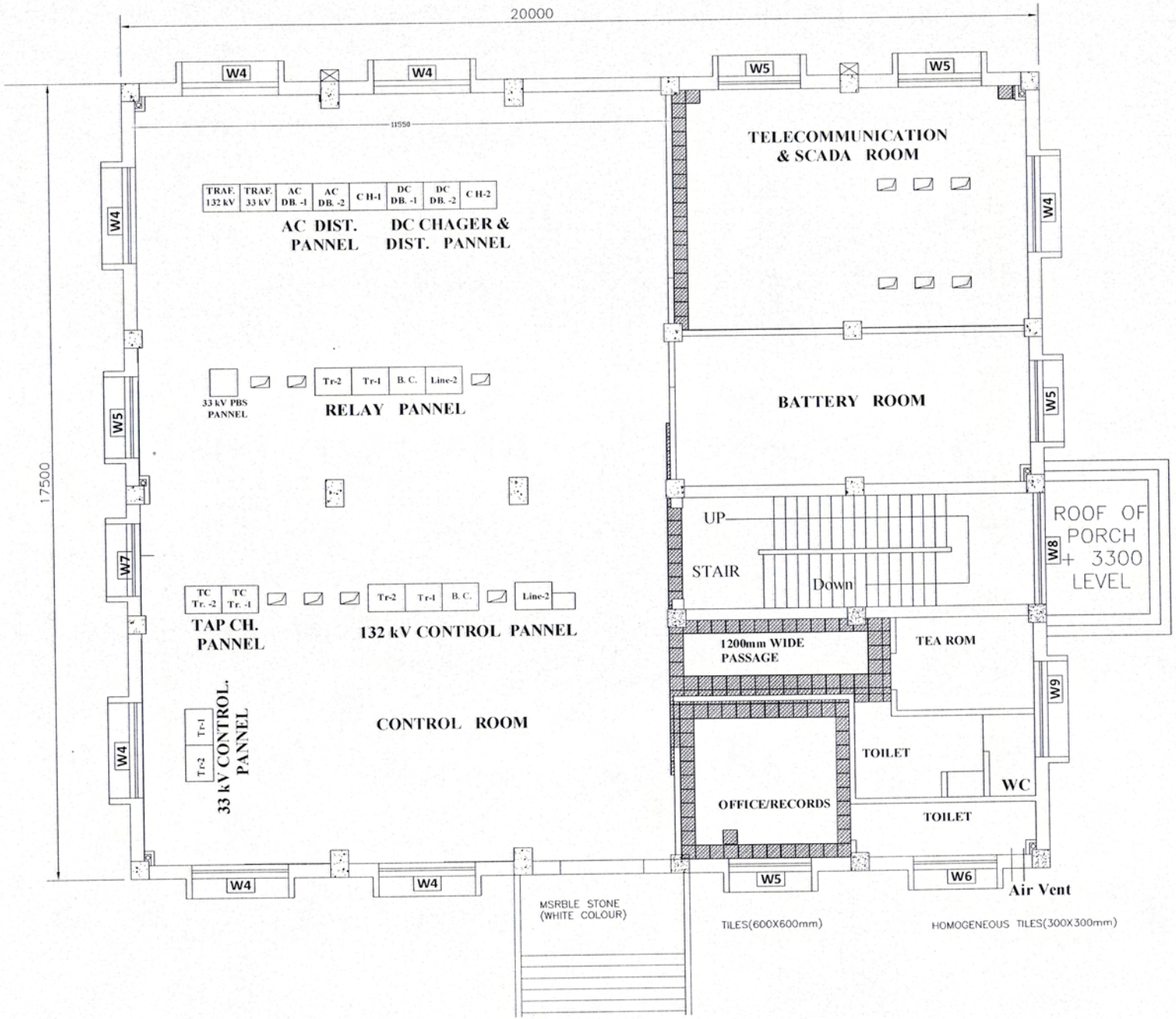
CONTRACTOR:
CHINA NATIONAL ELECTRIC WIRE & CABLE IMP./EXP. CORPORATION (CCC)
CONTRACT NO. PGCB/SPSDP/SS/LOT-2

BY	NAME	DATE
DESIGNED		2009-06-15
CHECKED		
APPROVED		

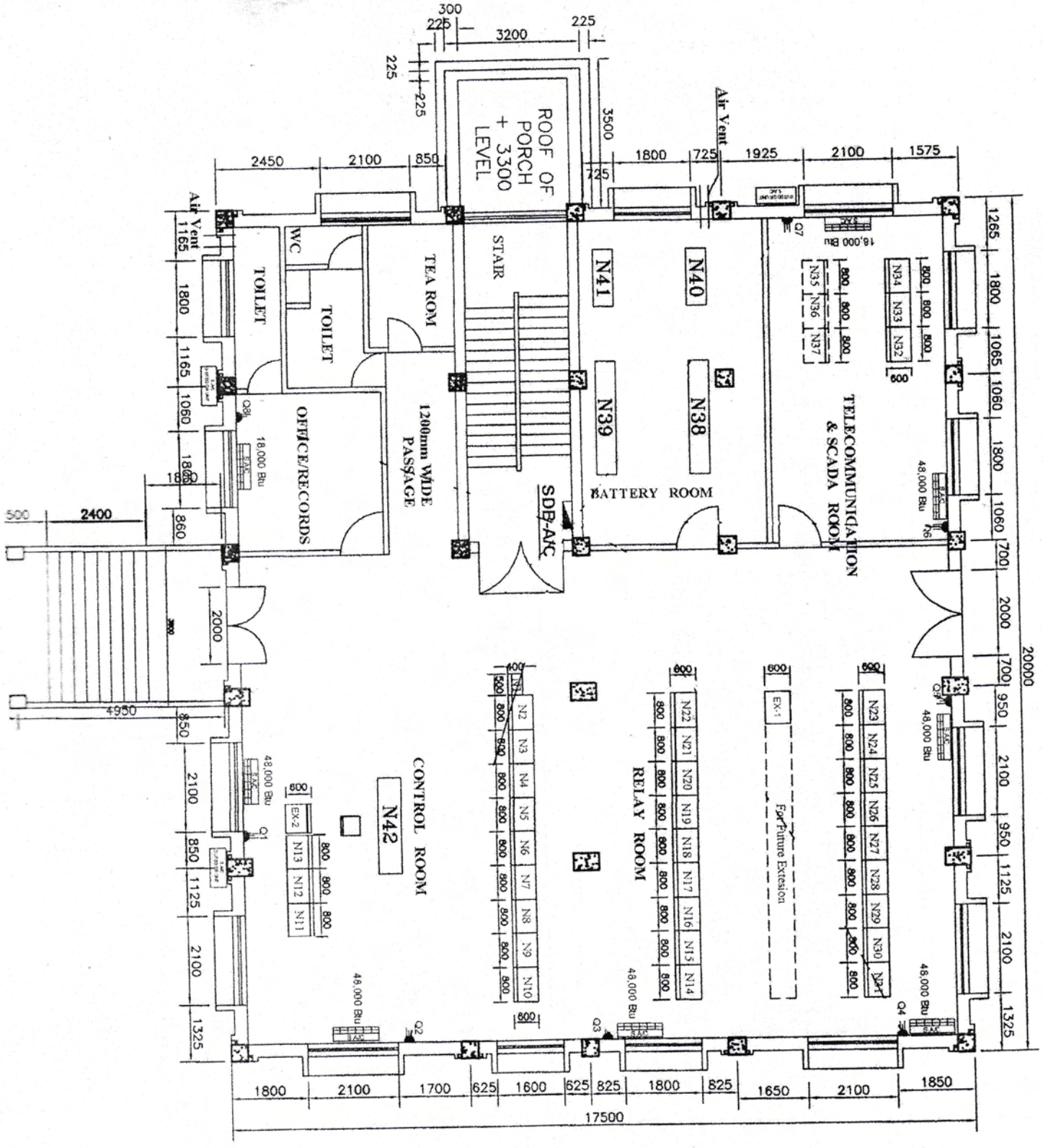
TITLE: PANC 132/33KV SUBSTATION
LAYOUT OF 132KV CONTROL BUILDING (FIRST FLOOR)
DWG NO. PANC-DD-ES-DW-0211

REV. 03
SHEET 03

CONTROL ROOM LAY OUT
Joypurhat 132/33 kV grid Sub-Station



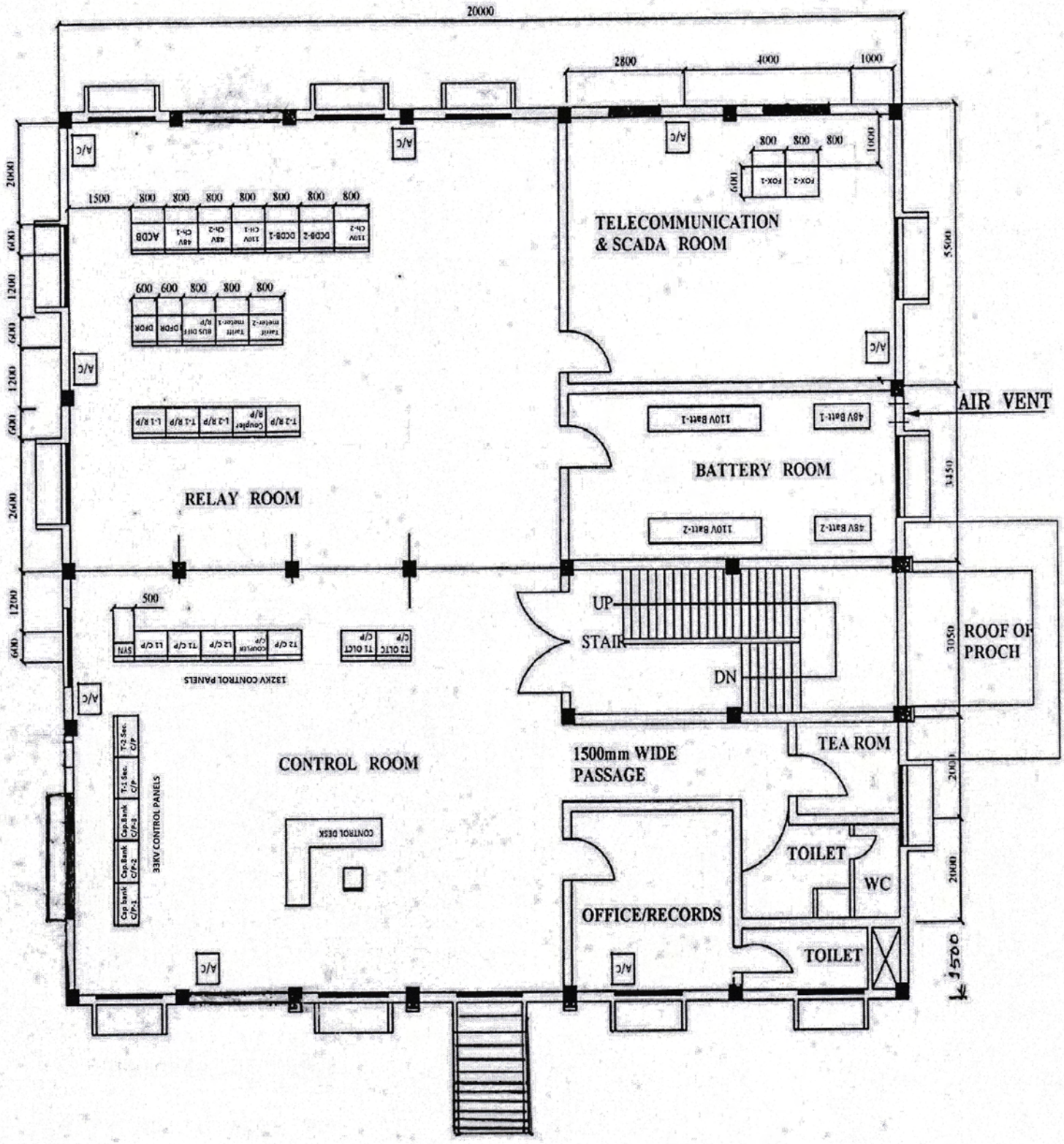
Daudkandi 132/33 KV Grid Substation Control Room Layout Plan

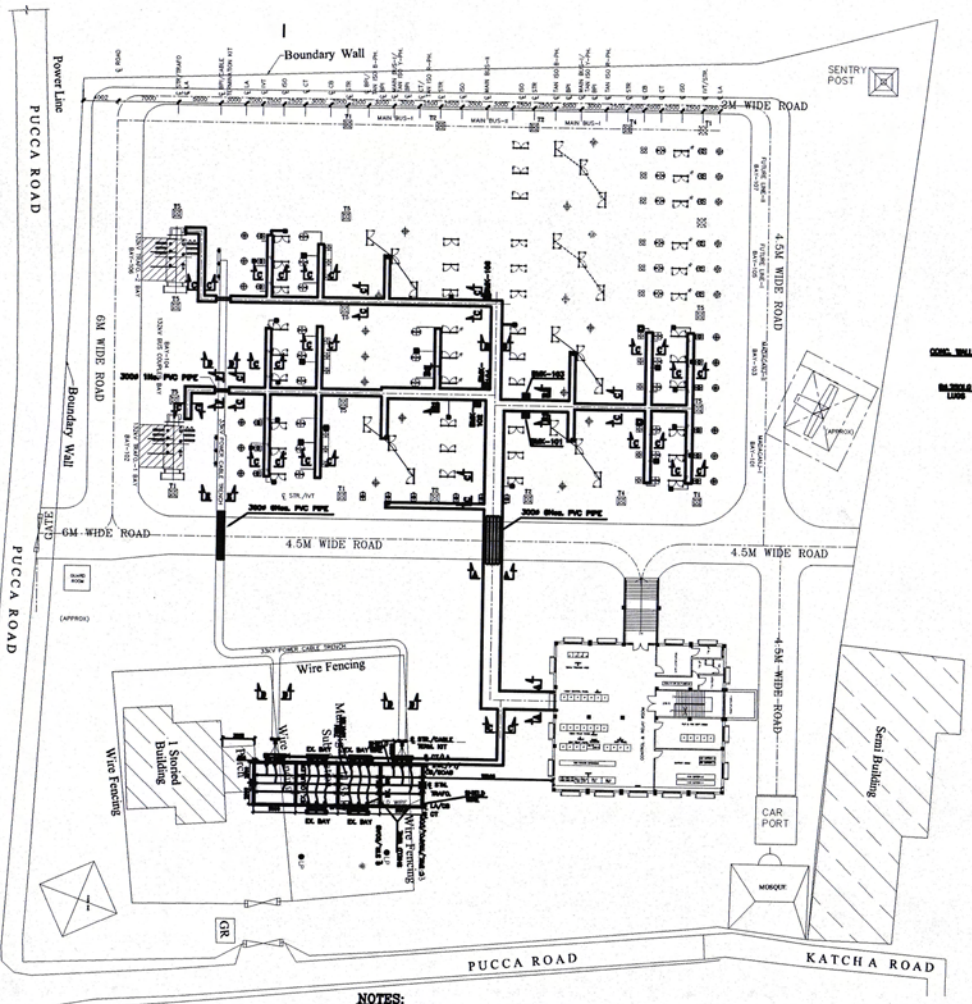


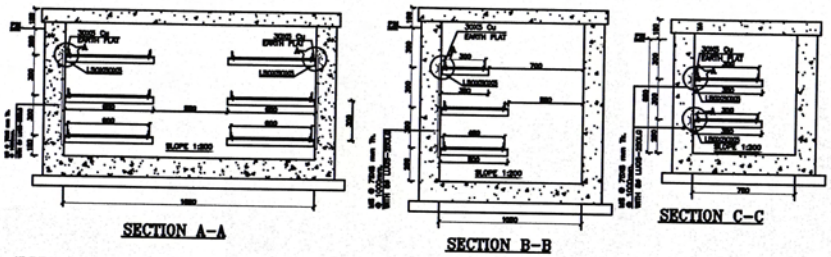
28.07.15
Sub-Assistant Engineer
Daudkandi Grid Substation
GMD, PGCB, Comilla

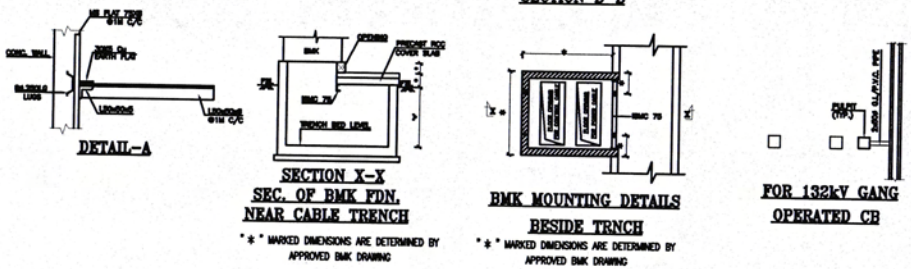
26/09/2015
Md. Faizul Islam Bhuiyan
Assistant Engineer
Daudkandi Grid Sub-Station
GMD, PGCB, Comilla

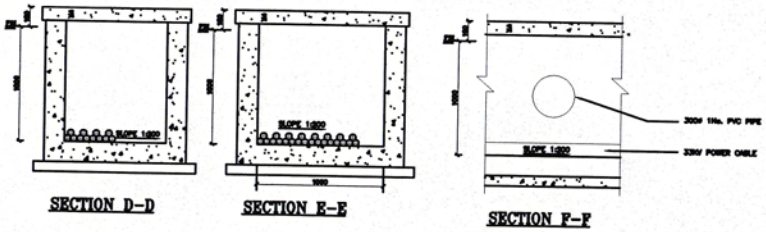
SAVAR ~~GIS~~ C/R


20000
2800
4000
1000
TELECOMMUNICATION
& SCADA ROOM
RELAY ROOM
BATTERY ROOM
AIR VENT
UP
STAIR
DN
ROOF OF
PROCH
CONTROL ROOM
1500mm WIDE
PASSAGE
TEA ROM
TOILET
WC
OFFICE/RECORDS
TOILET
CONTROL DESK
33KV CONTROL PANELS
132KV CONTROL PANELS
A/C
5500
3450
3050
2000
2000
1500









NOTES:

1) ALL DIMENSIONS/LEVELS ARE IN MM UNLESS OTHERWISE SPECIFIED.
2) A TRANSVERSE SLOPE OF 1:200 SHALL BE PROVIDED IN THE BASE SLAB OF CABLE TRENCH AND A LONGITUDINAL SLOPE OF 1:500 ALONG LONGITUDINAL DIRECTION.
3) FIXING ARRANGEMENT OF CABLE RACKS SHALL BE KEPT ON THE INSIDE FACE OF THE TRENCH.
4) CABLE RACKS SHOULD BE SPACED @ 300mm, UNLESS OTHERWISE STATED. RACKS ON OPPOSITE WALL OF TRENCH SHOULD BE STAGGERED TO FACILITATE CABLE LAYING.
5) LIFTING HOOKS TO BE PROVIDED ON EVERY 10 TH. OF COVER SLAB.
6) WHATEVER FUTURE EXPANSION POSSIBILITIES ARE THERE IN THE TRENCH, THAT END WALL WILL BE BRICK SEALING.
7) FIBER OPTIC CABLE TO BE LAID IN 50mm ø G.I./P.V.C. PIPE.
8) ILLUMINATION CABLE TO BE LAID IN TRENCH AND WHEREVER TRENCHES ARE NOT AVAILABLE IT WILL RUN IN BURIED PATH.
9) POWER AND CONTROL CABLE WILL BE LAID IN TWO LAYERS.
10) CABLE TRENCH IN THIS DRAWING IS TO INDICATE THE BASIC ROUTING AND VARIOUS SECTIONS ACCORDING TO ELECTRICAL REQUIREMENT. IF ANY PART OF THE CABLE TRENCH FOULS WITH ANY FOUNDATION, THE TRENCH MAY BE RE-ROUTED TO SUIT AT SITE.
11) CABLE ROUTE RELATED TO 33kV YARD MAY CHANGE AT SITE BASED ON THE FINAL LOCATION OF 33kV YARD.
12) ANGLES IN CABLE TRENCH WILL BE PAINTED WITH ANTICORROSIVE PAINT BEFORE CABLE LAYING.
13) FOR 33KV SINGLE CKT. LINE TOTAL 12 NOS. HT CABLE TO BE LAID & FOR DOUBLE CKT. (2 X 12)=24 NOS. HT CABLE TO BE LAID. DETAIL OF HT CABLE LAYING SHOWN IN SEC. Y-Y.

REFERENCE DRAWING:-

1) REFER SWITCHYARD LAYOUT PLAN AND SECTION DRG. NO. 3VIN100445D1102.
2) 75MVA TRANSFORMER CA & RC DETAILS DRG. NO. 1ZDX460200-A6862.

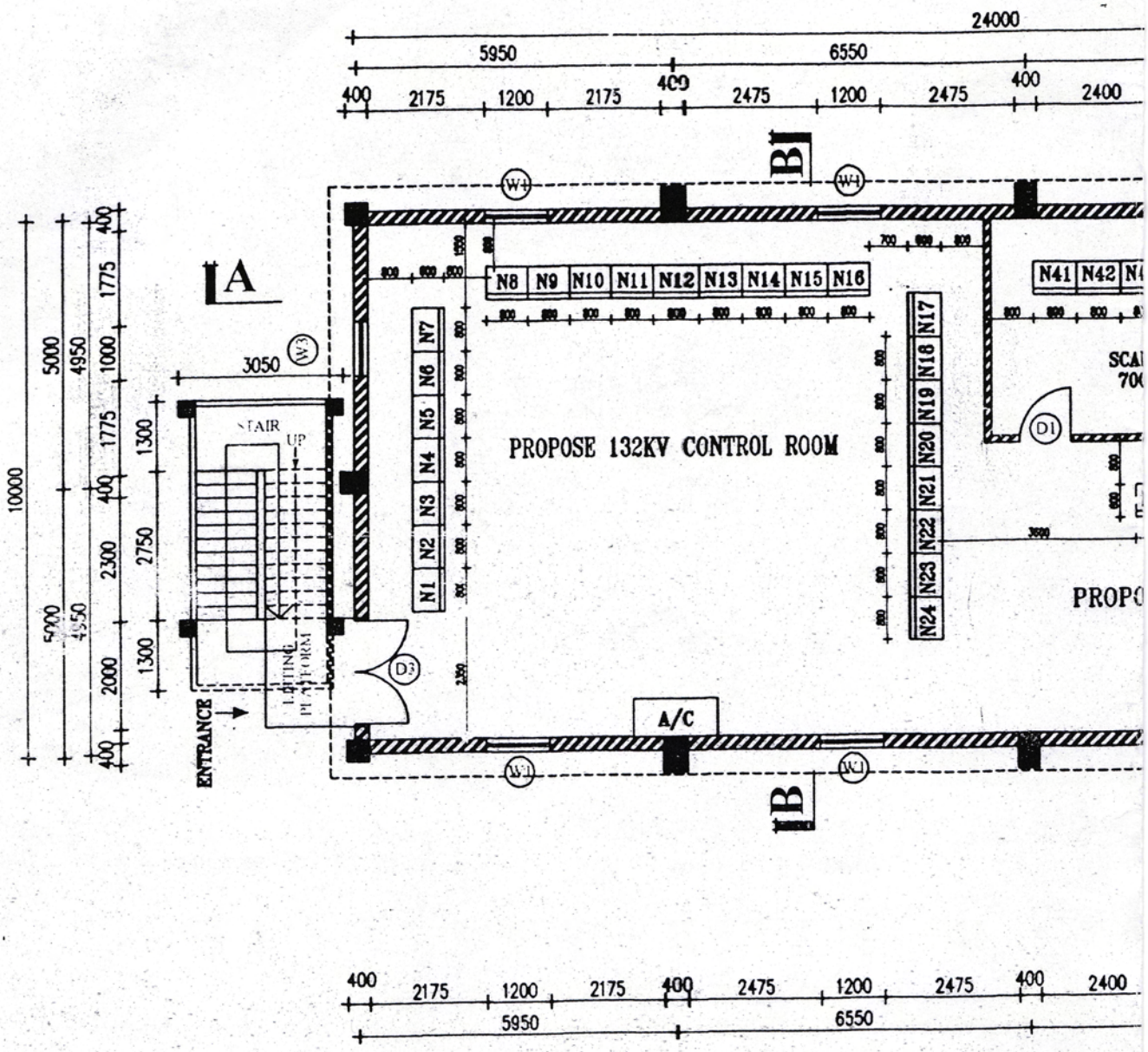
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REV	DATE	DESCRIPTION	ELE.	CIV.	STR.	C.M.	P.M
NIL	2010-11-11	FIRST SUBMISSION	✓	✓			✓

REVIEWED BY

Customer: POWER GRID COMPANY OF BANGLADESH (PGCB) LTD.

Prepared 2010-11-11 DD/AR	Document kind: FOR APPROVAL	Project: BENKHLIPPLY AND INSTALL 132/33kV SUB-STATIONS AT MEHERPUR AND MUNSHIGANJ AND EXTENSION OF EXISTING 132/33kV MADARIPUR AND HARIRAMPUR SUB-STATION ON TURNKEY BASIS (UNDER JBIC LOAN NO. BD-P152)	Paper size: A1
Checked 2010-11-11 SM	Contract No.: PGCB/JBIC/08/SS/03, DATED-21/12/2009	Sub-station name: 132/33kV MUNSHIGANJ NEW S/STN.	
Approved 2010-11-11 UKD	ABB	Title: CABLE TRENCH LAYOUT PLAN	Scale: NTS
Resp. (div./dept) IN PSS-DS		Document id.: 3VIN100445D1107 / Page: 01/01 / Date: 2010-11-11	Rev.: NIL / Lang.: EN



Ist Floor Pla

132KV SWITCHYARD

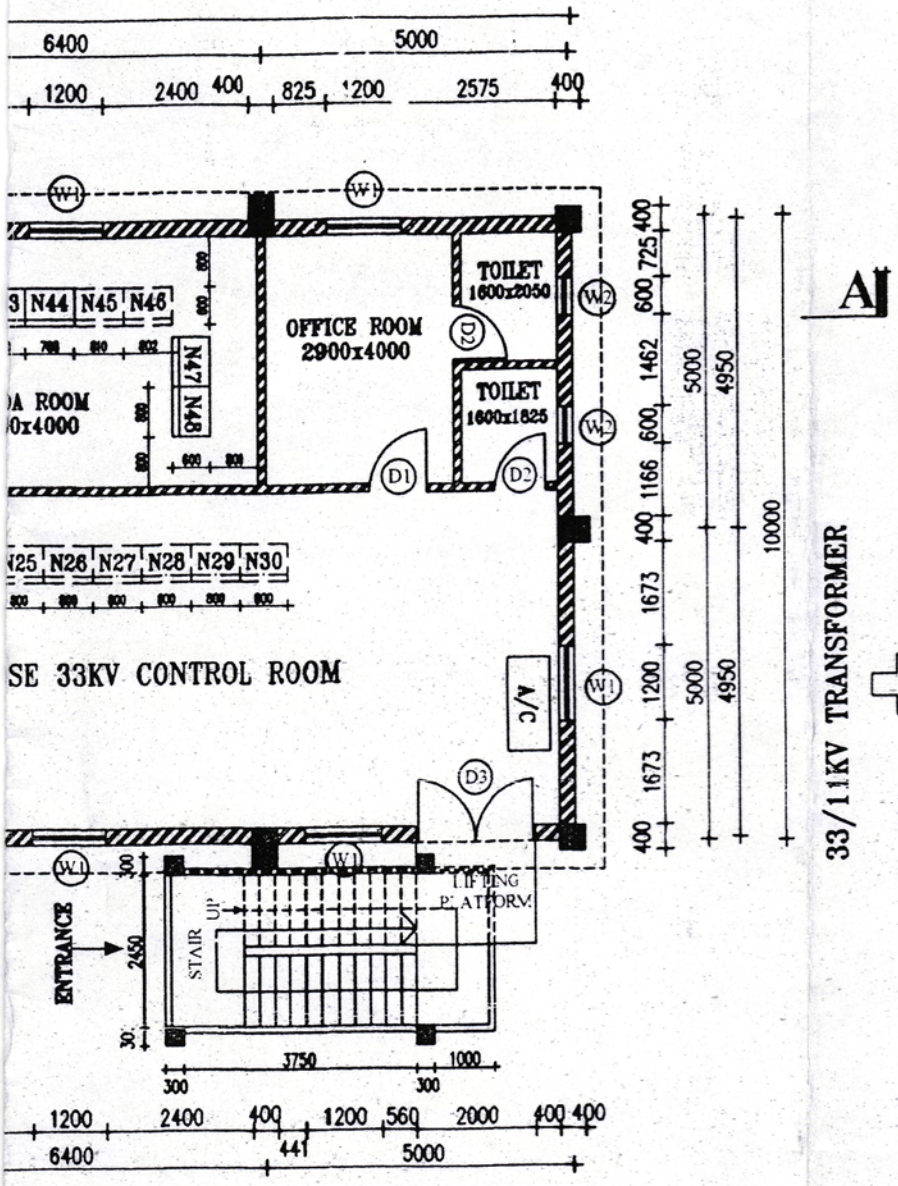
LEGEND

NEW CONTROL AND RELAY PANEL

N1 NEW CONTROL PANEL FOR 132KV LINE FEEDER (=L2)
N2 NEW CONTROL PANEL FOR 132KV LINE FEEDER (=L1)
N3 NEW CONTROL PANEL FOR 132KV BUSCOUPLER (=BT)
N4 NEW CONTROL PANEL FOR 132/33KV TR.2 (=T2)
N5 NEW CONTROL PANEL FOR 132/33KV TR.1 (=T1)
N6 NEW CONTROL & RELAY PANEL FOR 132/33KV TR.1 33KV INCOMING(=T1A)
N7 NEW CONTROL & RELAY PANEL FOR 132/33KV TR.2 33KV INCOMING(=T2A)
N8 NEW 400V AC DESTRIBUTION PANEL-1
N9 NEW DC 110V BATTERY (GROUP-1) DISTRIBUTION & CHARGER PANEL
N10 NEW DC 110V BATTERY (GROUP-2) DISTRIBUTION & CHARGER PANEL
N11 NEW CONTROL & RELAY PANEL FOR 33KV LINE FEEDER (=L31)
N12 NEW CONTROL & RELAY PANEL FOR 33KV LINE FEEDER (=L32)
N13 NEW CONTROL & RELAY PANEL FOR 33KV LINE FEEDER (=L33)
N14 NEW CONTROL & RELAY PANEL FOR 33KV LINE FEEDER (=L34)
N15 NEW CONTROL & RELAY PANEL FOR 33/33KV TR.31 (=T31)
N16 NEW CONTROL & RELAY PANEL FOR 33KV BUSCOUPLER (=BT)
N17 NEW CONTROL & RELAY PANEL FOR 33/11KV TR.32 (=T32)

N18 NEW CONTROL & RELAY PANEL FOR 33KV LINE FEEDER (
N19 NEW CONTROL & RELAY PANEL FOR 33KV LINE FEEDER (
N20 NEW CONTROL & RELAY PANEL FOR 33KV LINE FEEDER (
N21 NEW CONTROL & RELAY PANEL FOR 33KV LINE FEEDER (
N22 NEW RELAY PANEL FOR 132KV LINE FEEDER (=L2)
N23 NEW RELAY PANEL FOR 132KV LINE FEEDER (=L1)
N24 NEW RELAY PANEL FOR 132KV BUSCOUPLER (=BT)
N25 NEW RELAY PANEL FOR 132/33KV TR.2 (=T2)
N26 NEW RELAY PANEL FOR 132/33KV TR.1 (=T1)
N27 RESERVE FOR SPARE (out of scope)
N28 RESERVE FOR SPARE (out of scope)
N29 RESERVE FOR SPARE (out of scope)
N30 RESERVE FOR SPARE (out of scope)
N31 NEW DC 110V BATTERY PANEL OF THE GROUP 1
N32 NEW DC 110V BATTERY PANEL OF THE GROUP 2
N33 NEW DC 48V PLC BATTERY PANEL 1
N34 NEW DC 48V PLC BATTERY PANEL 2
N35 RESERVE FOR SPARE (out of scope)
N36 RESERVE FOR SPARE (out of scope)
N37 RESERVE FOR SPARE (out of scope)
N38 RESERVE FOR SPARE (out of scope)
N39 RESERVE FOR SPARE (out of scope)

EW TONGI S/S



WINDOW	WIDTH	HEIGHT
W1	1200	1050
W2	600	900
W3	1000	500
DOOR	WIDTH	HEIGHT
D1	1000	2100
D2	900	2100
D3	2000	2500

n

=L35)
=L36)
=L37)
=L38)

N40 RESERVE FOR SPARE (out of scope)
N41 NEW DC 48V(GROUP-1) DISTRIBUTION & CHARGER PANEL 1
N42 NEW DC 48V(GROUP-2) DISTRIBUTION & CHARGER PANEL 2
N43 SCADA SYSTEM PANEL 1
N44 SCADA SYSTEM PANEL 2
N45 RTU 1 (out of scope)
N46 RTU 2 (out of scope)
N47 PLC PANEL 1
N48 PLC PANEL 2

AS BUILT DRAWING

Revision	Content	Designed	Approved	Date
Employer	Dhaka Electric Supply Authority(DESA)			
Project	Greater Dhaka Power Distribution Project, Phase-IV Dhaka Power System Upgrade Project			
Contract	Turnkey Contract for Supply &. Installation of 132/33kV Substation No. 57204/01			
Contractor	China National Electric Wire & Cable IMP./EXP. Corporation(CCC)			
Substation	New Tongi 132/33kV Substation			
Title	1ST FLOOR PLAN OF CONTROL BUILDING			
Drawn	Designed	Checked	Approved	Date
Sarmin				
Scale	1:120	Dwg. No.	New Ton_132/33/CB/ 2 of 12	

ELECTRIC WIRE & CABLE IMPORT/EXPORT CORPORATION OF CHINA NATIONAL
DHAKA
C. C. C.
BANGLADESH

Annexure-10

DESIGN,SUPPLY,ERECTION,TESTING AND COMISSIONING AND INTEGRATION WITH NLDC OF 13 NOS NEW GRID SUB-STATIONS ON TRUNKEY BASIS.

SCHEDULE B1: SUMMARY OF PRICE SCHEDULE

Foreign Currency Price:

Description of Works		Foreign Currency Prices							
		Outside Employer's Country						Within the Employer's Country	Total F/C Cost
		Total Price FOB	Insurance	Freight	Total CIF Price	Erection	Total Amount	Total Price EXW	
1		2	3	4	5=(2+3+4)	6	7=(5+6)	8	9=(7+8)
Supply of Goods Schedule B2-1	Outside Employer's Country								
	Within the Employer's Country								
Inspection & Integration Schedule B3	Outside Employer's Country								
	Within the Employer's Country								
SUBTOTAL AMOUNT (USD)	Outside Employer's Country								
	Within the Employer's Country								
TOTAL AMOUNT (USD)									

Local Currency Price:

Description of Works	Local Currency Prices in Bangladesh Taka							
	Within the Employer's Country				Outside Employer's Country			Total L/C Cost
	Total Price EXW	Transportation & Handling to destination plus Erection (LTE)	Insurance to Destination	Total Amount	Local Transportation & Handaling Cost	Local Insurance to Destination	Erection	
1	2	3	4	5=(2+3+4)	6	7	8	9=(6+7+8)
Supply of Goods Schedule B2-2								
Inspection & Integration Schedule B3								
TOTAL AMOUNT (Bangladesh Taka)								

TOTAL CONTRACT PRICE in words ..... plus Bangladesh Taka .....

The above price shall appear on the FORM OF PRICE BID

Note: Income Tax will be deducted from the Contractor's invoices at the time of payment, according to the Income Tax Rules and Regulations of Bangladesh, Present Income Rule (TDS) is seven point five percent (7.5%).

DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING AND INTEGRATION
WITH NLDC OF 13 NEW GRID SUBSTATIONS ON TRUNKEY BASIS
SCHEDULE B2-1:Price for itemized works,Goods, or Services outside of Employer's country

					Foreign currency (F/C) Price (in ……..)					Local currency (L/C) Price (in Taka)		
Item	Description	Unit	Qty.	Country of origin	Unit price FOB	Total price FOB	Insurance	Freight	Total Price CIF	Local transport & handling cost to destination	Local Insurance to destination	Total L/C cost
			1		2	3=1x2	4	5	6=3+4+5	7	8	9=7+8
1	Remote Terminal Unite (RTU) as per SLD with 20% spares capacity. RTU acquisition protocol –MOD Bus, Communication protocol IEC-60870-5-104 and communication parameter & signal list to be approved by PGCB. Supply of Sub-Stations SCADA adaptation materials (i.e. Transducer/MFT, Cables for CT/PT/control/signaling etc, GPS,MC/SIC, Multiplying relay and so on) also included.	Lot	11									
2	Fiber Optic Telecomm Equipment (SDH/PDH) for each Lot with following services: a) Voice Communication b) Data Communication (Both LAN & WAN), c) Tele-protection d) Different LAN services (CCTV, DFDR etc for central monitoring)	Lot	8									
3	48 Volt DC Battery, 100Ahr, Alkaline.	Set	14									
4	50 A, Charger for 48 Volt DC 100Ahr battery.	Set	12									
5	Auxiliary Relays	Lum sum										
	Total											

Note: Income Tax will be deducted from the Contractor's invoices at the time of payment, according to the Income Tax Rules and Regulations of Bangladesh, Present Income Rule (TDS) is seven point five percent (7.5%).

DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING AND INTEGRATION
WITH NLDC OF 13 NEW GRID SUBSTATIONS ON TRUNKEY BASIS
SCHEDULE B2-2:Price for itemized works,Goods, or Services inside of Employer's country

					Foreign Currency (in……..)		Local Curre		
Item	Description	Unit	Qty.	Country of Origin	Unit Price EXW	Total Price EXW	Unit Price EXW	Total Price EXW	Transport & Handling to Destination
			1		2	3=1x2	4	5=1x4	6
1	Remote Terminal Unite (RTU) as per SLD with 20% spares capacity. RTU acquisition protocol –MOD Bus, Communication protocol IEC-60870-5-104 and communication parameter & signal list to be approved by PGCB. Supply of Sub-Stations SCADA adaptation materials (i.e. Transducer/MFT, Cables for CT/PT/control/signaling etc, GPS,MC/SIC, Multiplying relay and so on) also included.	Lot	11						
2	Fiber Optic Telecomm Equipment (SDH/PDH) for each Lot with following services: a) Voice Communication b) Data Communication (Both LAN & WAN), c) Tele-protection d) Different LAN services (CCTV, DFDR etc for central monitoring)	Lot	8						
3	48 Volt DC Battery, 100Ahr, Alkaline.	Set	14						
4	50 A, Charger for 48 Volt DC 100Ahr battery.	Set	12						
5	Auxiliary Relays	Lum sum							
6	LVAC, Control Cables, Signal Cables	Lum sum							
7	Civil works for installation of panels and extension of cable trench (If needed)	Lum sum							
	Total								

Note: Income Tax will be deducted from the Contractor's invoices at the time of payment, according to the Income Tax Rules and Regulations of Bangladesh, Present Income Rule (TDS) is seven point five percent (7.5%).

DESIGN,SUPPLY,ERECTION,TESTING AND COMISSIONING AND INTEGRATION WITH NLDC OF 13 NOS NEW GRID SUB-STATIONS ON TRUNKEY BASIS

Schedule B3 : Inspection & Intregation

				Foreign Currency (F/C) Price (in .....)		Local Currency (L/C) Price (in Taka)	
Item	Description	Unit	Qty	Outside Employer's Country		Within Employer's Country	
				Unit Price	Total F/C Cost	Unit Price	Total L/C Cost
			1	2	3=1x2	4	5=1x4
B3-1	Inspection Cost		LS				
B3-2	Integration of RTU and Telecom equipment to Master & Back Up Station's SCADA EMS and Telecom NMS system.		12				
Sub-Total Price carried forward							

Sub Total Price in words.....

Schedule B: Bid Price

Note: Income Tax will be deducted from the Contractor's invoices at the time of payment, according to the Income Tax Rules and Regulations of Bangladesh, Present Income Rule (TDS) is seven point five percent (7.5%).

Note2: The cost of NLDC SCADA integration shell be as per attached contract price between ALSTOM T&D and Power Grid Company of Bangladesh Ltd.

Appendix 1 - Terms and Procedures of Payment

In accordance with the provisions of GCC Clause 12 (Terms of Payment), the Employer shall pay the Contractor in the following manner and at the following times, on the basis of the Price Breakdown given in the section on Price Schedules. Payments will be made in the currencies quoted by the Bidder unless otherwise agreed between the parties. Applications for payment in respect of part deliveries may be made by the Contractor as work proceeds.

(A) Terms of Payment

Schedule No. 1 - Plant and Equipment Supplied from abroad/ within the Employer's Country

For Plant and Equipment Supplied from Abroad:

The Employer shall pay to Contractor under the terms and condition of the letter of credit as follows:

Ten percent (10%) of the CIF/FC amount (and after deduction of 7.5% AIT on Invoiced amount) as an advance payment against receipt of invoice and an irrevocable advance payment security for the equivalent amount made out in favor of the Employer. The advance payment security may be reduced in proportion to the value of the plant and equipment shipped FOB or delivered to the site, as evidenced by shipping and delivery documents.

Eighty percent (80%) of the total or pro rata CIF/FC (and after deduction of 7.5% AIT on Invoiced amount) or amount upon Incoterm "CIF," upon delivery to Site within forty-five (45) days after receipt of invoice.

Five percent (5%) of the total or pro rata CIF/FC (and after deduction of 7.5% AIT on Invoiced amount) or amount upon issue of the Completion Certificate, within forty-five (45) days after receipt of invoice.

Five percent (5%) of the total or pro rata CIF/FC (and after deduction of 7.5% AIT on Invoiced amount) or amount upon issue of the Operational Acceptance Certificate, within forty-five (45) days after receipt of invoice.

For Plant and Equipment Supplied from within the Employer's Country:

In respect of plant and equipment supplied from within the Employer's country, the following payments shall be made:

Ten percent (10%) of the total EXW, Local Transport & handling cost and Local Insurance amount (and after deduction of 7.5% AIT on Invoiced amount) as an advance payment against receipt of invoice, and an irrevocable advance payment security for the equivalent amount made out in favor of the Employer. The advance payment security may be reduced in proportion to the value of the plant and equipment delivered to the site, as evidenced by shipping and delivery documents.

Eighty percent (80%) of EXW, Local Transport & handling cost and Local Insurance amount (and after deduction of 7.5% AIT on Invoiced amount)upon Incoterm "Ex-Works", within forty-five (45) days of the presentation of Interim Payment Certificates against monthly Invoices calculated from Progress record sheets certified by the Engineer/Employer during the work period.

Five percent (5%) of EXW, Local Transport & handling cost and Local Insurance amount(and after deduction of 7.5% AIT on Invoiced amount) within forty-five (45) days of presentation of Interim Payment Certificate and Taking over Certificate.

Five percent (5%) of EXW, Local Transport & handling cost and Local Insurance amount (and after deduction of 7.5% AIT on Invoiced amount) upon issue of the Operational Acceptance Certificate, within forty-five (45) days after receipt of invoice.

For Integration of RTU and Telecom equipment

In respect of Integration of RTU and Telecom equipment services, the following payments shall be made:

Ten percent (10%) of the total amount (and after deduction of 7.5% AIT on Invoiced amount)as an advance payment against receipt of invoice and an irrevocable advance payment security for the equivalent amount made out in favor of the Employer.

Ninety percent (90%) of the total or pro rata Integration of RTU and Telecom equipment services amount (and after deduction of 7.5% AIT on Invoiced amount)upon completion and acceptance of Integration of RTU and Telecom equipment by the Project Manager within forty-five (45) days after receipt of invoice.

For Installation and other Services

In respect of installation services, the following payments shall be made:

Ten percent (10%) of the total installation and other services amount (and after deduction of 7.5% AIT on Invoiced amount) as an advance payment against receipt of invoice and an irrevocable advance payment security for the equivalent amount made out in favor of the Employer. The advance payment security may be reduced in proportion to the value of work performed by the Contractor as evidenced by the invoices for installation services.

Eighty percent (80%) of the measured value (and after deduction of 7.5% AIT on Invoiced amount) of work performed by the Contractor, as identified in the said Program of Performance, during the preceding month, as evidenced by the Employer's authorization of the Contractor's application, will be made monthly within forty-five (45) days after receipt of invoice.

Five percent (5%) of the total or pro rata value (and after deduction of 7.5% AIT on Invoiced amount) of installation services performed by the Contractor as evidenced by the Employer's authorization of the Contractor's monthly applications, upon issue of the Completion Certificate, within forty-five (45) days after receipt of invoice.

Five percent (5%) of the total or pro rata value (and after deduction of 7.5% AIT on Invoiced amount) of installation services performed by the Contractor as evidenced by the Employer's authorization of the Contractor's monthly applications, upon issue of the Operational Acceptance Certificate, within forty-five (45) days after receipt of invoice.

(B) Payment Procedures

The procedures to be followed in applying for certification and making payments shall be as follows:

For Plant and Equipment Supplied from Abroad:

Payment for supply and delivery of the Works and erection (Foreign Exchange Portion) in the Employer's country shall be made through an irrevocable commercial letter of credit to be opened by the Employer in favour of the Contractor. All costs in connection with Letter of Credit within Bangladesh shall be borne by the Employer and outside Bangladesh shall be borne by the Contractor.

For Plant and Equipment Supplied from Within Employer's Country:

The Employer will pay the Contractor against Interim Payment Certificate issued by the Engineer/Employer for the costs of all local Works value of the Contract for EXW, local handling, storage, transportation to site, insurance and erection including local construction materials. The Taka

payments will be as per the Power Grid Company Financial and Accounts Rules or any other Accounts Rules in force and adopted by the Employer.

Appendix 2 - Price Escalation

Not applicable