

Nepal Electricity Authority
Grid Substation Automation Project Phase 2

Clarification No: 02

OCB No and Title : Tender No: PMD/EGMP/GSAPP2-78/79-01 (Procurement of Plant for Design, Supply, Installation, Integration, Testing and Commissioning of Substation Automation System (SAS) for Existing Grid Substations of six-grid division office across Nepal.)

S.N	Volume/Section	Clause no.	Clause Description	Clarification Required	NEA Response
1	Vol-1, Sec-8: Special Conditions of the Contract	Chapter 1: Project Specific Requirement	39 units of SAS and 15 units of integration integration	Provide single line diagram.	Provided as a link in bid document(Annex-1, Vol-2)
2	Vol-1, Sec-8: Special Conditions of the Contract	7. Scope of Facilities 7.4	15 units of integration integration		As per bid document.
3		Volume 2 7.0 MIMIC DIAGRAM,	MIMIC DIAGRAM,	We know that mimic is used for CB/DS control function in traditional substation.In digital substation now,bay control unit(BCU) is used for control function.BCU have SLD in its HMI , CB/DS can be controlled in workstation through BCU, so can we use BCU to replace mimic function.	As per bid document., Mimic Diagram should be supplied
4		Volume 2 12.0 ANNUNCIATION SYSTEM for Control Panel	ANNUNCIATION SYSTEM for Control Panel	ANNUNCIATION SYSTEM is required in the technical agreement,We know that it is used for alarm of signals in traditional substation .In digital substation,BCU have the same function, it shows more signals in workstion. so can we use BCU to replace its function.	As per bid document.,Annunciation system should be supplied
5				Control and instrument switches is special for CB/DS in the technical agreement. But in this project,we prefer use BCU to replace mimic,so we will provide common switches for the relay,these switches have been used in NEA substation.It have the same function but a little bit of a difference in shape.	As per bid document.,Separate manual switches for CB/DS should be supplied
6				The communcation between NEA and substation is not clear.We will provide gateway(support 101/104) for the inteface of NEA,but the channels between substation and NEA is not in our scope.	As per bid document, channels between susbtation and NEA shall be in scope of NEA
7				Transducer is used in traditional substation.Now we will provide BCU to replace it, we can see analog quantity in workstaion through BCU.	Confirmed
8				In the technical agreement,control panel include that Ammeter/Wattmeter / transducer/Varmeter/CB-DS switches/annunciation windows /mimic, now we suggest use BCU to replace all this function	As per bid document.
9		Volume 2 Chapter 7 – General Technical Requirement, Substation Automation System 3.3 gateway	Gateway	According to the description of technical parameters, the hardware of gateway is an industrial level computer, whether the highly integrated and modulized gateway device with embedded opertating system is acceptable?	As per bid document, please refer clause 3.3 Gateway of Chapter 7- Substation Automation system of Bid document Volume II
10				Whether the remote end line differential relay is in this project scope?	Yes



11				Since Siemens may also participate this tender, whether can we remove the scope of integration with Siemens LDC to make the tender fair enough to all parties?	This shall be as per Bid document
12		Volume 2 chapter 1 BASIC REQUIREMENT OF MASTER CONTROL CENTER	The Master Control Centre shall exhibit the State-of-Art technology and equipped with all the necessary recent versions of communication and control infrastructures to operate and control the substations remotely with proper cyber security and fire walls to prevent unauthorized access.	Please clarify: is all these cyber security devices in the scope of the project?	Yes your understanding is correct
13		Volume 2 chapter 10 -Cyber security System and Monitoring and compliance manager for Critical Infrastructure Protection	The Contractor shall also be responsible for monitoring of the cyber security system with cyber security perspective and implementing the monitoring and compliance manager for Critical Infrastructure Protection. The logs of the system shall be analyzed for exceptions and the possible incident of intrusion/trespass shall be informed to the Employer. The monitoring shall encompass the various cyber security devices installed at Control Centres such as firewalls, Intrusion prevention system (both network based and host based), routers etc. The Centralized Monitoring Console (CMC) shall monitor and continuously collect the above logs. The contractor shall carry out Security Audit from CERT-In Certified auditors at its own cost for the complete systems under this project and implement the recommendation given by auditor in consultation with the owner.	Please clarify: is all these cyber security devices in the scope of the project?	Yes, your understanding is correct
14		Volume 2 chapter 9 1 introduction	The CCS shall also have the provision to report to LDC system in Kathmandu.	Please clarify the communication channel and required ports, so we can provide appropriate interface equipments for MCC to LDC.	As per bid document, please refer clause 3.1.1 (g) of Chapter 1- Project specific requirement of Bid document Volume II
15				In this section, devices required for the MCC are shown in the Fig, please: 1. clarify the technical parameters in detail, of all the devices, e.g. servers, workstations, lan switches, etc. 2. if the routers are configured for communication with SAS, please clarify the ports number and type. 3. if the office PC as WEB server is already exist? or it will be in the scope of the bidder?	1. MCC hardware technical parameters is based on the system design of the bidder. 2. Based on system architecture provided and system design by the bidder. 3. Scope of Bidder.
16				"Main/Backup control center" is mentioned several times in the specification, please clarify: 1. the Main control center is the Master control center mentioned in chapter 9? 2. the Backup control center is redundant backup control center for MCC? is it under the scope of the project? or for integrated only? or ignored in this project?	MCC means Master Control Centre for each grid division office. LDC is the main control centre located at siuchatar, Kathmandu Backup Control Centre is the Back up data centre located at Hetauda
17		Volume 2 Chapter 12- SCADA Video Projection System	a) 3X2 70" Configuration Video Projection system of 1024X768 pixel,	According to the development of global computer technology, the computer graphics card and monitoring screen are basically in the golden ratio of 16:9. Here, the 1024X768 resolution technical requirement requires a 4:3 ratio, and the 1024X768 resolution DMD chip has been discontinued. It is recommended to change it to "70" Configuration Video Projection system of 1920X1080 pixel"	The latest prevailing resolution/technology shall be accepted(including the VPS spares)



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18		Volume 2 Chapter 12- SCADA Video Projection System	Each projector shall provide a minimum resolution of 1024X768 pixels per module. The rear projection screens shall be capable of displaying full resolution of the source.	It is recommended to change to "Each projector shall provide a minimum resolution of 1920X81080pixels per module."	As per bid document
19		Volume 2 Chapter 12- SCADA Video Projection System	The projection bulb shall have a rated operating life of 9,000 hours typical.	It is recommended to change to "The projection LED light source shall have a rated operating life of 9,000 hours typical"	Refer to clarification no. 17
20		Volume 2 Chapter 12- SCADA Video Projection System	The Contractor shall supply the following VPS consumables for future use: a) VPS bulbs – 12 nos. b) VPS Dust filters (if applicable) – 12 nos.	It is recommended to change to "The Contractor shall supply the following VPS consumables for future use: a) LED light source – 12 nos. b) VPS Dust filters (if applicable) – 12 nos."	Refer to clarification no. 17
21				Whether the substation floor plan can be provided,	As per Bid document, bidder shall visit the site for clear picture.
22			Complete Substation Automation System (SAS) for substations including hardware and software, (including protection relays for main and backup protection, master trip relays, hand reset relays, etc as and when required) and other accessories and metering and indication facilities for the substation & remote control stations along with associated equipment for 132 kV / 66 kV/ 33 kV / 11 kV bays of 39 substations as specified in 1.1.2. and integration of additional newly built 15 substations (the total of 54 substations) to Master Control Centre(MCC) and Load Dispatch Centre at Siuchatar, Kathmandu and Backup Control Centre at Hetauda.	We understand there is many Retrofitting work in existing panels. For which we have to supply main and backup relays. Requesting you to provide separate Line item for retrofitting activities	All the bays where existing panels is used for SAS automation shall be retrofitted.
23			Complete Substation Automation System (SAS) for substations including hardware and software, (including protection relays for main and backup protection, master trip relays, hand reset relays, etc as and when required) and other accessories and metering and indication facilities for the substation & remote control stations along with associated equipment for 132 kV / 66 kV/ 33 kV / 11 kV bays of 39 substations as specified in 1.1.2. and integration of additional newly built 15 substations (the total of 54 substations) to Master Control Centre(MCC) and Load Dispatch Centre at Siuchatar, Kathmandu and Backup Control Centre at Hetauda.	Our Scope shall be limited to converging the Main and Backup protection Relay to a IEC61850 Compatible relay, the existing Electro Mechanical Relay shall not be changed in the existing panels. Incase if a Self Rest Type Master Trip Relay is not available we shall consider in the scope	As per bid document, all electromechanical and non-SAS relays shall be replaced with SAS compatible equipment.
24			Complete Substation Automation System (SAS) for substations including hardware and software, (including protection relays for main and backup protection, master trip relays, hand reset relays, etc as and when required) and other accessories and metering and indication facilities for the substation & remote control stations along with associated equipment for 132 kV / 66 kV/ 33 kV / 11 kV bays of 39 substations as specified in 1.1.2. and integration of additional newly built 15 substations (the total of 54 substations) to Master Control Centre(MCC) and Load Dispatch Centre at Siuchatar, Kathmandu and Backup Control Centre at Hetauda.	We shall provide necessary SAS data on IEC104 protocol till the gateway of SAS at each substation, NEA shall do necessary work to integrate the SAS data @ the SLDC which is of Siemens. However, we shall extend our support for point to point testing of availability of data on IEC 104 Protocol at the SLDC.	As per bid document, please refer clause 12 of Chapter 1- Project specific requirement of Bid document Volume II. However, being the property of NEA, NEA shall provide its full support and coordination for the integration.



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25			Complete Substation Automation System (SAS) for substations including hardware and software, (including protection relays for main and backup protection, master trip relays, hand reset relays, etc as and when required) and other accessories and metering and indication facilities for the substation & remote control stations along with associated equipment for 132 kV / 66 kV/ 33 kV / 11 kV bays of 39 substations as specified in 1.1.2. and integration of additional newly built 15 substations (the total of 54 substations) to Master Control Centre(MCC) and Load Dispatch Centre at Siuchatar, Kathmandu and Backup Control Centre at Hetauda.	We understand the LDC located at Suichattar is equipped with Siemens Make Power 7 . Please mentioned the make of Backup Control Centre located at Hetauda	Same Make
26			Complete Substation Automation System (SAS) for substations including hardware and software, (including protection relays for main and backup protection, master trip relays, hand reset relays, etc as and when required) and other accessories and metering and indication facilities for the substation & remote control stations along with associated equipment for 132 kV / 66 kV/ 33 kV / 11 kV bays of 39 substations as specified in 1.1.2. and integration of additional newly built 15 substations (the total of 54 substations) to Master Control Centre(MCC) and Load Dispatch Centre at Siuchatar, Kathmandu and Backup Control Centre at Hetauda.	1. In the BOQ Grid Wise Breakup is provided in which total no of Bays to be automated and no of New CRP Supply is provided. 2. In Volume 2 we got the No of CRP to be supplied per substation and the number of bays to be automated in Provided. 3. In the transmission annual report. We could find the SLD and arrive at no of Bays which existing. We found there are many discrepancies in the Qty mentioned in the BOQ and the SLD. Given in the Gridwise Breakup (Annexure-I)	Please quote according to the quantity mentioned in Vol-3, BOQ.
27			The existing communication protocol used for SCADA at LDC Kathmandu is IEC 101/104. For the present scope of work no RTU is envisaged and the Data for SCADA purpose shall be obtained from the Substation Automation System (based on IEC 61850) using Gateway port with communication protocol IEC 101/104 as per requirement being provided under present contract.	From our earlier experience we understand, the LDC has been upgraded at accept data on IEC104 Protocol only. Hence we shall considered gateway to supply data on IEC104 Protocol only. IEC101 protocol is not considered	As per bid document, please refer clause 12 of Chapter 1- Project specific requirement of Bid document Volume II.
28			(ii) Energy Meters from: ELSTER (ABB), ACTARIS (Schlumberger), EDMI, SIEMENS or equivalent.	Please confirm can we supply Secure Make or L&T Make Energy Meters which complies to the Spec Requirement. Please confirm	All the Make shall meet the technical specification.
29			CONTROL, RELAY & PROTECTION PANELS .	The CRP Spec Provided is a general specification covering all 220/132KV Bays. For Retrofitting type of Jobs considering all the protection provided in:	
30			TYPE OF PANELS	We are considering Simplex Panels	As per Bid document.
31			7.0 MIMIC DIAGRAM 11.INDICATING INSTRUMENTS & TRANSDUCERS FOR CONTROL PANEL 11.2. Indicating Instruments 11.2. Transducers 12. ANNUNCIATION SYSTEM for Control Panel 15. POSITION INDICATORS (if Applicable)	We are not considering supply of Conventional Control Equipments as we are providing BCU Based control. The Control application, Alarm and measuring application shall be available in the BCU.	Please refer to clarification s.no. 3



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32			<p>16. SYNCHRONISING EQUIPMENT</p> <p>Alternatively, the trolley shall be of mobile type with four rubber-padded wheels capable of rotating in 360 degree around the vertical axis. Suitable bumpers with rubber padding shall be provided all around the trolley to prevent any accidental damage to any panel in the control room while the trolley is in movement. The trolley shall have two meter long flexible cord fully wired to the instruments and terminated in a plug in order to facilitate connecting the trolley to any of the panels. The receptacle to accept the plug shall be provided on the panel.</p>	<p>Synchronizing function is provided as part of the BCU only. Hence Separate Sync Trolley is not considered in Scope</p>	<p>Your Understanding is Correct.</p>
33			<p>18.1. All relays shall be suitable for series compensated line. The relays shall have selectable mode for Differential and Distance Protection Mode. For the purpose of differential protection, and/or tele-protection scheme in distance protection, relays shall have Direct Fibre Optic Connection ports.</p>	<p>1. For the CRP Supplies mentioned in the BOQ: For supply of all new CRP for 132KV Line we have considered Main one Line Differential Relay along with one backup protection relay For 66KV - One no of Directional Overcurrent Relay for 33KV - One no of Directional Overcurrent Relay</p> <p>2. Need clarification on the existing Lines. For all the existing line of 132KV do we need to consider Line Differential Relay for Retrofitting or Line distance.</p> <p>3. Please confirm the retrofitting requirement of 66KV and 33KV Protection</p>	<p>For all the new panels and retrofitting purpose for 132 kv, the main relays shall have both the differential and distance protection scheme in selectable mode. For 66kv & 33kv, your understanding is correct.</p>
34			<p>18.1. All relays shall be suitable for series compensated line. The relays shall have selectable mode for Differential and Distance Protection Mode. For the purpose of differential protection, and/or tele-protection scheme in distance protection, relays shall have Direct Fibre Optic Connection ports.</p>	<p>Please confirm the Supply Installation of Remote End Line Differential Relay</p>	<p>Bidder shall consider the supply and installation of remote end relays of all the connecting substations/feeders not included in the list of substation mentioned in PSR.</p>
35			<p>18.2 All Line relays shall be separate from BCU. BCPU (Bay Control and Protection Unit) shall not be accepted at any voltage level.</p>	<p>For 132/66 & 33KV We shall consider BCU and BPU Separate item. Please confirm the requirement of 11KV Bays. Do we need to consider BCU and BPU Separately - We propose to considered BCPU as it will consume less space and both protection and control shall be inbuilt of the main relay</p>	<p>As per Bid document. BCPU shall not be accepted at any voltage level.</p>
36			<p>LOCAL BREAKER BACK-UP PROTECTION SCHEME</p>	<p>We are not considering any LBB Protection for the retrofitting substation</p>	<p>As per Bid document</p>
37			<p>BUSBAR Protection</p>	<p>Except for Hetauda, Parwanipur & Lekhnath. We are not considering Supply or Retrofitting of Busbar in other substation covered under upgradation - Please confirm</p>	<p>As per quantity mentioned in Price schedule.</p>
38			<p>CONTROL PANEL</p>	<p>We are providing BCU Based control. Hence Conventional Control Equipments like, Annunciator, Semaphore, Mimic, Indicating Instruments are not considered in Scope.</p>	<p>Please refer to clarification no. 3</p>



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39			Cyber-security: The cyber security features shall improve the overall quality of the system and improve the reliability and the availability of operations by securing the access of each device and providing an audit capability. The solution should be based on IEC62351, IEC62443-3-3, and NERC-CIP Vendors shall be certified for Bronze Level Practice Certification (IEC62443-2-4).	Please provide us the hardware & Software Requirement required for the project. We generally comply with IEC Standards for cyber security	As per IEC standard.
40			AVR Integration with SAS	Manual Raise and lower operation of OLTC taps of transformer shall be facilitated through Bay controller IED via SAS. Automatic Raise and Lower Operation shall be achieved through the existing AVR's Present in existing substation. New AVR Supply or replacing AVR is not considered in scope.	Your Understanding is Correct.
41			Meter Integration with SAS	we shall not disturb any existing non-communicable TOD or Energy meters installed in all KV Levels, we shall provide MFM Meters for getting Metering parameters at SAS. However, we shall supply Energy meter as per the specification for the new CRP which is supplied in the current scope of the tender.	Your Understanding is Correct.
42			SAS Architecture	Integration of Power Meter with SAS is not considered in Scope. As we are not considering supply of any Power meter in Scope	MFM shall be provided and integrated in SAS
43			Remote HMI	As we are integrating the SAS Station with MCC and SLDC. Remote HMI along with Printers, UPS is not considered in Scope. Please confirm	Remote HMI, Printers, UPS, etc for MCC is in present scope.
44			Retrofitting Relay Qty	We Request NEA to provide the List of Relays to be retrofitted in all the 39 Substation	Bidder's scope to visit the sites and confirm the quantity.
45			33&11KV Bays Details are not available	In the SLD Provided in Transmission Annual Report the 33 & 11KV Bays are not available. Request NEA to provide the details	The no. of 33 and 11 kv bays shall be considered as mentioned in BOQ.
46			The CCS will connect to several substations via IEC 101/IEC 104, and as work as a master control center for there substations, so the connected substations can be unattended substations.	Please confirm the breakup of IEC 101 and IEC 104 substations	Gateways with 104/101 ports shall be provided in all the substations.
47			Figure 2.1 CCS system structure schemes	We understand that CCS system structure scheme is shown in the following figure 2.1 is only suggestive not firm as it can be different for difeferent vendor. Kindy confirm our understanding	Confirmed
48			Section 1.9 Annual Training during AMC Period	We understand that Trainees from all Grid office will join this training at single place and asked 5 days Duration is Common for all Grid Office. Kindly confirm our understanding	Confirmed
49			2.6 f) Four year AMC (after the one year Warranty period)	Please note that the asked AMC for VPS is "Four year AMC (after the one year Warranty period)" whereas Chapter 10 Routine Maintenance & Support Clause 1.1 states that "The period of routine maintenance support shall be three years period commencing from Operational Acceptance." Both the above requirements w.r.t AMC is not uniform. Kindly clarify	As per Bid Document.



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50	CHAPTER 1-Project Specification Requirement	Page No. 11 of 395 Clause No. '3.1.1.a	The Grid Substation Automation Project Phase 2 includes total of 54 numbers of grid substation under six different grid offices as indicated in 1.1.2. Out of these 54 numbers of substations, 39 number of substations require implementation of complete SAS system as specified and 15 number of additional grid substation that already has Automation System and requires only integration with LDC/Master Control Centre under this project scope.	<p>We understand that existing LDC is of other OEM. Including integration in current package will give undue advantage to the OEM who has installed base at LDC as every other OEM will be dependent on it for the cost of SAS integration in LDC.</p> <p>We request client to exclude the LDC integration from the scope to ensure competitive bidding. Client can ask the respective OEM for LDC integration of 54 stations which is a general practice across other utilities also.</p> <p>We have many end users globally who is taking care of Integration Scope separately with existing OEM. We have enclosed public tender document for one of the utility for your ready reference .</p> <p>1. CEB (Ceylon Electricity Board) Srilanka</p> <p>We also wish to highlight that most of the substations covered in present scope are existing substations and are already integrated with LDC Scada or will be integrated by EPC contractor who is executing the respective substation.</p>	As per bid document, please refer clause 12 of Chapter 1- Project specific requirement of Bid document Volume II. However, being the property of NEA, NEA shall provide its full support and coordination for the integration.
51	CHAPTER 1-Project Specification Requirement	Page No. 12 of 395 Clause No. '3.1.1.f	In respect to 3.1.1 b, for tele-protection purpose in distance/differential relays, the bidder shall include the cost of replacing the corresponding distance / differential relays in the remote ends substation / feeders that are not listed in the section 1.1.2. For this purpose, it is advised to bidder to visit the substation on their own to get the in-depth sight overview.	We request the client to quantify the location wise CRP with no. of relays in each such CRP, along with the space availability (dimensions) at remote end panels to retrofit the new relay.	Please refer to single line diagram for remote end substation(feeder) that are not included in this project list.
52	CHAPTER 1-Project Specification Requirement	Page no. 13 of 395 Clause No. '3.1.1.k	Integrating hardware/transducers for integrating the existing RTCC panel for transformer tap monitoring and controlling through SCADA	<p>Kindly clarify if the RTCC panel has communicable device (AVR etc.) for remote tap changing and monitoring and this is placed in same room as that of other CRP (present + future). If yes, please specify the protocol and interface port.</p> <p>Else, please quantify the transducers to be considered for tap monitoring and digital signals for controlling.</p>	As per Bid document, "For this purpose, it is advised to bidder to visit the substation on their own to get the in-depth sight overview. "
53	CHAPTER 1-Project Specification Requirement	Page No. 13 of 395 Clause No. '3.1.1.r	Installation of Fault Locator (preferably Travelling Wave Fault Locator) as per quantity specified in BOQ. The fault locator set shall consist of one receptor at local end and receptors at all remote end stations connected directly and a fault analyzer with associated software and user license.	As per Chapter-6, General technical requirement, control and relay panel clause 18.6, we understand that fault locator can be offered as inbuilt functionality of line protection relays therefore dedicated / standalone fault locator (as mentioned in BPS) is not required.	As per Chapter-6, General technical requirement, control and relay panel clause 18.6 and dedicated / standalone fault locator (as mentioned in BPS) are separate items.
54	CHAPTER 1-Project Specification Requirement	Page No. 21 of 395 Clause No. '12.0.k	The contractor shall also supply necessary BCU for monitoring and control of auxiliary supply including operation of Isolators associated with Auxiliary transformer.	We understand that RTU can be offered for auxiliary signals. This will have an added advantage of expansion in I/Os for future requirement.	BCU shall be supplied for monitoring and control of auxiliary equipments as mentioned in BPS



55	CHAPTER 1-Project Specification Requirement, Annexure-III	Page No. 25 of 295 Claus No.1.2	Data acquisition principles for existing Substation The existing substations are provided with RTU for interfacing of the following supervisory controls and data acquisitions:	We understand that existing stations (15x) are having RTU as gateway for communication to LDC. We also understand that requisite signals are available on IEC-101/104 upto the tele-communication equipment at these stations and only the signal integration in MCC is in scope of bidder. Any modification / augmentation in existing stations / RTUs / SAS or any testing at substation end shall be in NEA scope. Kindly confirm.	Your Understanding is Correct.
56	CHAPTER 1-Project Specification Requirement, Annexure-V	Page No. 35 to 42 of 395 Substation wise BOQ		From the BOQ, it seems that these stations have existing CRP which are to be integrated in new SAS and further to MCC / LDC. E.g. Duhabi S/S has a requirement of new CRP (5 bays of 132 kV) whereas the SAS integration is calling for 7 bays therefore it means 2x bays are existing. We need the details of existing CRP like make, model, protocol supported, interface port type, requirement of ethernet switch for existing bays, location of panel within the same control room as new panels. This clarification is required for all substations where these existing bays are present.	As per bid document, the bidder shall visit the substation on their own to get the in-depth sight overview.
57	CHAPTER 1-Project Specification Requirement, Annexure-V	Page No. 35 to 42 of 395 Substation wise BOQ		We require you to provide the panel details for matching the new panels with existing ones. Panel details include, the dimension, colour shade, base frame details, construction type of panels (simplex, duplex, swing frame, fixed front etc.). This clarification is required for all substations where these existing bays are present.	Please refer to Clarification no. 56
58	CHAPTER 1-Project Specification Requirement, Annexure-V	Page No. 35 to 42 of 395 Substation wise BOQ	Line differential and Line distance	As per Annexure-V, line distance and line differential functions are asked in one relay however the bid price schedule mentions line differential or line distance. If line distance or line differential relays are required separately as per station requirement, then kindly quantify the stations on the basis of line distance / line differential protection.	As per BPS, both the Line differential and Line distance shall be in one unit with selectable mode feature.
59	CHAPTER 1-Project Specification Requirement, Annexure-V	Page No. 35 to 42 of 395 Substation wise BOQ	5. Butwal Grid, Line item C, Digital protection Coupler	As per the BOQ of Butwal station, there are 3x line bays requested however the Digital protection Coupler is asked 2 nos. only. Kindly clarify the exact requirement for Digital protection Coupler.	The bidder shall supply as per the BPS quantity
60	CHAPTER 1-Project Specification Requirement, EGMP EMP	--		We understand that NEA has taken all clearances and approvals for the activities as mentioned in tender. Furthermore, NEA shall liaison with local authorities for approval and expedition of necessary permissions.	Confirmed
61	Chapter 2 – General Technical Requirement	Page No. 135 of 395 Clause No. 18.2	CONTROL CABINETS, JUNCTION BOXES, TERMINAL BOXES & MARSHALLING BOXES FOR OUTDOOR EQUIPMENT	We understand that this is not in scope of this tender. Kindly confirm.	Confirmed
62	Chapter 10 – ANNUAL MAINTENANCE AND SUPPORT SERVICES	--	Routine Maintenance & Support services	We understand that Routine Maintenance & Support services as specified in Chapter-10 are applicable for MCC level devices and not for CRP, SAS etc. (other substation level devices).	As per Bid Document, it is related to each SAS substations and MCC.



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63	Chapter 10 – ANNUAL MAINTENANCE AND SUPPORT SERVICES	Page No. 318 of 395 Clause No. 1.2	The Contractor shall maintain detailed routine maintenance register software for recording all the routine checkup and maintenance done for each individual system components on monthly basis, and when required in emergency cases, and get it verified by the station in-charge of the employer. All the payments shall correspond to the records of maintenance register submitted at the designated owner's office in three copies.	We understand that routine maintenance register is to be maintained and not any software based register	As per Bid Document, routine maintenance register software needs to be provided.
64	Chapter 10 – ANNUAL MAINTENANCE AND SUPPORT SERVICES	Page No. 318 of 395 Clause No. 1.2	The Contractor shall maintain detailed routine maintenance register software for recording all the routine checkup and maintenance done for each individual system components on monthly basis, and when required in emergency cases, and get it verified by the station in-charge of the employer. All the payments shall correspond to the records of maintenance register submitted at the designated owner's office in three copies.	We understand that routine checkup and maintenance visits shall be done once in a quarter however register shall be maintained accordingly.	Physical maintenance shall be done as per Chapter -10, 1.2.4
65	Chapter 10 – ANNUAL MAINTENANCE AND SUPPORT SERVICES	Page No. 319 of 395 Clause No. 1.2.1	The contractor shall establish a Central Service Center in close co-ordination with the project office with all necessary office equipment. At least one Software Engineer and One Hardware Engineer having expertise in SCADA/EMS systems shall be deployed at the Central Service Centre. Additional support staffs may be deployed by the	At least one Software Engineer and One Hardware Engineer having expertise in SCADA/EMS systems shall remain available to remotely resolve the issues (severity 1, 2, 3 and 4)	As per bid document, "The contractor shall establish a Central Service Center in close co-ordination with the project office with all necessary office equipment."
66	Chapter 10 – ANNUAL MAINTENANCE AND SUPPORT SERVICES	Page No. 321 of 395 Clause No. 1.2.2.3	The contractor shall carry out Security Audit from CERT-In Certified auditors at its own cost for the complete systems under this project and implement the recommendation given by auditor in consultation with the owner.	We understand that security audit shall be performed on various cyber security devices installed at Control Centres such as firewalls, Intrusion prevention system (both network based and host based), routers etc.	Your Understanding is Correct.
67	Chapter 10 – ANNUAL MAINTENANCE AND SUPPORT SERVICES	Page No. 321 of 395 Clause No 1.2.3	The contractor shall also be responsible for providing updates/patches for the software products supplied under the project.	We understand that patch management shall be required for MCC SCADA software.	patch management shall be required for MCC/substations SCADA software and all other custom software of this project.
68	Chapter 10 – ANNUAL MAINTENANCE AND SUPPORT SERVICES	Page No. 325 of 395 Clause No. 1.7	Availability and Payment charges Calculation	We understand that availability and payment calculation is valid for MCC only and not for SAS, CRP etc.	Please refer to clarification no. 84
69	Chapter 10 – ANNUAL MAINTENANCE AND SUPPORT SERVICES	Page No. 326 of 295 Clause no. 1.9	Annual Training during AMC Period	We understand that annual training is valid for MCC only and not for SAS, CRP etc.	Annual Training is related to MCC, SAS, CRP, etc as a whole.
70	General	--	--	We understand that all panels like CRP, SAS, RTCC etc. shall be placed in same room. There is no separate kiosk or switchgear room requirement.	Your Understanding is Correct. Separate kiosk or switchgear room is not required.
71	General	--	--	Please share with us the SLD of all stations (new + existing).	Refer to bid document, Annex -1 of Vol-2, Chapter-1
72	Chapter 6 – General Technical requirement - control and relay panel	Page No. 184 to 188 clause No. 11,12, 14	INDICATING INSTRUMENTS & TRANSDUCERS FOR CONTROL PANEL, ANNUNCIATION SYSTEM for Control Panel, INDICATING LAMPS	Since the Control and relay are with automation i.e. BCU based hence these components are not envisaged.	Please refer to clarification s.no .3
73	Chapter 6 – General Technical requirement - control and relay panel	Page No. 191 of 395 Clause No. 18.1	The relays shall have selectable mode for Differential and Distance Protection Mode. For the purpose of differential protection, and/or tele-protection scheme in distance protection, relays shall have Direct Fibre Optic Connection ports.	Line protection relay shall have selectable mode for differential and distance. Hence, we understand that bidder to offer the lay which has both differential and distance protection functions which can be activated at site as per the site requirement.	Your understanding is correct.



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74	Chapter 6 – General Technical requirement - control and relay panel	Page No. 191 of 395 Clause No. 18.2	All Line relays shall be separate from BCU. BCPU (Bay Control and Protection Unit) shall not be accepted at any voltage level.	In connection with CI 33 Configuration of relay and protection panel (Pg-6-34), we propose to offer BCPU (backup O/C+E/F part of BCU) for 33 kV feeders (Line, Trafo., Bus Coupler) with dedicated CT/VT connections for measurement (metering core) and protection (protection core) separately. Same is depicted in system architecture in document Chapter 7 – General Technical requirement - substation automation system CI 2.2 (pg-7-7). Request you to accept our proposal.	BCPU (Bay Control and Protection Unit) shall not be accepted at any voltage level.
75	Chapter 6 – General Technical requirement - control and relay panel	Page No. 191 of 395 Clause No. 18.2	All Line relays shall be separate from BCU. BCPU (Bay Control and Protection Unit) shall not be accepted at any voltage level.	In connection with CI 33 Configuration of relay and protection panel (Pg-6-34), we propose to offer BCPU (backup O/C+E/F part of BCU) for 132kV feeders (Line, Trafo., Bus Coupler) with dedicated CT/VT connections for measurement (metering core) and protection (protection core) separately. Request you to accept our proposal.	BCPU (Bay Control and Protection Unit) shall not be accepted at any voltage level.
76	Chapter 6 – General Technical requirement - control and relay panel	PageNo. 196 of 395 Clause No. 21	Transformer protection	We understand that the protection to be grouped in Group-I and Group-II as per the philosophy mentioned in this clause. Kindly confirm.	Confirmed
77	Chapter 6 – General Technical requirement - control and relay panel	Page No. 206 of 395 Clause No. 31.1	Relay test Kit One relay test kit shall comprise of the following equipment as detailed here under - 3 sets Relay tools kits - 2 nos. Test plugs for TTB - 2 nos. Test plugs for using with modular type relays (if applicable)	Relay test Kit One set of relay test kit for each Grid (total 6x Grids) shall comprise of the following equipment as detailed here under - 1 sets Relay tools kits - 2 nos. Test plugs for TTB - 2 nos. Test plugs for using with modular type relays (if applicable) Please confirm your acceptance on above	As per Bid document.
78	Chapter 6 – General Technical requirement - control and relay panel	Page No. 207 of 395 Clause No. 33	Configuration of relay and protection panel (Pg-6-34) S.No. 8 - Under voltage protection relays -2 nos.	We understand that same can be included in BCU / Main protection relays.	Your understanding is correct.
79	Chapter 6 – General Technical requirement - control and relay panel	Page No. 207 of 395 Clause No. 33	Configuration of relay and protection panel (Pg-6-33) a.2 - LBB function as part of BCU is acceptable	We understand that LBB (breaker failure) can be offered as part of respective BCU of all the bays (Line, Trafo., Bus Coupler etc.) at all voltage levels. Separate protection CT core input for LBB is to be offered by all bidders in BCU.	Your understanding is correct.
80	Chapter 6 – General Technical Requirement, Control & RelayPanels	Page No. 191 of 395 Clause No. 17.13. b)	The relay shall have suitable communication facility for future connectivity to SCADA. The relay shall be capable of supporting IEC 61850 protocol.	The relay shall have suitable communication facility for connectivity to SCADA. The relay shall be IEC61850 ed.2 compliant. However, the same hardware shall also support ed.1	Your understanding is correct.
81	Chapter 6 – General Technical Requirement, Control & RelayPanels		additional clause	d) All hardware modules used in BCU and BPU shall be conformal coated.	As per Bid document.
82	Chapter 6 – General Technical Requirement, Control & RelayPanels		additional clause	h) IEDs should have Service tracking LTRK as per IEC 61850	As per Bid document.
83	Chapter 6 – General Technical Requirement, Control & RelayPanels		additional clause	i) IEDs should have Security event logs GSAL as per IEC 61850	As per Bid document.
84	Chapter 7 – General Technical requirement - substation automation system	Page No. 220 and 252 of 395 Clause no. 1.2 & 14	Remote HMI	We understand that remote HMI requirement is not applicable for present scope as all the SAS are getting connected to new MCCs as well as LDC for operational requirement.	Your understanding is correct.



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85	Chapter 7 – General Technical requirement - substation automation system	Page No. 222 and 223 of 395 Clause No. 2.2	Remotely it may be accessed from an Internet browser. (Pg-7-6)	As per general practice of power utilities, stations are not exposed to web and there is not remote connectivity from internet browser. We request you to kindly relook into your operational and functional requirement to enable secured environment at station level.	As per Bid document.
86	Chapter 7 – General Technical requirement - substation automation system	Page No. 222 and 223 of 395 Clause No. 2.2	Optional data concentrators, even redundant, providing the interface between legacy field bus communicating IED's and the IEC61850 substation bus. The protocols are serial or TCP/IP versions for IEC 60870-5, DNP3.0 and Modbus. (Pg-7-6)	Please specify the no. of devices with legacy protocol along with their interface ports at each substation	Bidder's scope to visit the sites and confirm the quantity.
87	Chapter 7 – General Technical requirement - substation automation system	Page No. 222 and 223 of 395 Clause No. 2.2	Gateway-2 shown as optional (Pg-7-7)	As per Cl 1.2 in same document, it refers gateway-1 (for MCC only) and gateway-2 (for LDC only) in main scope. Please confirm the no. of gateways to be offered at each station.	min 2 gateways with no. of ports in each gateways as mentioned in PSR, Chapter-1.
88	Chapter 7 – General Technical requirement - substation automation system	Page No. 222 and 223 of 395 Clause No. 2.2	Power Meters (Pg-7-7)	We understand that these power meters are free issued by NEA to successful bidder and these meters are communicable over IEC 61850.	Refer to clarification no. 42
89	Chapter 7 – General Technical requirement - substation automation system	Page No. 222 and 223 of 395 Clause No. 2.2	Each IED shall have its own integrated Ethernet switch. (Pg-7-7)	As per the architecture, IEDs are connected to ethernet switch with star topology and further switches in ring network (with RSTP) for station level device communication hence integrated switch in IEDs are not required and not accepted in practice by other major utilities.	Shall be confirmed during Detailed Engineering.
90	Chapter 7 – General Technical requirement - substation automation system	Page No. 238 and 239 of 395 Clause No.4.1.5	One switch shall be provided to connect all IEDs for two bays of 220kV yard to communication infrastructure.	We propose the following - One switch shall be provided to connect all IEDs for three bays of 132kV yard to communication infrastructure. One switch shall be provided to connect all IEDs for five bays of 66kV and 33 kV yard to communication infrastructure.	Is dependent upon Bidders' design and shall be confirmed during Detailed Engineering.
91	Chapter 7 – General Technical Requirement, Substation Automation System	3.2.4.1.	Substation HMI Operation:	Substation HMI Operation: There shall be lockout and tagout feature for safe operation.	Confirmed
92	Chapter 7 – General Technical Requirement, Substation Automation System	4.1.5	Switched Ethernet Communication Infrastructure: The bidder shall provide the redundant switched optical Ethernet communication infrastructure for SAS. One switch shall be provided to connect all IEDs for two bays of 220kV yard to communication infrastructure. Each switch shall have at least two spare ports for connecting bay level IEDs and one spare port for connecting station bus.	Switched Ethernet Communication Infrastructure: The bidder shall provide the redundant switched optical Ethernet communication infrastructure for SAS. One switch shall be provided to connect all IEDs for two bays of 220kV, three bays of 132kV and five bays of 66 and 33kV to communication infrastructure. Each switch shall have at least two spare ports for connecting bay level IEDs and one spare port for connecting station bus.	Is dependent upon Bidders' design and shall be confirmed during Detailed Engineering.
93	Chapter 7 – General Technical Requirement, Substation Automation System	4.2	Bay level unit	Bay level unit BCU shall be IEC61850 ed.2 compliant. However, the same hardware shall also support ed.1	Confirmed
94	Chapter 7 – General Technical Requirement, Substation Automation System	5.1.1.1	Human-machine interface (HMI)	Human-machine interface (HMI) Server/Gateway as IEC61850 client shall support both Edition 1 and Edition 2. Engineering changes in Server/Gateway performed on Hot system should automatically reflects in Standby system.	Confirmed



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95	Chapter 7 – General Technical Requirement, Substation Automation System	4.2.1	<p>Technical Parameters of BCU -</p> <ul style="list-style-type: none"> - Dual on - Board with dual I.P. addresses on IEC-61850 - IED connected by a serial link - Software Digital Input coming from configurable relays & other devices - measurements received through the communication network with 16-bit resolution. - 4 X 10/100 Base T (RJ-45) ports+2X10/100 Base Switches Fx (optical) ports for redundant Ethernet network. - 1 X RS232 and 3 X RS485 can support IEC 103 Modbus, should be s/w configurable. - Rack fitting with modular design. 	<p>As per the architecture diagram (pg-7-7) and subsequent clauses (Cl 2.2), Meters, BCU and IEDs are connected in star topology with single port to IEC 61850 LAN. Hence these requirements are not valid for BCU.</p> <p>Furthermore, all these technical parameters of BCU are favouring one particular OEM and hence creating a barrier to other bidders for competitive bidding.</p>	As per Bid Document
96	Chapter 7 – General Technical Requirement, Substation Automation System	11.1	<p>During guarantee period as specified in tender document, contractor shall arrange bi-monthly visit of their representative to site to review the performance of system and in case any defect/shortcoming etc. is observed during the period, the same shall be set right by the contractor within 15 days.</p>	<p>We understand that this guarantee period is same as mentioned in Cl 12.1 of this document i.e. 1000 hours. Kindly confirm.</p>	Guarantee period referred to is: Defect Liability Period which is 2 years for SAS and protection equipment.
97	Chapter 7 – General Technical Requirement, Substation Automation System	--	<p>Typical Architecture (Pg-7-41)</p>	<p>This architecture is repetitive hence we understand that the architecture diagram given under Cl 2.2. (pg 7-7) shall supercede this architecture (Pg 7-41)</p>	Either could be taken as a reference.
98	Chapter 9 - Technical Specification for SCADA Central Control System	Page 1-6, Clause 3.1.1	<p>Construction of Master Control Center (MCC) at six different location(one each under six grid office) for monitoring and controlling of all respective 132 kV /66 kV /33 kV /11 kV bays of 54(fifty four) existing substations under six Grid Division of NEA and provision of integrating approximately additional 10 (ten) under-construction substations that shall come in operation within next 5 years. The final location of MCC shall be finalized during detail design stage.</p>	<p>1) We understand that there will be 6 master control centers with independent SCADA systems. 2) All control center will be similar in terms of the BoQ</p> <p>Please confirm</p>	Confirmed
99	Chapter 9 - Technical Specification for SCADA Central Control System	Page 1-6, Clause 3.1.1	<p>Construction of Master Control Center (MCC) at six different location(one each under six grid office) for monitoring and controlling of all respective 132 kV /66 kV /33 kV /11 kV bays of 54(fifty four) existing substations under six Grid Division of NEA and provision of integrating approximately additional 10 (ten) under-construction substations that shall come in operation within next 5 years. The final location of MCC shall be finalized during detail design stage.</p>	<p>We understand that the RTUs/SAS systems will communicate with the respective control centers only and the operations of these stations will be from their respective MCC only. There is no inter-operation of the substations between the different MCCs. There is no change-over b/w the control centers. Only required data shall be exchanged for monitoring purpose without changeover of operations.</p> <p>Please confirm</p>	Confirmed
100	Chapter 9 - Technical Specification for SCADA Central Control System		<p>There is no control center BoQ included in the tender.</p>	<p>There is only an architecture diagram in Page 9-6, Fig 2.3. Please clarify if the architecture diagram is indicative (or) has to be considered as is for the control center BoQ. There is no MCC control center BoQ as part of the specification.</p> <p>Please clarify</p>	Control centre and MCC (Master Control centre are used interchangeably wherever. The architectural diagram is indicative for the basic(minimum) hardware requirements to meet the scope of project.
101	Chapter 9 - Technical Specification for SCADA Central Control System		<p>Hardware specifications for MCC control center equipment</p>	<p>There is no hardware specifications included in the specification for the various MCC CCS SCADA equipment.</p> <p>Please clarify.</p>	Is dependent upon Bidders' design to meet the objective and scope of project and shall be confirmed during Detailed Engineering.



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102	Chapter 9 - Technical Specification for SCADA Central Control System	1) Page 9-6/Table 2.1 2) Page 9-8/CI 1.2.3	1) Table 2.1 RTU and other control center Connections 2) The front-end (abbreviated FE) module of SCADA CCS supports main remote control protocols. They are listed as following:	The SAS/RTUs will communicate with the control center SCADA on IEC101/IEC104 protocol. Other protocols are for sub-device communication to RTUs/SAS within the substation. Hence, except for IEC101/IEC104 protocols other protocols are not applicable for control center.	Confirmed
103	Chapter 9 - Technical Specification for SCADA Central Control System	1) Page 9-6/Table 2.1 2) Page 9-8/CI 1.2.3	1) Table 2.1 RTU and other control center Connections 2) The front-end (abbreviated FE) module of SCADA CCS supports main remote control protocols. They are listed as following:	Please clarify the no. of stations that will communicate on 1) IEC 101 2) IEC 104	All. Provision shall be provided in all the substations.
104	Chapter 9 - Technical Specification for SCADA Central Control System	Page 9-6/Fig. 2.3	Structure of SCADA CCS	Please clarify if the architecture diagram is indicative (or) has to be considered as is for the control center BoQ. There is no MCC control center BoQ as part of the specification.	Refer to clarification-02, attachment 'a'
105	Chapter 9 - Technical Specification for SCADA Central Control System	Page 9-7	4) Compatible with many communication protocols, such as IEC60870 and IEC61850, to facilitate the update of communication from data communication to the higher level model communication;	Communication b/w RTUs/SAS and CCS will be on IEC104/IEC101. IEC61850 is substation level protocol for sub-device communication and hence not applicable.	Confirmed
106	Chapter 9 - Technical Specification for SCADA Central Control System	Page 9-7	5) Integrative Diagram Model Library technology based on CIM for the establishment of primary models and secondary models;	As the CCS MCC scope is only for SCADA, there is no network model library and hence this is not applicable.	Is dependent upon Bidders' design and shall be confirmed during Detailed Engineering.
107	Chapter 12 - SCADA Video Projection System	Page 1of 5/Clause 1.3	Make of VPS system and MCC layout	Please specify the makes of VPS system. Further, please share MCC control room layout if it is existing control room.	As per Bid Document, all make that meets the technical specification. All MCC Control room are new control centre in the scope of Bidder.
108	Chapter 12 - SCADA Video Projection System	Page 1of 5/Clause 1.3	Scope of Work Integration of Video Projection System with existing system	Please clarify the scope of existing system? What is the interface type required for the existing system and please share the existing system configuration, Operating system and port configuration.	VPS shall be integrated with the hardware inside MCC.
109	Chapter 12 - SCADA Video Projection System	Page 1of 5/Clause 1.3	Scope of Work Installation of one frequency meter along with VPS	Please clarify the supply scope of frequency meter, further port/interface available in frequency meter if existing.	Is in scope of bidder. Refere chapter 12, vol-2
110	Chapter 12 - SCADA Video Projection System	Page 1of 5/Clause 1.3	The bidder is requested to survey the site for VPS installation including furniture reorientation/replacement and submit the details along with the offer.	Furniture scope regarding reorientation of existing furniture or replacement or new furnitures shall be in the scope of M/s NEA. We need detailed specifications for furniture's and control room layout if it is in scope of contractor.	Suitable to support all bidders's supplied hardwares.
111	Chapter 1 - Project Specification Requirement	Annexure-IV / Technical Specification for Visual Monitoring System	Visual monitoring system (VMS) for effective watch and ward of sub station premises covering the areas of entire switchyard, Control Room cum Administrative building, Fire fighting pump house, stores and main gate, shall be provided. The contractor shall design, supply, erect, test and commission the complete system including cameras, Digital video recorder system, mounting arrangement for cameras, cables, LAN Switches, UPS and any other items/accessories required to complete the system. To provide all the necessary licenses to run the system successfully shall be in the scope of contractor	Please clarify if VMS system is existing in the SAS station. Do the contractor need to supply and install VMS at SAS station and MCC's under this contract. Please specify the make of Camera.	Please refer Vol-3, BPS (Vendor accessed quantities). It is a separate Line item in BOQ.
112	Chapter 1 - Project Specification Requirement	Annexure-IV / Technical Specification for Visual Monitoring System	The cameras can be mounted on structures, buildings or any other suitable mounting arrangement to be provided by the contractor.	All required structures, buildings or any other suitable arrangement for fixing the cameras shall be NEA scope. It will be difficult for a contractor to freeze this at bidding stage.	Please refer Vol-3, BPS (Vendor accessed quantities). It is a separate Line item in BOQ.



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113	Chapter 1 - Project Specification Requirement	Annexure-IV / Technical Specification for Visual Monitoring System	The number of cameras and their locations shall be decided in such a way that any location covered in the area can be scanned. The cameras shall be located in such a way to monitor at least: 1. The operation of each and every isolator pole of the complete yard in case of AIS Sub-station. 2. The Operation of each bay/ bays of GIS Hall as Applicable. 3. All the Transformer and Reactors All the Entrance doors of Control Room Building and Fire-fighting Pump House, GIS Hall and Switchyard Panel room as applicable. 4. All the gates of switchyard. 5. Main entrance Gate 6. All other Major AIS Equipment (such as CB, CT, CVT, SA etc. as applicable)	In the tender areas are defined, however no. of camera's are not specified clearly. Please share the quantity of cameras for each substation location to avoid any conflict during execution. Please specify how many camera's shall be placed in outdoor locations. Further, it is requested to provide the layout of each location to undertand the communication layout.	Please refer Vol-3, BPS (Vendor accessed quantities). It is a separate Line item in BOQ. Please refer to Annex IV for scope of work in VMS.
114	Chapter 1 - Project Specification Requirement	Annexure-IV / Technical Specification for Visual Monitoring System	The surveillance VMS System shall operate on 230 V, 50 Hz single-phase power supply. System shall have back up UPS power supply meeting the power supply need of all the cameras in the stations including those which are installed at gate for a period of 2 hours. The bidder shall submit the sizing calculation for the UPS considering the total load requirement of Video Monitoring System.	We understand UPS power supply and power supply source/point at each locations shall be provided by M/s NEA including supply and laying of required power cable and communication cables.	Refer Clarification 02-Attachement a.
115	Chapter 1 - Project Specification Requirement	Annexure-IV / Technical Specification for Visual Monitoring System	System to have facility of 100% additional camera installation beyond the originally planned capacity.	We understand it is expansion capability of the system supplied. Please clarify.	As per Bid Document.
116	VOLUME – II OF III	Chapter 1 – Project Specification Requirement 2.0 INTENT OF SPECIFICATION 2.1	The specification includes design, engineering, manufacture, fabrication, testing at manufacturer's works, delivery, unloading at site, storage, erection, testing and commissioning at site of the Substation Automation System (SAS) in the existing Grid Substations across nepal. Scope includes complete automation of 132 kV bays, 66 kV, 33 kV and 11 kV bays of 39 substations under six Grid Division offices, NEA including the construction of six Master Control Centers (MCCs) at various six grid locations indicated above.	Kindly provide the addresses and location of installation of the 6 nos. Master Control Centre.	Refer to Vol-2, PSR-3.1.1(f)
117	VOLUME – II OF III	Chapter 1 – Project Specification Requirement 2.0 INTENT OF SPECIFICATION 2.1	Backup Data Centre at Heatuda	Please confirm scope of work for the Backup Data centre at Hetauda. Also Provide the Details of OEM who has supplied the same	Integration of all 132/66/33/11 kV Bays of all substations under present scope with the SCADA of SIEMENS (SINAUT Spectrum) at Backup Load Dispatch Centre, Hetauda.
118	VOLUME – II OF III	Chapter 1 – Project Specification Requirement 2.0 INTENT OF SPECIFICATION 2.1	Scope includes complete automation of 132 kV bays, 66 kV, 33 kV and 11 kV bays of 39 substations under six Grid Division offices, NEA including the construction of six Master Control Centers (MCCs) at various six grid locations indicated above.	We request customer to please provide details about voltage levels and number of substations at each voltage level.	Refer to Vol-2, PSR, Annex V
119	VOLUME – II OF III	Chapter 1 – Project Specification Requirement 3.0 SCOPE 3.1.1 Works associated with 132/66/33/11 kV Substations under the scope of the Project b.	Complete Substation Automation System (SAS) for substations including hardware and software, (including protection relays for main and backup protection, master trip relays, hand reset relays, etc as and when required) and other accessories and metering and indication facilities for the substation & remote control stations	We understand that the number of Panels that need to be replaced are as per BPS. Any change in existing relays/panels in the existing Panels are not to be done. All relays presently installed in a system are communicating on IEC-61850 and having FO/RJ45 Ports available. Please confirm	Number of Panels that need to be replaced are as per BPS. For all the other retrofitting works, please refer to Vol-3, price schedule-1: Line item no. 4 for each grid division office. The existing system may not have any relays communicating on IEC-61850 and having FO/RJ45 Ports available. All retrofitting will required relays are in scoepe of Bidder



120	VOLUME – II OF III	Chapter 1 – Project Specification Requirement 3.0 SCOPE 3.1.1 Works associated with 132/66/33/11 kV Substations under the scope of the Project c.	Dismantling of the replaced isolators and storing the dismantled material / equipment in the substation stores or any other places as specified by the employer shall be in the scope of the contractor. Cost of dismantling and storing is deemed to be included in the installation and other services in BPS.	Please confirm the maximum distance of the store from the location where isolator will be dismantled	Within the premise of the substation.
121	VOLUME – II OF III	Chapter 1 – Project Specification Requirement 3.0 SCOPE 3.1.1 Works associated with 132/66/33/11 kV Substations under the scope of the Project e,	for tele-protection purpose in distance/differential relays, the bidder shall include the cost of replacing the corresponding distance/differential relays in the remote ends substation/feeders that are not listed in the section 1.1.2.	a.It is understood that the customer will arrange to provide necessary shutdown for replacing the corresponding distance/differential relays in the remote end substation/feeders. It is also understood that required physical space is available in the panels of remote end substation/ feeders to install new relay as replacement of old one. No panel or any other item to be supplied by contractor. Please confirm. b.Please provide the list of names of remote end substations.	a. Confirmed. b.Bidder's scope to visit the sites and confirm.
122	VOLUME – II OF III	Chapter 1 – Project Specification Requirement 3.0 SCOPE 3.1.1 Works associated with 132/66/33/11 kV Substations under the scope of the Project f.	provision of integrating approximately additional 10 (ten) under- construction substations that shall come in operation within next 5 years.	We understand that 5 years has been considered from Invitation of Bids date, i.e. 31st March 2022. We also understand that the integration of under-construction substations will be done in maximum 10(ten) numbers substations . It is also understood that the under-construction substations will be compatible with our system for integration , our scope will be to do the integration in software only and no extra hardware will be supplied by us for these integration activities. Please confirm.	For Date: Please refer to BPS-4(d) Scope: Confirmed.
123	VOLUME – II OF III	Chapter 1 – Project Specification Requirement 3.0 SCOPE 3.1.1 Works associated with 132/66/33/11 kV Substations under the scope of the Project i.	132 kV/ 66 kV/ 33 kV/ 11kV XLPE cable along with termination kit and other accessories for temporary supply arrangement as required while replacing isolators or indoor switchgears.	We understand that the contractor can make other arrangement also apart from XLPE cable for temporary supply, if required. The materials/equipments including cable (if any) used for temporary supply will be the property of the contractor and will be taken back by contractor. Please confirm.	Confirmed
124	VOLUME – II OF III	Chapter 1 – Project Specification Requirement 3.0 SCOPE 3.1.1 Works associated with 132/66/33/11 kV Substations under the scope of the Project g,	It is envisaged that required hardware for integration (SDH equipment and Fibre cable connecting the substations) for all 54 substations are already existing and in operation state. If not, that shall be in scope of employer. The bidder shall provide all the other hardware and accessories (until the terminal gateways) as per the architecture for integration purpose, covered under substation automation topic in price schedule.	Please confirm the communication system is a part of employer from the Gateway till MCC/LDC/Backup Data centre.	Gateways are in the scope of Bidder. SDH equipment and Fibre cable connecting the substations shall be in scope of Employer.
126	VOLUME – II OF III	Chapter 1 – Project Specification Requirement 3.0 SCOPE : 3.1: BASIC REQUIREMENT OF MASTER CONTROL CENTER	3. The control center building shall be built over existing RCC structure building at respective Substation location. The construction shall be PES (Pre-engineered structure or RCC).The bid price shall include all required floorings, false ceilings, partitions for server rooms, control room, battery room, enough air- conditioner in each rooms, electronic door locks for entrance to control and server rooms, toilet, bathrooms, meeting table and minimum furniture, etc	We propose HDPE PUFF material which will be used for pre fabricated structure and with out any sanitation facility , we request customer to clarify.	As per Bid Document. For Layout reference please see refer to Clarification 02-Attachement b. Please refer, Vol-2, Chapter-11, Clause 6 for PES.



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127	VOLUME – II OF III	Chapter 1 – Project Specification Requirement 3.0 SCOPE 3.2	The Contractor shall also be responsible for the overall co-ordination with internal/external agencies; Supplier of Owner's supplied equipment	We request customer to clarify responsibility for the permissions from Nepal local Govt. authorities, if required.	NEA shall coordinate for any permissions, if required.
128	VOLUME – II OF III	Chapter 1 – Project Specification Requirement 12.0 SPECIFIC REQUIREMENT L	The contractor shall quote for the integration of upcoming new substations within 5 years as specified in bid price schedule.	We request customer to please let us know expected per year addition of substations count for next 5 years.	As per Bid, it is expected to commission 10 nos. of substations within 5 years. Per Year addition cannot be confirmed at this time.
129	VOLUME – II OF III	EGMP EMP Detailed design and pre- construction preparations Environment safeguards staffing – see also site specific measures for additional staffing requirements	Contractor: • Contractor to employ as part of the team delivering each package/lot at least one suitably qualified and experienced, dedicated, environment officer and at least one suitably qualified and experienced, dedicated, health and safety officer responsible to be based on-site and monitor and supervise safeguards implementation on a day to day basis for the duration of the works	1) We request customer to clarify whether EHS safeguards requirement at each location or common EHS safeguard for the complete project. 2) We request customer to clarify that environment officer and health and safety officer can be a common person.	As Per Bid Document
130	VOLUME – II OF III	Chapter 6 – General Technical Requirement, Control & Relay Panels 18. TRANSMISSION LINE PROTECTION 18.1.	All relays shall be suitable for series compensated line. The relays shall have selectable mode for Differential and Distance Protection Mode. For the purpose of differential protection, and/or tele- protection scheme in distance protection, relays shall have Direct Fibre Optic Connection ports.	We understand that only in New panel wherein we are supplying panel as per BPS, we need to provide Differential cum Distance relays. Please confirm	For all the new supplies as well as retrofitting works, to complete the scope of project.
131	VOLUME – II OF III	Chapter 7 – General Technical Requirement, Substation Automation System 3.3. Gateway	Gateway offered shall be of reputed make with modular structure & high availability. The Gateway provided for the above system shall be rack mounted. LED indications should be provided on the front of the cards to know the status of communication by looking at the front of the communication card. The Gateway shall also support PLC programming for future controls at complied are stipulated here as per cl 3.3	The specification clause 3.3 technical parameters, calls for a Industrial PC based gateway. Hence it will not be modular and support PLC Programming. However future bays can be extended in the same IPC without changing hardware.	As per Bid Document.
132	VOLUME – II OF III	Chapter 7 – General Technical Requirement, Substation Automation System 4.2.1 Input/Output (I/O) modules	Technical Parameters of BCU (Point 2,16,17)	We are supplying BCU which are having 2x FO port for communication with server/gateway through an ethernet switch with an additional serial port for Relay programming in the front.	As per Bid Document.
133	VOLUME – II OF III	Chapter 7 – General Technical Requirement, Substation Automation System 4.4 Extendibility in future	Offered substation automation system shall be suitable for extension in future for additional bays. During such requirement, all the drawings and configurations, alarm/event list etc. displayed shall be designed in such a manner that its extension shall be easily performed by the employer. During such event, normal operation of the existing substation shall be unaffected and system shall not require a shutdown. The contractor shall provide all necessary software tools along with source codes to perform addition of bays in future and complete integration with SAS by the user. These software tools shall be able to configure IED, add additional analogue variable, alarm list, event list, modify interlocking logics etc. for additional bays/equipment which shall be added in future.	We shall submit the project specific configuration files, API, script however source code will not be part of supply, We request customer to please confirm.	As per Bid Document: The contractor shall provide all necessary software tools along with source codes to perform addition of bays in future and complete integration with SAS by the user. These software tools shall be able to configure IED, add additional analogue variable, alarm list, event list, modify interlocking logics etc. for additional bays/equipment which shall be added in future.
134	VOLUME – II OF III	Chapter 7 – General Technical Requirement, Substation Automation System 5.1.1.4	Cyber Security	We are considering our solution based on IEC 62351 - 8 RBAC for HMI's Please confirm.	As per relevant IEC.
135	VOLUME – II OF III	1.2.2 Reliability of FE System	2 sets of UPS can be used as power supply to ensure normal operation of equipment. All communication hardware supports hot plugging	We request customer to please provide detailed requirement of UPS i.e. back up time, KVA rating etc on each Master control center.	Refer to Attachment a of Clarification-02



136		General	uninterruptible power supply (UPS)	We request customer to please provide load details to be connected with UPS on each Master control center.	Based on Bidder design of system.
137		General	uninterruptible power supply (UPS)	We request customer to please share the nos. of ACDB feeder details and also type of ACDB requirement i.e. wall mounted or free standing.	Based on Bidder design of system.
138	VOLUME – II OF III	Chapter 9 – General Technical Requirement, Central Control System (MCC)1.2.3 Support Protocols	The front-end (abbreviated FE) module of SCADA CCS supports main remote control protocols. They are listed as following: <ul style="list-style-type: none"> ● IEC60870-5-101 remote communication protocol ● IEC60870-5-104 ● IEC60870-5-103 ● IEC60870-6-TASE.2 network communication protocol ● IEC61850 ● DL476-92 ● CDT ● Modbus ● OPC 	We understand that IEC 61850 and IEC 60870-103 are substation protocol. There is also mentioned of DL476-92, CDT protocols which looks to be non standard. SCADA system need to be communicate with RTU/SAS system over IEC 60870-101 / 104 and other control center protocol. We request customer to please confirm.	Confirmed. Standard Protocols shall be used.
139	VOLUME – II OF III	Chapter 10 – General Technical Requirement, Substation Automation System1.1 Maintenance support	The system availability shall be measured control center wise, for example the availability of Main & Backup Control Centre shall be considered separately.	We understand all the 6 nos. Control Center will be standalone and there will be no Backup Control Center. We request customer to clarify.	Presently, no backup for MCC is envisaged.
140	VOLUME – II OF III	Chapter 10 – General Technical Requirement, Substation Automation System1.2 Preventive Maintenance Activity	The Contractor shall maintain detailed routine maintenance register software for recording all the routine checkup and maintenance done for each individual system components on monthly basis, and when required in emergency cases, and get it verified by the station in-charge of the employer.	For routine Checkup and preventive maintenance, global practice is quarterly. Doing this activity on monthly basis require more time for coordination between owner and contractor and executing various check up task can hamper smooth day to day operation. Therefore we propose a preventive maintenance check every three months (per quarter).	As per Bid document.
141	VOLUME – II OF III	Chapter 10 – General Technical Requirement, Substation Automation System1.2.1 Hours of Cover	The Contractor shall provide engineers who have desired experience and skill to maintain the SCADA/EMS system to the desired level of availability. The contractor shall establish a Central Service Center in close co-ordination with the project office with all necessary office equipment. At least one Software Engineer and One Hardware Engineer having expertise in SCADA/EMS	We understand that there will be central service center for all six locations Please confirm. Kindly confirm the location for central service center.	Shall be decided after finalization of MCC location.
142	VOLUME – II OF III	Chapter 10 – General Technical Requirement, Substation Automation System1.2.2 Service Response requirements	Non-compliance to Monitoring of Log, Patch Management, Annual Security audit and implementation of the remedial actions suggested by the auditor will be treated as Severity 2.	Patch Management and Implementation of remedial action might require a detailed and thorough testing before deploying the new patch or remedial action at Production System. Meeting the severity level timelines is practically impossible. In order to meet the timeline, contractor may bypass a thorough testing which may later cause adverse operational impact. Therefore, we request to remove this clause from any Severity Level.	As per Bid document.



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143	VOLUME – II OF III	Chapter 10 – General Technical Requirement, Substation Automation System 1.2.2.3 Cyber security System and Monitoring and compliance manager for Critical Infrastructure Protection	The contractor shall carry out Security Audit from CERT-In Certified auditors at its own cost for the complete systems under this project and implement the recommendation given by auditor in consultation with the owner.	We request customer to clarify the nos. of audit requirement. We request customer to add the audit in customer price schedule.	At least one audit annually. The contractor shall carry out Security Audit from CERT-In Certified auditors at its own cost for the complete systems under this project and implement the recommendation given by auditor in consultation with the owner.
144	VOLUME – II OF III	Chapter 10 – General Technical Requirement, Substation Automation System 1.4 Integration of new equipment and or Station	All future services, protocol emulations and configuration support for integration of Control Centre Integration on ICCP, Clients for OPC services, Web Services & CIM import & export utility for offline applications shall be the responsibility of contractor during maintenance period. The integration services to be provided by the bidder will include the addition of New ICCP connection & its integration and addition of interface for off-line Applications, OPC clients. Non Availability of these services at Control centre for these integration shall be treated as severity 3 support as defined below	We shall provide the unit rate for executing such jobs during AMC period. As the given statement for the given requirement is an open ended scope and we can not estimate the quantum of work during AMC period. Assigning a severity level for such work is not appropriate. We request customer to confirm.	As per Bid Document.
145		General	General	We request customer to provide the editable excel format for price schedule and editable softcopy of tender specification.	Shall be provided upon formal request.

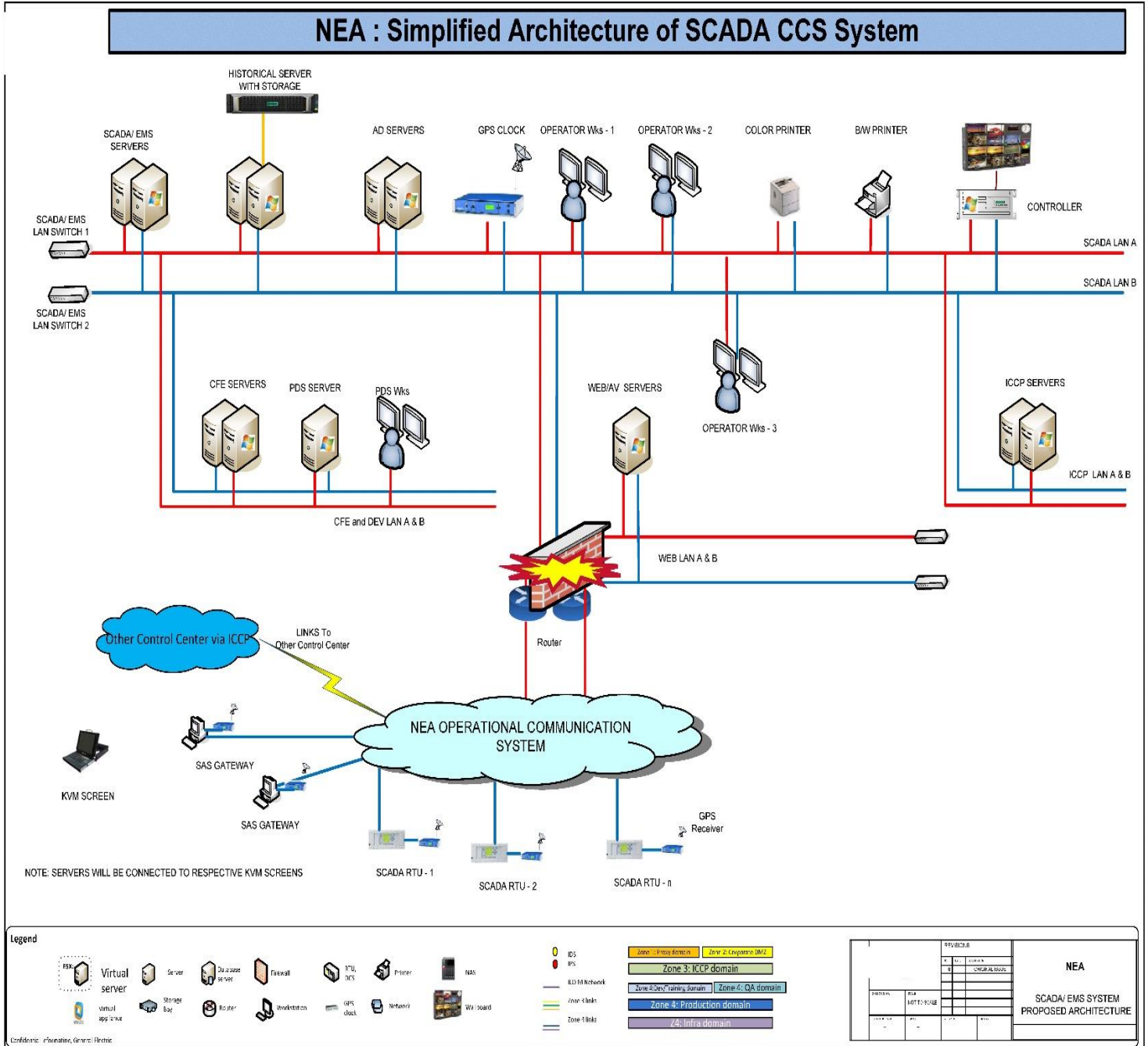


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Attachment-a

For Tender Purpose Only

1. Hardware List (not limited to) for MCC



NEA:- Control Center Hardware BOQ

Sl. No.	Description of Items	Unit	BOQ	Remarks
a	Servers			
1	SCADA	No.	2	
2	CFE	No.	2	
3	PDS Server	No.	1	
4	ICCP Server	No.	2	
5	HIS Servers	No.	2	
6	AD/NMS Servers	No.	2	
	Total	No.	11	
b	Workstations			
1	Dispatcher Workstation with Dual 24" Monitor	No.	2	
2	Engineer Workstation with Dual 24" Monitor	No.	2	
	Total	No.	4	
c	GPS			
1	GPS Time synchronization system	No.	1	
	Total	No.	1	
d	Storage			
1	5 TB	No.	2	
	Total	No.	1	
e	Networking Equipment			
1	24 Port L3 LAN Switch	No.	4	
	Total	No.	4	
f	Routers			
1	Router for Interfacing LDC/Backup LDC	No.	2	
2	Router for Interfacing with SAS Substations	No.	1	
	Total	No.	1	



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g	Firewall			
1	Data Center Firewall	No.	1	
2	Mandatory Spare Firewall	No.	1	
	Total	No.	2	
h	Printers			
1	Color Laser Jet Printer	No.	1	
2	Multifunction Printer	No.	1	
	Total	No.	2	
i	VPS (As per spec)			
1	VPS (3x2) 70" Size along with controller & software	Set	1	
2	Mandatory Spare for VPS	Set	1	
	Total	No.	2	
j	Panels/KVM Switch/Screen			
1	Server Racks/ Networking Racks along with KVM monitor & KVM switch	No.	2	
	Total	No.	2	
k	UPS	Set		
1	2*25KVA with Battery Bank and accessories	Set	1	
	Total	Set	1	

Uninterruptible Power Supply (UPS)

An **uninterruptible power supply** or **uninterruptible power source (UPS)** shall be supplied with all necessary cables of required capacity and connecting accessories, to provide emergency power to MCC when the input power source or mains power fails.

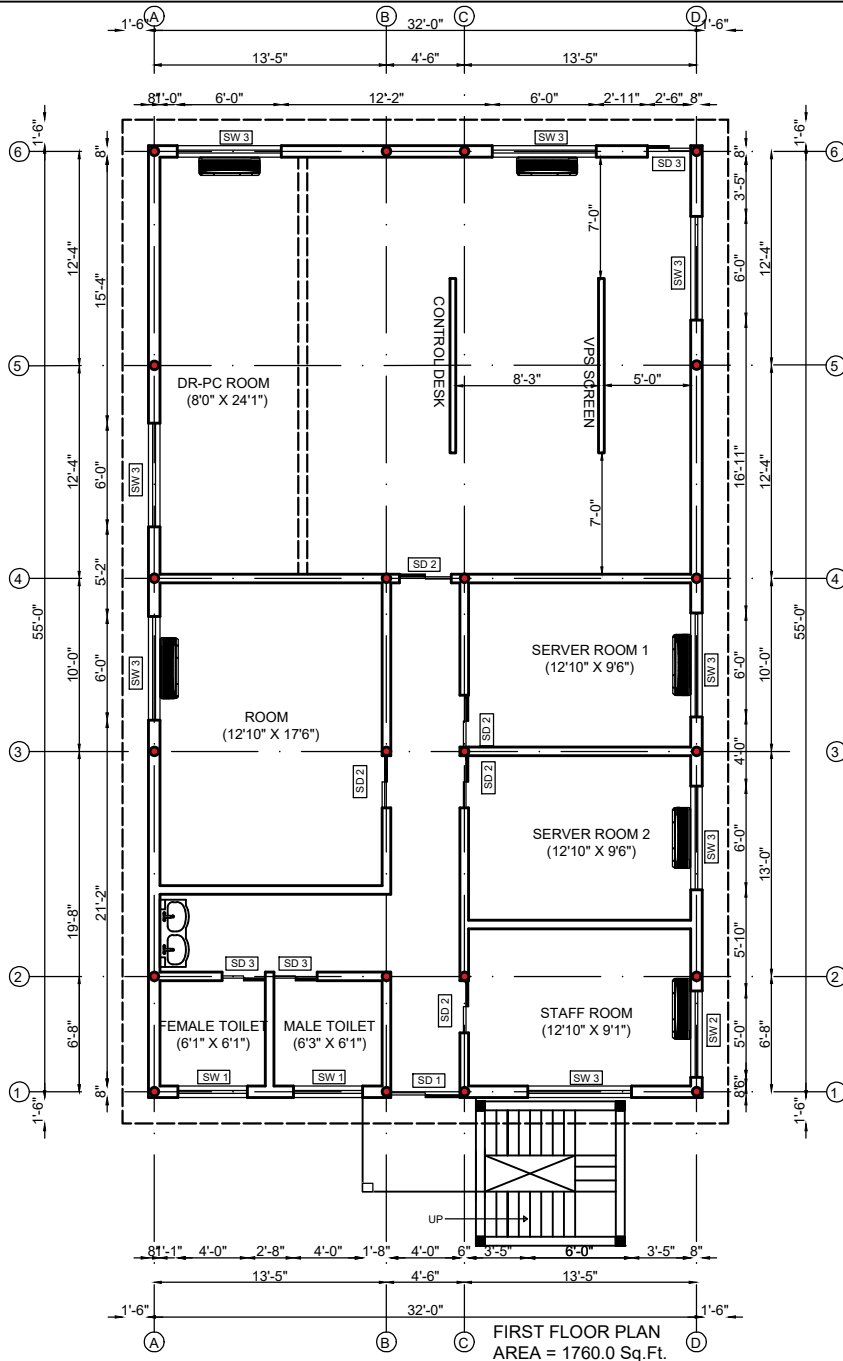
Requirement:

2 sets of UPS (Main and Standby) each of 25KVA rating shall be used as power supply to ensure normal operation of equipment.

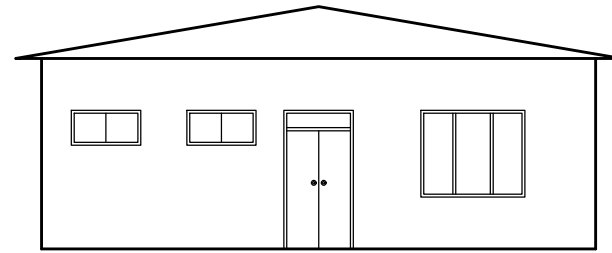
Battery Bank: One set of Maintenance free VRLA type Battery bank (each battery of 2V rating) for providing backups for 6 hours. The Ampacity of the individual battery shall depend on the design by the bidder.

The bidder shall design the backup system considering the consumption capacity of offered equipment in MCC. Voltage level of UPS shall be appropriately chosen by the bidder.

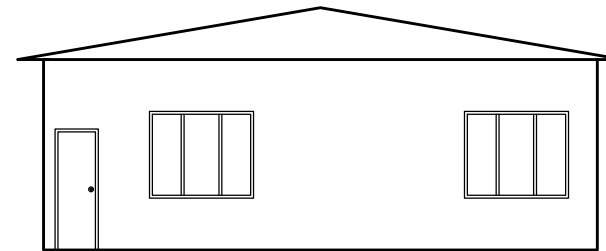




FIRST FLOOR PLAN
AREA = 1760.0 Sq.Ft.



SOUTH ELEVATION



NORTH ELEVATION

Doors & Windows Schedule

S.NO.	ITEM	LENGTH	HEIGHT
1	SD 1	4'-0"	8'-0"
2	SD 2	3'-0"	7'-0"
3	SD 3	2'-6"	7'-0"
4	SW 1	4'-0"	2'-0"
5	SW 2	5'-0"	5'-0"
6	SW 3	6'-0"	5'-0"

NOTE:

- 1) THE ABOVE MENTIONED DRAWINGS SHALL BE USED FOR TENDER PURPOSES ONLY.
- 2) THE INTERNAL PARTITION SHALL BE HALF GLASS PARTITION IN ELEVATION.



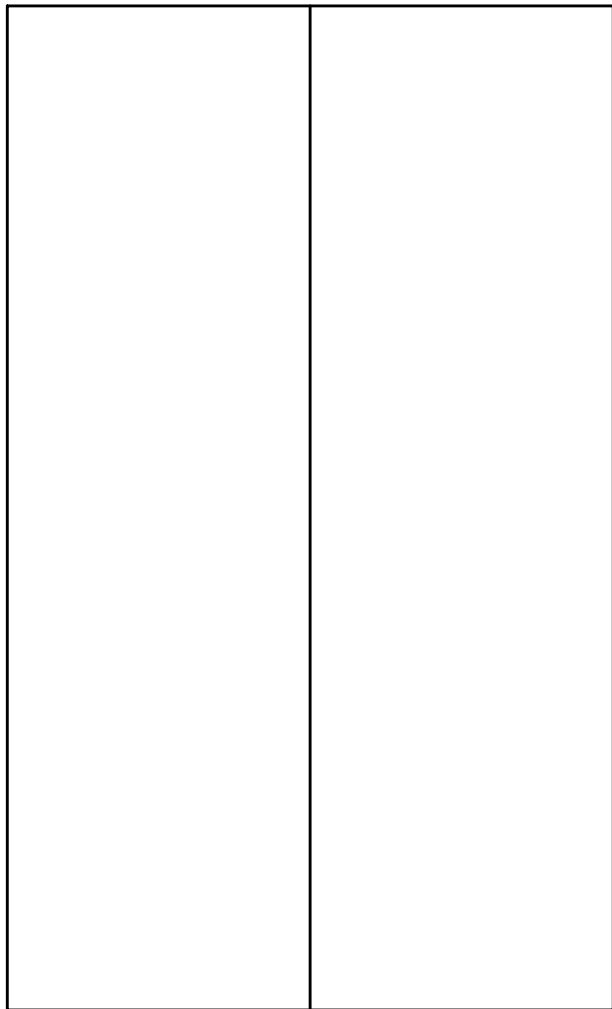
Owner: Signature
NEPAL ELECTRICITY AUTHORITY

Title: GENERAL LAYOUT FOR MASTER CONTROL ROOM

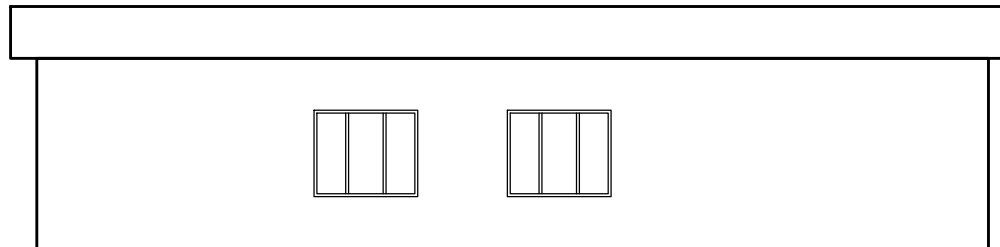
Details: plan, elevation and door-window schedule

Designed by: Checked by:

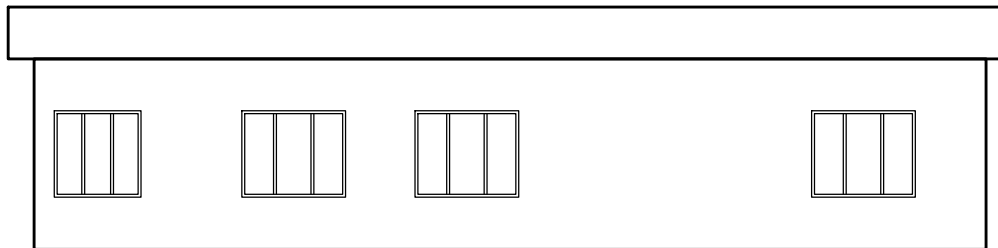
Date: Scale: 1"=8'-0" Sheet No: 1



ROOF PLAN



WEST ELEVATION



EAST ELEVATION

AUXILIARY MATERIALS DESCRIPTION

S.NO.	DESCRIPTION	QUANTITY
1	AIR CONDITIONER	7 Nos.
2	ELECTRONIC DOOR LOCK	2 Nos.
3	CONTROL PC TABLE	2 Set
4	REVOLVING CHAIR	4 Nos.
5	MEETING TABLE/ CHAIR	1/ 6 Nos.
6	FIRE EXTINGUISHER (10L)	6 cylinders
7	SMOKE DETECTOR	1 in each room

NOTE:
 1) THE ABOVE MENTIONED DRAWINGS SHALL BE USED FOR TENDER PURPOSES ONLY.
 2) THE INTERNAL PARTITION SHALL BE HALF GLASS PARTITION IN ELEVATION.



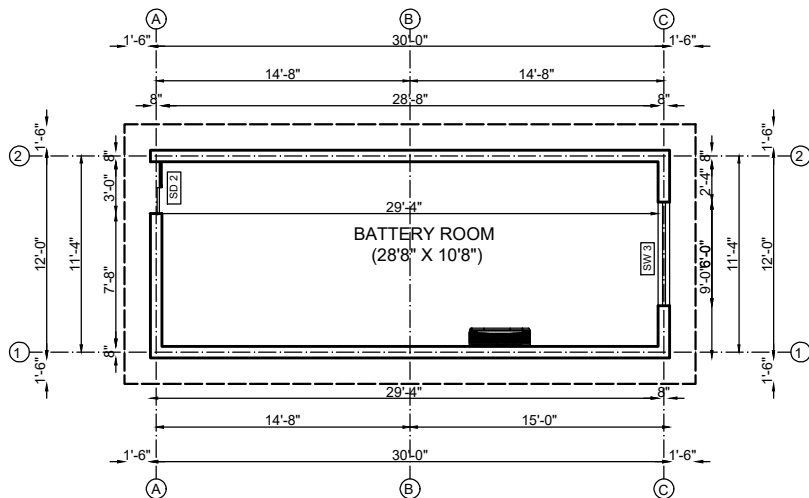
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 NEPAL ELECTRICITY AUTHORITY

Title:
 GENERAL LAYOUT FOR MASTER CONTROL ROOM

Details:
 plan,elevation and door-window schedule

Designed by: Checked by:

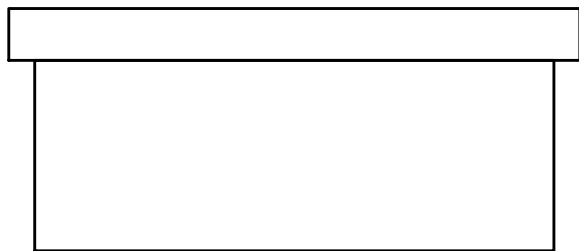
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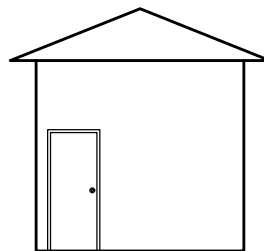
GROUND FLOOR PLAN
AREA = 360.00 Sq.Ft.



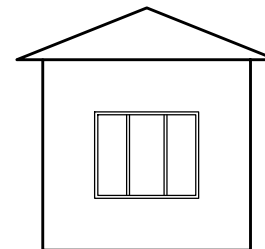
ROOF PLAN



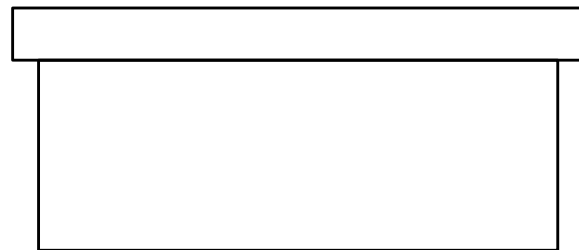
SOUTH ELEVATION



EAST ELEVATION



WEST ELEVATION



NORTH ELEVATION

Doors & Windows Schedule

S.NO.	ITEM	LENGTH	HEIGHT
1	SD 2	3'-0"	7'-0"
2	SW 3	6'-0"	5'-0"

NOTE:

- 1) THE ABOVE MENTIONED DRAWINGS SHALL BE USED FOR TENDER PURPOSES ONLY.
- 2) THE INTERNAL PARTITION SHALL BE HALF GLASS PARTITION IN ELEVATION.



Owner: Signature
NEPAL ELECTRICITY AUTHORITY

Title:
GENERAL LAYOUT FOR BATTERY ROOM

Details:
plan, elevation and door-window schedule

Designed by: Checked by:

Date: Scale: 1"=8'-0" Sheet No: 3