Metro Manila Subway Project Phase 1 Package CP106: E&M Systems and Track Works			
ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
		Volume I, Part 1 — Bidding Procedures	
1.	Section II, Page BDS-3 ITB 18.7	There is still no instruction about treatment of VAT. Please clarify how to treat VAT between Employer and Contractor. May we understand following manners are applied for this Contract? a) VAT for local payment shall be paid by the Employer to the Contractor, against the Contractor's billing claiming with effective VAT rate (i.e. currently 12%) on top of the amount of local payment. b) Import Duty and Import VAT for importation of any goods and materials related to the Project shall be paid and settled by Employer in coordination with the Philippines' Bureau of Custom.	a) Your understanding is correct. In accordance with the "Bureau of Internal Revenue (BIR) Memorandum Circular (RMC) No. 8-2017 dated 9 January 2017 article 1., the VAT registered suppliers and subcontractors of the Japanese companies, shall bill and pass on the twelve percent (12%) to the Japanese companies/contractors. In turn, the Japanese contractors shall include 12% VAT in their billing and pass on to the concerned executing agency (DoTr). However, in accordance with RMC No. 8-2017 article 2., it will be the responsibility of the Japanese Contractor to file the prescribed VAT returns on gross receipts derived from the Project, claim their input taxes from their purchase of goods, properties and services from their suppliers or subcontractors and shall pay the output tax or VAT thereon, after offsetting the creditable or allowable input taxes, considering that the amount intended

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			for payment of the VAT has already been collected and received by the Japanese contractors or nationals from the executing agency (DoTr) as part of the total billing/invoice price. b) Your understanding is correct. Import Duty and Import VAT for the importation of materials and equipment required for implementation of the Project shall be paid by the Employer directly to the relevant Philippine government agencies concerned, e.g. the Bureau of Customs. Thus, Duty and VAT on such imported items shall not be included in the Bid Price.
2.	Section II, Page BDS-5 ITB 24.1	- The CP106 is the FIDIC Yellow Book contract. Since the responsibility of design is involved in the contractor side, it is necessary to satisfy the outline or performance specification created by the project owner. - E&M package is closely linked with other Civil package, and the detailed design on the Civil side is essential information in the estimation and design work. But	Please refer to Item No.1 of Annex "B" (Addendum No.2) of General Bid Bulletin No.2.

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		now, the detailed design of CP101 has not been approved, and CP102-105 and CP108-110 are still in the process of detailed design. - Since the detailed design data related to civil engineering is not reflected in the ITB of CP106, we cannot process preparation for bidding such as estimation or design work. From these points, we believe that the bid dateline needs to be extended.	
3.	Section III, Page EQC-4 2.2.2	Please consider of relaxation of this eligibility and qualification criteria to change the threshold from 50% to 100%.	Please refer to Item No.3 of Annex "B" (Addendum No.2) of General Bid Bulletin No.2.
4.	Section I. Instructions to Bidders, Page – ITB -5 Clause 4. Eligible Bidders	Please confirm our understanding that unincorporated Joint Venture or Consortium can be deemed as an eligible Bidder.	Yes, Bidders understanding is correct.
5.	General	Please confirm that as Facilities SCADA is in CPl0l contract and not CP106 Contract, BOQ items A2. l l, B 13 and C 12 are not to be completed by the CP 106 contractor.	The Facility SCADA is in the CP106 Contract and not in the CP101 Contract or any other Civil contract packages.

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6.	General	Please confirm references to Tunnel lighting and outlets in Schedules B5 & C5 are not the responsibility of CP 106 and should not be priced as this is in contradiction to ERG - 45.	Yes, Bidders understanding is correct.
Volume II, Part 2 – Employer's Requirements ***b) General Requirements (ERG)***			
7.	Table 12.1 ERG-45	Please confirm the Facilities SCADA is the responsibility of the CP101 Contractor and that CPl06 has no involvement.	Confirmed, the Facility SCADA is under CP106 scope, but not under CP101 scope.
8.	Table 12.1 ERG-45	Please confirm the lighting (Stations & Tunnels) is the responsibility of the CP 101 Contractor and that CP106 has no involvement.	Yes, Bidders understanding is correct.
9.	Volume II. Page ERG-123 and 124 17.7.2 Major Equipment and Required Functions for PRI	*"(1) Training equipment for Power supply system equipment and others* *The following equipment shall be installed in PRI.."* The contents of Training center equipment seem to be specialized for training center. Please clarify the specification list which is different from equipment for power supply system required in section POW-4.	Refer to Vol II Section 17 & 17.1.3. The detailed equipment list is shown in Table 17.1: Major Sub Equipment

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10.	Volume II. Page ERG-123 17.7.1 General	*"The Contractor shall try to avoid student's injury to use clear plastic cover on high voltage area than AC 230 V."* No requirement to prevent DC voltage is in this paragraph. Please clarify kind of AC/DC and voltage level you need to prevent student's injury. Please clarify in what condition the training is expected to carry out e.g. Under energizing main circuit of every equipment.	Yes, to prevent electrical shocks from both AC and DC. The training shall be carried out with and without electrical circuit being energized. It's the CP 106 Contractor's responsibility to ensure the design shall comply with IEC/BSEN standards for the safety electrical touch voltage in a Training Centre and Workshop.
11.	Volume II. Page ERG-124 17.7.2 Major Equipment and Required Functions for PRI	No single line diagram including AC switchgear, Rectifier transformer, Rectifier, DC switchgear and Negative panel for PRI is attached in the bid documents. Please provide the single line diagram for equipment in PRI.	The PRI (test track) shall be fed from Depot TSS as shown in Bid Document Volume III of IV, under OCS section, Drawing No.: MMSP-OCS-0000-DD-0101 for the details of PRI and Depot Feeding Network. However, it's the Contractor's responsibility to establish further at the detailed design stage.

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12.	Volume II. Page ERG-35 and 36 10 INSPECTION, TESTING AND COMMISSIONING 10.1 GENERAL	*"Inspection Hold Points* *(3).....It is expected that three (3) Employer's and two (2) or (1) Engineer's Personnel will attend at each inspection of the railway systems (8 systems) at three (3) times with five (7) days including travel time for each inspection. "* Please clarify which five or seven day are expected for each inspection.	Please refer Annex "A", item 4 in General Bid Bulletin No.3.
13.	Volume II. Page ERG-130 to 136 17.9 MMSP TEST TRACK FOR WORK SHOP AND TRAINING CENTER 17.10 MMSP TEST TRACK FOR PRI	We interpret that the power supply for both of the test tracks for workshop and PRI is fed from Depot TSS. Please specify the specifications of the equipment for power feeding to the test tracks if our understanding is correct.	Yes, your interpretation is correct. Refer to response item 11 above.
14.	Volume II. Page ERG-App 21-6 and 7 6.2 Quantative Technical Safety Requirements (Table showing the SIL)	Table shows the power supply system other than RMU and depot power system are required SIL 2. We understand that the telecommunication signals between RTU and SCADA related to vital condition and safety operation shall have redundancy in order to comply SIL 2. Please clarify if our understanding is correct.	Yes, your understanding is correct. Contractor shall demonstrate their design comply with safety and SIL rating.

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15.	Volume II. Page ERG-124 to 125 17.7.2 Major Equipment and Required Functions for PRI 17.7.3 Major Equipment and Required Functions for TC	Employer's requirement for power supply system on main line is not showing any statement regarding Telecommunication Breaking Device. We understand the telecommunication breaking device is functioning as transfer tripping functions between TPSSs. However it is not separated to independent panel as stated on clause 17.7.2 and 17.7.3 Please clarify (1) if our understanding is correct and (2) if we need to make original design of Telecommunication Breaking Device for PRI and TC respectively.	At present include Telecommunication Breaking Device. Contractor to asses and further develop to interface with Telecommunication system.
16.	Appendix 6 Interface ERG-App6-23	Please confirm Appendix 6 Item 4 Stations E&M facilities is not in the CP106 scope and therefore CP 106 contractor is not the lead for the design, as this contradicts other clauses in the specifications as above.	Yes, Bidders understanding is correct.
Volume II, Part 2 – Employer's Requirements, ***c) Technical Requirements (ERT)***			

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17.	02 Signaling System Clause 2.5.4.2 (3) e Page SIG-2-17	"An interface specification of interoperability will detail the operational method of changeover between the different signalling systems": when could we expect to receive this interface specification?	The Interface Specification shall be developed between the CP 106 Contractor, CP 107 Contractor and NSRP E&M System Contractor for Interoperability requirement. This Interface Specification document shall be signed by the CP107, CP106 and NSRP E&M System Contractors for the Engineer approval and the Employer acceptance.
18.	02 Signaling System Clause 2.5.7 Page SIG-2-23	Will the client be providing more detailed signalling principles for the interlocking, or should the CP106 propose as part of its design?	CP106 Contractor shall propose the signalling principles for the interlocking for the Engineer approval and the Employer acceptance.

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19.	02 Signaling System Clause 2.3.4 4) Page SIG-2-9	"The CONTRACTOR shall submit a report indicating that the safety of ATP system with CBTC and Interlocking (CBI) system satisfies SIL4, including the internal audit result by the CONTRACTOR's organization and audit by third party specialist. Also, SIL4 shall be applied to ORP (Over Run Protection), FSP (False Starting Protection) and TSR (Temporary Speed Restriction)." However, FSP (False Starting Protection) is not mentioned in any other part of the document. Is it a required function? If so, please confirm the requirements in which document is it described?	Yes, FSP is a requirement. Refer to Annex "B" for the requirement.
20.	03 Telecommunication System Clause 3.7.6 Page 3-49	The Contractor shall carry out a radio coverage & EMC study for the Millimeter wave communication system to be installed on NSRP line. Please confirm the extent of this study.	No, Millimeter wave is only applicable to MMSP. MMSP trains operating on NSCR will change over to the NSCR Signalling and Radio system.
21.	03 Telecommunication System Clause 3.7.6 Page 3-48	Telecom Contractor shall supply a SIL2 signal to the Onboard HMI and CCTV viewing console, in a deterministic manner. Millimeter Wave Platform Screen Monitoring System shall be designed in accordance and, compliant to SIL2 requirements. Can you confirm the SIL2 requirement, which is unusual	SIL2 signal is applicable for wireless transmission from platform to onboard HMI. However, the proposal from contractor to be included in their detailed design demonstrating smooth performance of the Millimeter wave

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		for a MSN/Ethemet technology?	transmission system.
22.	03 Telecommunication System Clause 3.7.13 Page 3-75	Power supply system is not mentioned for the Depot and the BOCC please confirm · Please confirm if we have to provide UPS at these 2 locations, and if yes, with which specifications?	Yes, UPS+Battery banks shall be provided for both locations. Refer to Vol II ERT sections 3.4 SYSTEM OVERVIEW 3.4.1 General at page TEL 3-6. UPS+Battery Bank design proposed by the Contractor for Depot to avoid multiple UPSs with Battery Banks at multiple locations, The design is subject to approval from The Engineer and acceptance by the Employer.

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23.	03 Telecommunication System Clause 3.16 Page 3-107	Spare parts shall be 20% of the quantity of the equipment to be delivered. Please confirm 20% is. required for all equipment as this is a significant amount of spares.	Contractor to propose spare parts and quantity based on their Reliability Availability and Maintainability (RAM) assessment for the Engineer approval and Employer acceptance. The spare parts quantity of equipments for Telecom package shall be for 10 years from the end of Defect Notification Period (i.e. full hand over to O&M). The design and spare parts to avoid any unavailability or obsolete of telecom equipment's parts in market for next 10 years.
24.	Telecommunication System (TEL) Clause 3.7.1 Page TEL-3-8/3-16	The frequency and type examination and type approval of the radio set shall be applied to the NTC by the responsible contractor. Radio frequency, VHF band (30MHz-300MHz), UHF band (300MHz-3000MHz) is assumed. What is NTC allocation of TETRA band for this project?	Allocation of frequency band for TETRA or other similar radio system is not yet decided by NTC (National Telecommunication Commission) for MMSP project. However, 1. The Contactor can propose required TETRA frequency band in the Bid for frequency licenses approval.

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			2. At present the Contractor should assume and consider the future design of TETRA system in range of VHF band (30MHz-300MHz) and UHF band (300MHz-3000MHz). The Engineer and the Employer shall assist the Contractor to secure the frequencies for radio system from NTC after CP106 Contract award.
25.	Telecommunication System (TEL) Clause 3.6.2 Page TEL-3-13	What are the Philippines standards applicable in this project?	The release 2017 Philippine Electrical Code standards are applicable to this Project to meet the railway requirements. "***The Institute of Integrated Electrical Engineers of The Phils., Inc."*** International standards & Japanese standards are also applicable standards to this project to fulfill the requirements as described in Telecom package. All standards proposed by the Contractor is subject to The Engineer approval and The Employer acceptance.

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26.	Telecommunication System (TEL) Clause 3.7.6 Page TEL-3-48	Transmission of the Rolling Stock CCTV cameras data, real-time monitoring and interface with the train health data from train to OCC and Depot, are prime example of requirements of this project. Kindly advise the number of cameras/required bandwidth and the concurrent monitoring of how many trains from OCC as this has great impact on the selection of broadband radio system.	The Contractor to propose the solution to accommodate bandwidth requirement for 8 car train length 160m and 10 coaches train length 200m for monitoring. Each passenger Car shall have minimum 4 cameras and one (1) camera in each Driver Cab. Contractor shall propose number of trains that can be monitored concurrently for live video streaming from the OCC and BOCC for The Engineer approval and The Employer acceptance. Further coordination with O&M operator and incident risk assessment may take place during the detailed design.
27.	Telecommunication System (TEL) Clause 3.7.6 Page TEL-3-48	The Millimetre Wave communication system shall ensure smooth (seamless) and efficient handover between the Radio base Stations. During the handovers, there shall be no impact such as freeze, or loss of video signal and train health data. There shall be no loss of data. Without detailed design criteria, we assumed the proposed spectrum for the mm wave communication system shared	Yes, an alternative solution adopting Wi-Fi technology with 2.4/5G based BBRS (Broadband Radio system) to meet functional requirement will be acceptable.

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		with high-speed wireless communications as seen with the least 802.11 and Wi-Fi standard (operating at 60 GHz). In this case, mm wave solution would not be the correct solution for the broadband radio system. We do not know if it is the operator's preference on the selection of this technology and if the proposed solution is fit for broadband transmission purposes. Please advise if an alternative solution adopting Wi-Fi technology with 2.4/5G based BBRS to meet functional requirement will be acceptable to the authority. We do not know any company having MM wave solution in the market in revenue service for railway communication and therefore have no track record or type approval for this type of system in railway operating situation.	
28.	Telecommunication System (TEL) Clause 3.7.11 Page TEL-3-68	The Disaster prevention system shall follow the applicable Philippines government guidelines & Standards before commencing the design of the system. Please advise type approved suppliers from Philippines government for the selection of sensors.	The Contractor shall follow the Philippines government guidelines & Standards or Japanese (JIS) standards applicable to buy the sensors for MMSP Project. The Contactor to consult with local authorities during design stage to obtain list of approved

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			suppliers in Philippines.
29.	Telecommunication System (TEL) Clause 3.7.5 Page TEL-3-42	The location & Coverage study layout plan of all cameras shall be developed for the entire station area (including all levels of stations) & depot area by the contractor during detailed design and submitted for review and approval. The camera coverage requirements are not specified with the coverage design criteria specified in Page TEL-3-41. "The camera representation of the object for monitoring". Please confirm the requirements.	The requirement for monitoring of Station and Depot area shall be divided into four (4) categories of image for camera coverage study as per requirement shown in Vol ll ERT at page Tel 3-41 • Identification • Recognition • Detection • Monitoring The coverage study shall be based on above four categories. For an example: Station Entrance for security check and Emergency exits shall fall under identification category. Recognition image of a person / passenger at TVM shall be under the category of identification. The contractor shall provide enough cameras for

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			100% coverage of a Station paid & unpaid areas, main entrances/exits, Concourse level, Mezzanine level, including Street level entrance/exit, Station plaza area, as per the Station Architectural Design and description in Vol ll, ERT page TEL 3-42, TEL 3-43 & TEL 3-44.
30.	Telecommunication System (TEL) General	Please provide station Layout drawings for coverage design for TEL, CCTV, PAS and Intercoms.	Please refer to previously published General Bid Bulletin No.5, Annex "C".
31.	04 Power Supply System Clause 4.2.1 - General	Please confirm the meaning of the acronym "ITV"	Please ignore the term 'ITV'.
32.	04 Power Supply System Clause 4.8.11 - Emergency Tripping System	Please provide the specification for ETS within the scope of CP106.	ETS specification is not available, however it is the Contractor's responsibility to develop the technical requirements at the design stage ensuring the affected electrical section is deenergized under an emergency situation.
33.	04 Power Supply System	The list of variables to be exchanged between relays (IEDs,	It is Contractor's responsibility to develop the list

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	Clause 4.8.12 - Protection Control and Monitoring	equipment in general) and the SCADA system is not detailed in the specification. Please provide.	of variables (inputs/outputs) requirement for each equipment relays (IED) at the design stage to enable all of them to communicate and exchange information via RTU & SCADA.
34.	04 Power Supply System Clause 4.10.16 - SCADA Architecture	Please provide details of the interface with inputs/outputs of the Power SCADA system with regard to the MERALCO scope.	MERALCO shall have their own SCADA system interfaced with the incoming power supply (115kV) at the Switching Station located next to the Bulk Substation (BSS). The Contractor is responsible for developing the inputs/outputs SCADA required at interface point between 115kV GIS of BSS and MERALCO's 115kV Switch Station. The Contractor also responsible for developing I/O schedules of the complete power supply system requirement from the downstream feed from 115kV step down to 34.5kV and beyond.
35.	04 Power Supply System Clause 4.2.1 / 5 I iii) Page POW-4-18	"Substation Automation System to IEC 60815" IEC 60815 is related to high-voltage insulators, whereas 61850 is related to communication networks and systems in substations. Is it acceptable that the Contractor provides "Substation Automation System to IEC 61850"?	It's typo error and the correct standard reference should be IEC 61850. The design of Substation Automation System must comply with IEC 61850.

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36.	04 Power Supply System Clause 4.2.1 / 9 / i) Page POW-4-18	"34.5 kV cable to substation to cable terminal box (PCT box)" PCT is not defined in abbreviations chapter. Please confirm the meaning of PCT.	PCT is incorrect. It meant to be a PMV (Preliminary Metering Vault) which located on MERALCO side. This is no longer applicable since MMSP 34.5kV feeders are direct supplied from BSS(s) and not from 34.5kV MERALCO system.
37.	04 Power Supply System Clause 4.2.1 I 9 I vi) Page POW-4-19	"Installation of support in own site to receive electricity" Could you clarify what shall the Contractor carry out with these words? What is own site? What kind of electricity shall be received?	These works shall include but no limit to the following: i. Design and installation of 115kV Switching Station and 2 x 115kV OHL Incoming Feeders connected from transmission lines to the 115kV Switching Station shall be carried out by third party (MERALCO). ii. The design and installation of all permanent power supply (i.e. Bulk 115kV step down to 34.5kV at the GIS Bulk Substations and temporary incoming supplies from electricity supplier MERALCO) and any others that are required by CP 106 during construction shall be the responsibility of CP 106 Contractor. Contractor to determine the temporary power supply requirements at each site for construction

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			period. CP 106 Contractor shall design, install and commissioning all temporary supplies prior to bring into service and decommissioned and removal of all temporary equipment after the construction site finished.
38.	04 Power Supply System Clause 4.2.1 I 11 / i) Page POW-4-19	"Review and approval of the Employer's electrical engineer and of others, shall submit to the respective Employer's engineers the design, supply, system quality management, installation, testing including integrated testing and commissioning of the complete electrical power supply system" This sentence does not clearly indicate the tasks to be carried out by the Contractor. Could you clarify it?	This clause was not clearly written. It meant that CP106 Contractor shall take full responsibility to ensure their designers/engineers and sub-contractor designers/engineers are professional and competent with the design, checked, reviewed, built and testing and commissioning etc. The Employer shall review the Contractor's Quality Assurance Management Plan/procedures and staff competency acceptance.
39.	04 Power Supply System Clause 4.2.1 / 11 / v) Page POW-4-20	"The tasks to be carried out by the Contractor shall include [...] System operations" Please confirm that the Contractor is not responsible for system operations. Please clarify the scope of works suggested by the item "system operations"?	System Operations shall be included but not limit to the following: i. Equipment operation. ii. System operation as a complete system (i.e. fit for purpose). iii. Complying to the Operation & Maintenance

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			(O&M) requirements purposed by the Contractor, etc. iv. Contractor shall produce O&M documents for item (i) and (ii).
40.	04 Power Supply System Clause 4.3 .1 Table 5 Page POW-4-21	"The high voltage is over 1000 V AC" Can the Contractor consider that the high voltage refers to rated voltage over 1000 V AC and over 1500 VDC?	Reference to BSEN standard < or = 1000V AC is referred as Low Voltage (LV). Higher than 1000V AC and 1500V DC is 'Medium Voltage (MV)'. Contractor should also refer to the local Philippines Code of Practice for the right definition used in Philippine for LV, MV and HV.
41.	04 Power Supply System Clause 4.3 .1 Table 5 Page POW-4-21	"low voltage refers to voltage not exceeding 1000 V AC" Can the Contractor consider that the low voltage refers to rated voltage not exceeding 1000 V AC or 1500 VDC?	Refer to response Item No. 40 above.
42.	04 Power Supply System Clause 4.3.1 Table 5 Page POW-4-21	Power Receiving Post (PRP) is mentioned in the definitions chapter, but there is no specification, please confirm the specification of the PRP or if there is no PRP to be provided on this contract.	The Power Receiving Post (PRP) shall be designed and installed for 2 x 115kV OHL Incoming Feeders from the Grid connection points to the Switching Station by MERALCO (refer also Item 37 above for clarification). At this stage CP106 do not need to install PRP.
43.	04 Power Supply System Clause 4.5.4,	Please confirm the Tunnel lighting and outlets is the responsibility of the CPl0l Contractor and that CP106 has	Yes, Bidders' understanding is correct.

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	Page POW-4-32	no involvement.	
44.	04 Power Supply System Clause 4.6.13	Please clarify the LV Scope for power supply Part (CP106) in BSS, TPS and SSS?	BSS – CP106 is responsible for a complete design and built, including both AC & DC low voltages. This includes 2 x 115kV Cu/XLPE cable between Switching Station and BSS. TPS – CP106 is responsible for a complete design and built, of TSS. Where indicates 400V 3-Phase and 230V 1-Phase are under Civil Contractors. SSS - CP106 is responsible for a complete design and built including DC low voltage and the interface requirements. Where indicates 400V 3-Phase and 230V 1-Phase are under Civil Contractors. Please refer to high level design of Feeding Line Diagrams and Section VI of Employer's Requirements. Also, it's Contractor's responsibility to liaise and interface with Civil Contractors for the design and built plan program activities to achieve the delivery of the project in a timely manner. LV Scope meant to 110V DC and others auxiliary supplies required for

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			metering/control/measurement etc.
45.	04 Power Supply System Pages from 4 to 8 Page 18	According to Feeding line diagrams, it is mentioned that these SLD are only for information, but in accordance to page 18, paragraph 6, it is required to confirm the option as shown on Feeding Line Diagrams. Please clarify.	Please note the Technical Requirements (ERT) was written as a 'Conceptual Design' and thus to be used as a guidance and information for the contractor to develop detailed design. The Contractor must undertake the full responsibility to carry out the necessary design and choose the best OPTION that fit the technical and commercial prospective (i.e. fit for purpose and cost-efficient design solution) for the Engineer's review and approval. OPTION 1 or 2 to be determined through Train Simulation Studies to study the regenerative energy during trains braking. The regenerative energy can be used to replace to transformer/rectifier unit, if possible. Contractor shall carry out the detailed train simulation studies taken into consideration 'Operation Requirements' specified in ERT, under section 4.1.12. The design also shall ensure the capacity/rating of each equipment, substations; include 34.5kV HV Power Cable and conductors etc. to be

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			installed on MMSP are of adequate ratings, sizes and must be able to withstand the system short-circuit level(s).
46.	04 Power Supply System Clause 4.6.12 & 4.6.13	According to chapter 4.6.12, it is mentioned that the scope of MERALCO: 1. Incoming 115kV overhead lines and associated switchgear; 2. 115kV Switching Compound physical structures including building; 3. 115kV bus bars; 4. l 15kV Grid transformer HY circuit breakers etc but in accordance with the chapter 4.6.13, this scope is repeated for CP106 and it is not clear. Please clarify and detail the scope of work of CP106?	The CP106 scope of works comprised of Civil/Structure and Electrical as a complete design and built of 115kV/34.5kV Bulk Supply Substations (BSS), as specified in Vol ll ERT section 4.6.13. This also includes the interconnection/cabling/protection between MERALCO Switching Station and 115kV GIS of BSS but excluding the supply of item 15 – Metering equipment. The installation of Metering equipment inside the Switching Station is part of MERALCO scope of work. The scope of CP106 also includes, but not limited to: a) 2 x 115kV Cu/XLPE Incoming Feeder Cables and associated protections and control between new Switching Station. b) A complete of 115kV GIS of BSS comprised of the following:

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			i. 115kV GIS double busbars (2 incomers, 1 bus-coupler and 3 outgoing feeders). ii. 2 x 60MVA (ANON) equipped with two stages of fans (80MVA ONAF1 & 100MVA ONAF2), 115kV/34.5kV. Note design shall allow for future one additional transformer of similar rating. iii. 34.5kV Switchgear (10 Panels: 2 incomers, 1 bus-coupler, 6 outgoing feeders and 2 spare panels) iv. Capacitor VTs/CTs/Metering v. Disconnectors/Earthing; switches/motorized Switching devices etc. vi. Reactive Power Compensation Equipment vii. 2 x 1MVA, 34.5kV/400V Cast Resin Transformers viii. 400V LV AC Switchboard ix. HV/LV Power Cables x. Protection and Control compliant to IEC 60850 xi. Substation Automation System in accordance IEC 60850

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			xii. SCADA xiii. Telecom Post and associated telecom equipment xiv. Local Control Room include PC and communication network xv. BSS shall be fully aircon provided. xvi. Others etc. The design shall comply with MERALCO 115kV GIS Substation specifications. **Note for Clarification** Section 4.6.12 – MERALCO Scope of Work. This list is amended as follow: MERALCO is responsible for the design and build of 2 x 115kV OHL Incoming Feeders, new Switching Station and Metering equipment inside the Switching Station.
47.	04 Power Supply System Clause 4.6.2	It is mentioned that Each BSS shall install with two 600MVA, 115kV/34.5kV, please confirm that 600MV A is a mistake which should read 60MVA?	Yes, 60MVA is correct.
48.	04 Power Supply System Clause 4.13.1	"Internal Interfaces [..] Indicative and non-exhaustive items are as following: Local Utility Provider for Incoming	Vol ll ERT Section 4.13.1, item 1 should refer to as 'External Interfaces', such as:

Metro Manila Subway Project Phase 1 Package CP106: E&M Systems and Track Works			
ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
		Feeder 115kV and 34.5kV" Please clarify the internal interface suggested by this item.	i. for the design of 2 x 115kV Cu/XLPE cablings and associated protections required between MERALCO Switching Station and 115kV GIS BSS. ii. for temporary supplies required during construction period.
49.	04 Power Supply System	Please provide initial power simulation study details so that equipment sizing can be defined and estimated.	Currently there is no initial power simulation study available. Contractor shall carry out Power Simulation studies during detailed design stage. It's Contractor responsibility to carry out the full detailed design studies as specified in ERT, under section 4.6 to ensure all equipment installed on the power supply system are adequate rated, withstand of short-circuits, safe and reliable.
50.	04 Power Supply System	Is there an estimated of power balance done by Civil work contractor in order to size relative equipment during tender phase? Please provide details of structures and room sizes so that entry methodology and power equipment size can be estimated	There are some high-level designs include load shedding on the E&M side for distribution transformer sizing, generator sizing and estimate the room sizing as follow: i. Area of TSS is estimated between 550sqmm and 650sqmm max., and 5.5m height. Contractor to confirm. See attached drawing " Typical Substations & Equipment Room

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
			Layout for TSS, SSS, & ERS. ii. Area of SSS is estimated between 200sqmm and 250sqmm max., and 5.5m height. Contractor to confirm. iii. Area of BSS is estimated 1600sqmm – GIS Compact Type Substation, 4 levels include cable basement. Contractor to confirm. However, it is Contractor's responsibility to carry out the necessary studies for design layouts to ensure adequate for equipment ratings and room sizes. Contractor is required to work closely with Civil/Architecture Contractor/s with respect to room size, cable entries, cable management system etc. to develop combined service drawings (CSDs) during E&M system design and built stage.
51.	04 Power Supplu System	Please provide details of the following distances between connections in order to estimate the cables quantities: Between Grid sources and BSS 1/BSS2 (if in our scope) Between Bulk Supply Substation (BSS l) and depot TSS, Between Bulk Supply Substation (BSS 1) and Tandang Sora	BSS 1 & 2 approx. lengths: Two Incoming Feeders 2 x 1000m² Cu/XLPE (2 per phase). Length approx. of 100m each. For distances between BSSs and Stations please refer to chainages specified in Feeding Line

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
		TSS, Between Bulk Supply Substation (BSS2) and Lawton East TSS, Between Bulk Supply Substation (BSS2) and Lawton West TSS Between Bulk Supply Substation (BSS 1) and Quirino Highway Station SSS, Between Bulk Supply Substation (BSS 1) and Tandang Sora SSS, Between Bulk Supply Substation (BSS2) and Lawton East SSS, Between Bulk Supply Substation (BSS2) and Lawton West SSS	Diagrams and ERT. The Bulk Substation, BSS 1 shall be located inside the lot 35 area identified as Option 2) as shown on drawing No.: MMSP-BSS-001. BSS 2 shall be located towards the south section of MMSP near Senate Station area. Exact location is under study. For further Civil or Station layout, please refer Annex "C" of General Bid Bulletin No.5
52.	04 Power Supply System	Please provide details of installation mode cables at each level in TSS, SSS, between stations and substations? Please confirm us that we can use as an assumption, the installation of HV, MV, traction cables and LV cables will be independently in order to estimate cable quantities? Please detail cable support and civil drawings in TSS, SSS and between stations and substation (cable tray, cable duct) required for the installation of cables?	Please refer to the drawings provided in the Volume III of IV of the Bidding Documents. It's Contractor's responsibility to calculate and design the Cable Management Systems to be installed in each TSS and SSS. For cables in between Substations refer to the drawings provided for reference only in the Volume III of IV.

Metro Manila Subway Project Phase 1 Package CP106: E&M Systems and Track Works			
ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
53.	04 Power Supply System	Please provide the 115kV short-circuit power (at upstream level) and grounding resistance values to be considered for the design?	Contractor to seek advice and interface with the Power Supply Utility Provide (MERALCO) on this matter at the design stage and also obtain MERALCO approval for the Engineers review and approval. However, for reference only based on MERALCO's Distribution Impact Study (DIS) report indicated that the 115kV breakers at the Switching Station is rated at 2000A with short circuit level of 40kA. CP 106 Contractor to further clarify this requirement with MERALCO during the detailed design stage.
54.	04 Power Supply System Clause 4.5.2	It is said that the Earthing and bonding at BSSs shall be done according to the requirements of MERALCO, Please, clarify the earthing system requirements at the Grid transformers?	Contractor to seek advice and interface with the Power Supply Utility Provide (MERALCO) on this matter at the design stage. However, neutral earthing required to install at 115kV/34.5kV BSS to limit the earth fault.
55.	04 Power Supply System Clause 4.8.2 viii	The busbars of 115kV and 34.5kV switchgear shall be extendable for future use. Please clarify the use and the number of future departures at each bus bar?	Future extension is unknown at present, however, the Contractor to ensure the 115kV and 34.5kV busbar must be extendable, especially for 34.5kV switchgear.

Metro Manila Subway Project Phase 1 Package CP106: E&M Systems and Track Works			
ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
			For 115kV GIS, Contractor to seek advice from the Power Supply Utility Provide (MERALCO) on this matter at the detailed design stage. For costing purpose please refer to item 46 above.
56.	Volume II. Part 2 Page POW-4-105 4.15.3 Availability	Please clarify what the expectation of built-in diagnostics and remote monitoring functions is.	Please refer Annex "A", item 57 in General Bid Bulletin No.3.
57.	Volume II. Part 2 Page POW-4-106 4.15.8 Single Point Failure	Please clarify the diagnostic information is meant fault alarm information.	Please refer Annex "A", item 58 in General Bid Bulletin No.3.
58.	Volume II. Part 2 Page POW-4-108 4.15.16 Environment Compliance	Is the synthetic transformer Main transformer? We interpret that the requirement of the oil type transformers is applied to the main transformer only since other transformers are specified as dry-type. Please clarify it.	Synthetic transformer for 115/34.5kV BSS Main Transformer is preferable, however oil (mineral) type can be acceptable as long as it built to comply with Environmental Standards. It shall be outdoor installation, IP55 min Rectifier Transformers and Distribution Transformers are Cast-Resin Type, Indoor Installation.
59.	Volume II. Part 2 Page POW-4-2	Please clarify the capacity and quantity of emergency generator set.	The capacity and quantity of emergency generator set specified in ERT, under section

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
	4.1 Overview		4.1.6. were assessed by Civil (E&M) Contractors. However, it's responsibility of CP106 Contractor to work closely with various Civil Contractor(s) to verify necessary emergency loads required for each station and to ensure the capacity of each emergency generator is of adequate rating, during the design stage.
60.	Volume II. Part 2 Page POW-4-13 4.1.8 34.5kV Incoming Feeder Capacity (Note to Contractor)	Allowable capacity of 28MVA x 70% at 34.5kV incomer feeder point is too small for 60MVA bulk transformer. Please clarify. In spite of the requirement that the transformer in BSS has a capacity of 100MVA in, this allowable capacity of 19.6MVA, 28MVA x 70%, is too small if one of the transformers in the BSS is shut down. Is there any consideration for short circuit current?	Please refer Annex "A", item 7 in General Bid Bulletin No.3. Note the incoming feeder point method refereed here is no longer applicable since MMSP 34.5kV feeders are fed from BSS(s) not from 34.5kV MERALCO.
61.	Volume II. Part 2 Page POW-4-17 Clause: 5. Manila Electric Company (MERALCO) power connection works.	As per clause 4.6.12, item 10 [Page: POW-4-40], we understand that 115kV pilot wire protection relay on the 115kV line is in the scope of MERALCO. Please clarify it.	Please refer to response Item 46 above for clarity.
62.	Volume II. Part 2 Page	FEMA 1050 is applied for the seismic reinforcement for	Please refer Annex "A", item 10 in General Bid

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
	POW-4-25 4.4.2 Proven Design	building and structures by the Civil contractor. We understand FEMA 1050 is not applied for power supply equipment. Please confirm	Bulletin No.3.
63.	. Volume II. Part 2 Page POW-4-25 4.4.4 Applicable Standards and Code of Practices	IEC61850 and IEC61508 are not found in this clause although they are found in other clauses. Please clarify it.	Please refer Annex "A", item 11 in General Bid Bulletin No.3. Applicable standard IEC 61850.
64.	Volume II. Part 2 Page POW-4-35 4.6.2 115kV/34.5kV Grid Main Power Transformer Capacities	Please confirm the statement as 600MVA is typo for 60MVA.	Please refer Annex "A", item 12 in General Bid Bulletin No.3.
65.	Volume II. Part 2 Page POW-4-37 Clause: 4.6.8 Design and Construction of 115/34.5kV Bulk Supply Substations	It seems that the Clause 4.6.8 includes the requirements for the works of the Civil scope and the MERALCO scope. Please clarify the specified scope of works for the contractor of the Power Supply System (POW).	Please refer to response Item 46 above.
66.	Volume II. Part 2 Page POW-4-38 4.6.9 Design and Testing Approvals	Please clarify the intended earthquake level in this specification.	Please refer Annex "A", item 14 in General Bid Bulletin No.3.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
67.	Volume II. Part 2 Page POW-4-38 to 39 4.6.10, 4.6.11 and 4.6.12	Please clarify the difference between "switching compounds" and switchgears.	Please refer Annex "A", item 15 in General Bid Bulletin No.3.
68.	Volume II. Part 2 Page POW-4-40 4.6.13 CP106 Scope of Work	Is it located at 115kV line at primary side of 60MVA transformer? If yes, we understand that it shall be the scope of MERALCO since CP106 scope is downstream from 60MVA transformer. Please clarify it.	Please refer to response Item 46 above.
69.	Volume II. Part 2 Page POW-4-40 4.6.13 CP106 Scope of Work	As per Clause 4.6.12 [Page: POW-4-40] and Clause 4.6.20 [Page: POW-4-41], we understand metering equipment is inside MERALCO scope of work.	Bidder's understanding is correct. Please also refer to response Item 46 above.
70.	Volume II. Part 2 Page POW-4-41 4.6.16 115/34.5kV Grid Main Power Transformer	Please clarify following items:- a) winding vector. b) tap changer range, and step. c) the voltage impedance. d) the interface of primary side, overhead line or cable. e) the difference of specification between ONAF1 and ONAF2. f) the installation condition (Outdoor/Indoor, IP rating) of main transformer.	Please refer Annex "A", item 17 in General Bid Bulletin No.3. The design of 60MVA (ANON), 80MVA (ONAF1), 100MVA (ONAF2), 115kV/34.5kV main transformers shall be compatible with MERALCO's facilities as they will be the one to supply the power required for the system. Transformer shall be installed outdoor. IP55 min. Other electrical characteristics to be obtained from MERALCO.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
71.	Volume II. Part 2 Page POW-4-42 4.6.21 115/34.5kV Main Transformer Protection	Please clarify LV Balanced Earth Fault function.	Please refer Annex "A", item 18 in General Bid Bulletin No.3.
72.	Volume II. Part 2 Page POW-4-42 4.6.21 115/34.5kV Main Transformer Protection	j) Earth Fault; Please clarify if it is standby earth fault. l) Tank Earth Fault; Please clarify what the difference between (b), (j) and (l) earth fault is.	Please refer Annex "A", item 19 in General Bid Bulletin No.3. j) is stand-by earth fault. l) The tank earth-fault protection is a specific type of the transformer protection. This protection is used where a neutral point of the transformer winding is grounded. Contractor advise to seek consultant with 'Protection Specialist' to carry out detailed protection studies.
73.	Volume II. Part 2 Page POW-4-44 and 69 4.7.1 and 4.8.12	4. Please clarify what the four independent parameter setting groups are. 5. Please clarify if this statement intends for the provision of redundant protective relay in addition to original protective relay.	Please refer Annex "A", item 20 in General Bid Bulletin No.3.
74.	Volume II. Part 2 Page POW-4-47 4.7.4 DC	Please clarify the "braking" is typo for "breaking"?	Please refer Annex "A", item 21 in General Bid Bulletin No.3.

Metro Manila Subway Project Phase 1 Package CP106: E&M Systems and Track Works			
ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
	Traction Power		
75.	Volume II. Part 2 Page POW-4-48 4.8.2 115kV Bulk Supply Substation	Please clarify the specification of Neutral Earthing Resistor.	Please refer Annex "A", item 22 in General Bid Bulletin No.3. The design of 'Neutral Earth Resistor' shall be installed on 115kV system to restrict the earth fault and therefore the design must comply to MERALCO 115kV system. Contractor to obtain the technical specification from MERALCO at the design stage.
76.	Volume II. Part 2 Page POW-4-48 and 54 4.8.4 Traction Substation (TSS) Equipment D. 1500V DC Switchgear HSCB, Isolators	Please clarify which interlock, electrical interlock or mechanical interlock, is intended.	Please refer Annex "A", item 23 in General Bid Bulletin No.3. This implies to electrical interlocks.
77.	Volume II. Part 2 Page POW-4-49 4.8.4 A 34.5 kV Switchgears	Please clarify the statement, saying only Depot is outdoor installation condition, is correct. If yes, please clarify what the requirement of IP grade is and also clarify if all of other panels installed in Depot TSS are outdoor installation.	Please refer Annex "A", item 24 in General Bid Bulletin No.3. All Depot equipment shall be indoor type and shall have suitable IP rating as per manufacturer recommendation. However, this depends on type of equipment.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
78.	Volume II. Part 2 Page POW-4-49, 50, 52, 55 4.8.4 A 34.5 kV Switchgears	Generally, the firefighting system is installed under the scope of Civil contractor as room/building protection. Please clarify the reason why this is applied to the equipment.	Please refer Annex "A", item 26 in General Bid Bulletin No.3.
79.	Volume II. Part 2 Page POW-4-49 4.8.4 A 34.5 kV Switchgears	Specification says that the 34.5kV switchgear shall be comprised of the following: i) Air insulated vacuum circuit breakers which can withdraw; ii) SF6 gas insulated fixed mounted vacuum circuit breakers; and iii) SF6 gas insulated vacuum circuit breakers which can withdraw. Please clarify if it is the intention that the contractor decides which type of 34.5kV switchgear is to be used out of the above options (i), (ii) or (iii).	Please refer Annex "A", item 25 in General Bid Bulletin No.3.
80.	Volume II. Part 2 Page POW-4-50 4.8.4 A 34.5 kV Switchgears	Please clarify the meaning of "break of max". Does this term mean overvoltage which occurs as transient recovery voltage when short circuit current, rated current, or exciting current at transformer are interrupted at GIS? Please clarify if the contractor can propose the Air Insulate Switchgear which can withdraw or Gas Insulated Switchgear.	Please refer Annex "A", item 27 in General Bid Bulletin No.3.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
81.	Volume II. Part 2 Page POW-4-50 4.8.4 A 34.5 kV Switchgears	Please clarify the meaning of "1250A for ring breakers" is for which component, busbar or circuit breaker, in GIS or both? Please specify separately the rated current for Loop main feeder and Ring main feeder.	Please refer Annex "A", item 28 in General Bid Bulletin No.3.
82.	Volume II. Part 2 Page POW-4-50 4.8.4 A. 34.5 kV Switchgears	Please clarify we can select the output voltage 230VAC or 110VAC. *UPS specification doesn't show the output voltage ratings.	Please refer Annex "A", item 29 in General Bid Bulletin No.3.
83.	Volume II. Part 2 Page POW-4-50 and 52 4.8.4 B. Rectifier Equipment	On the Page of POW-4-46, clause 4.7.4, 6th paragraph, it is stated that "Two (2) rectifier banks shall be installed at every traction substation and shall have estimated capacity sufficient for 10-car train operation with 2-minute headway. One rectifier unit shall be for normal operation and the other for standby backup system." Please clarify if 2 Rectifiers are to be run in parallel or separately as normal and standby.	Please refer Annex "A", item 30 in General Bid Bulletin No.3.
84.	Volume II. Part 2 Page POW-4-51 4.8.4 B. Rectifier Equipment	- Please clarify the statement of "EN 60163" is typo for "EN 50163. - In accordance with EN 50163, the statement related to "a voltage that is self-limiting at no load" is not found.	Please refer Annex "A", item 31 in General Bid Bulletin No.3.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
		Please clarify it.	
85.	Volume II. Part 2 Page POW-4-51 4.8.4 B. Rectifier Equipment	The Table number should be Table 7 not 4, please clarify.	Please refer Annex "A", item 32 in General Bid Bulletin No.3.
86.	Volume II. Part 2 Page POW-4-51 4.8.4 B. Rectifier Equipment	Please clarify how this value is derived.	Please refer Annex "A", item 32 in General Bid Bulletin No.3.
87.	Volume II. Part 2 Page POW-4-51 4.8.4 B. Rectifier Equipment	It is expected that a note is accidentally omitted since there is the asterisk after "series". Please clarify it.	Please refer Annex "A", item 32 in General Bid Bulletin No.3.
88.	Volume II. Part 2 Page POW-4-52 4.8.4 B. Rectifier Equipment	Please clarify if it is not applicable when disk type diode is adopted.	Please refer Annex "A", item 33 in General Bid Bulletin No.3.
89.	Volume II. Part 2 Page POW-4-52 4.8.4 C. Rectifier	- Please clarify the contractor can propose the material of winding for Rectifier Transformer (Copper or Aluminum).	Please refer Annex "A", item 34 in General Bid Bulletin No.3.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
	Equipment	- Please specify the coupling factor of rectifier transformers.	
90.	Volume II. Part 2 Page POW-4-52 and 53 4.8.4 C. Rectifier Equipment	There seems to be discrepancies on the off-load tapings. +/- 5.0% is required in the 'C Rectifier Transformer d)' but +/- 7.5% is required in the tapings in the 'Table 8'. Please clarify this.	Please refer Annex "A", item 35 in General Bid Bulletin No.3.
91.	Volume II. Part 2 Page POW-4-53 4.8.4 C. Rectifier Equipment	Dry type transformer is not equipped with gas pressure alarm and tripping device. Please confirm.	Please refer Annex "A", item 36 in General Bid Bulletin No.3.
92.	Volume II. Part 2 Page POW-4-55 4.8.4 E. 1500V DC Switchgear	"D 1500V DC Switchgear HSCB, Isolators" on the page of POW-4-54 specifies that: 'For connecting the negative terminals of the rectifiers with negative bus bars, motorized off load switches, interlocked with corresponding HSCB & Disconnector Switches shall be provided.' Please clarify which is correct, manual or motorized.	Please refer Annex "A", item 38 in General Bid Bulletin No.3.
93.	Volume II. Part 2 Page POW-4-55 and 56 4.8.4 E. 1500V DC Switchgear	We interpret that transducers and shunts are also acceptable as well as Current Transformers and Voltage Transformers. Is our understanding correct?	Please refer Annex "A", item 37 in General Bid Bulletin No.3.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
94.	Volume II. Part 2 Page POW-4-56 4.8.4 E. 1500V DC Switchgear	- We interpret that transducers is also acceptable as well as current transformers. Please clarify it. - Please clarify what the function of conversion switch is.	Please refer Annex "A", item 39 in General Bid Bulletin No.3.
95.	Volume II. Part 2 Page POW-4-58 4.8.4 G Negative Disconnect Switch and Negative Switchboard Assembly	Please clarify which interlock, electrical interlock or mechanical interlock, is intended.	Please refer Annex "A", item 40 in General Bid Bulletin No.3.
96.	Volume II. Part 2 Page POW-4-6 and 9 Fig,3, Fig.6	T3 TSS is feeding to both of mainline and the airport, however there is no switches between connection point at mainline and airport line. On the other hand, on Fig.6, T3 TSS is feeding to airport line only. Please clarify which connection logic is correct.	Please refer Annex "A", item 6 in General Bid Bulletin No.3. T3 TSS DC Switchboard comprised of 4 outgoing HSCBs: two HSCBs shall feed the Mainline, the remain two HSCBs panels to be completely equipped with protections and control ready for cables terminations for future extension.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
97.	Volume II. Part 2 Page POW-4-6 and 9 Fig,3, Fig.6	On Fig.3, the traction section after SP namely Lawton East is fed from Lawton West TSS, however in Fig.6, only T3 TSS feeds that section. Please clarify which TSS is feeding each section.	Please refer Annex "A", item 6 in General Bid Bulletin No.3.
98.	Volume II. Part 2 Page POW-4-6 and 9 Fig,3, Fig.6	The locations of the SPs shown on Fig.3 and Fig.6 are different to each other. Please clarify the current location of SP.	Please refer Annex "A", item 6 in General Bid Bulletin No.3.
99.	Volume II. Part 2 Page POW-4-62 4.8.4 J. Sectioning Post (SP) Equipment	Please clarify the specific operation of Sectioning Post (SP).	Please refer Annex "A", item 41 in General Bid Bulletin No.3.
100.	Volume II. Part 2 Page POW-4-63 4.8.4 M. Short Circuiting Devices	Please clarify the reason mentioning AC.	Please refer Annex "A", item 42 in General Bid Bulletin No.3.
101.	Volume II. Part 2 Page POW-4-64 4.8.4 O. Battery and Battery Charger	It is acceptable that the battery charger supplier provide other brand batteries?	Please refer Annex "A", item 43 in General Bid Bulletin No.3.
102.	Volume II. Part 2 Page POW-4-65	Please clarify the detailed information of various subsystem equipment other than Power SCADA system.	Please refer Annex "A", item 44 in General Bid Bulletin No.3.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
	4.8.4 R. Uninterruptible Power Supplies (UPS)		
103.	Volume II. Part 2 Page POW-4-65 4.8.4 R. Uninterruptible Power Supplies (UPS)	Please clarify if there is any specific restriction on the installation space.	Please refer Annex "A", item 45 in General Bid Bulletin No.3.
104.	Volume II. Part 2 Page POW-4-65 4.8.4 R. Uninterruptible Power Supplies (UPS)	Please clarify these functions specifically.	Please refer Annex "A", item 46 in General Bid Bulletin No.3.
105.	Volume II. Part 2 Page POW-4-65 4.8.7 Dry Type Transformer (Delta-Star) for Depot and Main Line	Please specify if auxiliary transformers shall be provided with enclosures and its IP rating.	Please refer Annex "A", item 47 in General Bid Bulletin No.3.
106.	Volume II. Part 2 Page POW-4-66 4.8.7 Dry Type Transformer (Delta-Star) for Depot and Main Line	Please clarify the specification and location of 34.5kV/0.23-0.115 kV, further please clarify which scope includes these transformers.	Please refer Annex "A", item 48 in General Bid Bulletin No.3.
107.	Volume II. Part 2 Page	We interpret that this requirement is not applicable since	Please refer Annex "A", item 49 in General Bid

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
	POW-4-67 4.8.7 Dry Type Transformer (Delta-Star) for Depot and Main Line	SSS transformers are dry-type. Please clarify it.	Bulletin No.3.
108.	Volume II. Part 2 Page POW-4-68 4.8.11 Emergency Tripping System	Please clarify further details: - Location and numbers to be installed (each SSS platform only? Applied to Depot area also?). According to NFPA130, Blue light (Push button plunger, ETS box) should be located at emergency access point (i.e. passenger evacuation point and/or fire officer / security officer access point). - Tripping zone when a certain plunger activated - IP rating of ETS boxes - Demarcation of scope between power supply and other contractors such signalling contractor.	Please refer Annex "A", item 50 in General Bid Bulletin No.3. The design must comply to NFPA 130 as follow: 6.4.2 Blue Light Stations. 6.4.2.1* Blue light stations shall be provided at the following locations: (1) At the ends of station platforms (2) At cross-passageways (3) At emergency access points (4) At traction power substations (5) In enclosed trainways as approved 6.4.2.2 Adjacent to each blue light station, information shall be provided that identifies the location of that station and the distance to an exit in each direction. 6.4.2.3 For blue light stations at elevated guideways, the graphics shall be legible from the ground level outside the trackway.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
			6.4.2.4 In systems with overhead traction power, the requirement to disconnect traction power shall be permitted by an approved alternative means. * This subsection shall apply to the traction power subsystem installed in all trainways, which shall include the wayside pothead, the cable between the pothead and the contact third) rail or overhead contact system (OCS), the contact rail or OCS supports, and special warning and identification devices, as well as electrical appurtenances associated with overhead contact systems.
109.	Volume II. Part 2 Page POW-4-69 4.8.12 Protection Control and Monitoring	Does this mean that soft interlock on SCADA is required but soft interlock in local equipment installed at TSSs or SSS is not required? Please clarify this requirement specifically.	Please refer Annex "A", item 51 in General Bid Bulletin No.3.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
110.	Volume II. Part 2 Page POW-4-69 4.8.12 Protection Control and Monitoring	- Please clarify the specifications of main transformers. - Please specify the detailed requirement of over fluxing relay. In the clause 4.6.16 on the POW-4-41, double winding transformer is specified. However, restrict earth fault on both primary and secondary is required. In that case, the winding is star-star connection. Please clarify the necessity of delta winding as a tertiary winding.	Please refer Annex "A", item 52 in General Bid Bulletin No.3.
111.	Volume II. Part 2 Page POW-4-70 4.8.13 Protection for 34.5kV Network	The internal fault of distribution and rectifier transformer can be detected and protected by the earth fault relay equipped in 34.5kV GIS. Therefore, we interpret that this differential protection is not necessary. Please clarify it.	Please refer Annex "A", item 53 in General Bid Bulletin No.3.
112.	Volume II. Part 2 Page POW-4-71 and 72 4.8.15 Income from Rectifier	Please clarify if Protection elements no. 5 and 7 - 11 listed in specification are applied to rectifier unit instead of DC switchgear. The tripping signal to DC rectifier feeder breaker will be sent in case of tripping failure.	Please refer Annex "A", item 54 in General Bid Bulletin No.3.
113.	Volume II. Part 2 Page POW-4-72 4.8.16 Feeders to OCS	We interpret that this requirement is Line test (Load measuring) function. Is our understanding correct?	Yes, correct.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
114.	Volume II. Part 2 Page POW-4-72 4.8.17 Other Protection	- On page POW-4-55, E. 1500V DC Switchgear clause, DS is required to equip the Relay for Grounding Protection (64P). 64P protection is different from frame leakage protection, please clarify both of these protection elements are required. - Please clarify the intention of "Temporary faults due to birding" is short-circuit faults caused by animals.	Please refer Annex "A", item 56 in General Bid Bulletin No.3.
115.	Volume II. Part 2 Page POW-4-18 4.2.1 General	Please clarify IEC 60815 is typo for IEC 61850.	Please refer Annex "A", item 9 in General Bid Bulletin No.3.
116.	Volume II. Part 2 Page POW-4-25 and 29 4.4.4 Applicable Standards and Code of Practices	IEC61850 and IEC61508 are not found in this clause although they are found in other clauses. Please clarify it.	Please refer Annex "A", item 11 in General Bid Bulletin No.3.
117.	Volume II. Page POW-4-79 4.10.1 Overview	*"In the event of communications failure between a station and the control database, the station traction power SCADA equipment shall continue to function as an autonomous system, maintaining a local database and all Power SCADA facilities."* Please clarify 'an autonomous system'.	Autonomous system is a local back-up system to maintain availability during the main communications equipment failure. The CP 106 E&M System internal interface with SCADA design/suppliers and electrical equipment suppliers to develop the SCADA system architecture during the design stage.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
118.	Volume II. Page POW-4-79 4.10.1 Overview	*"9. Provide centralized data storage and software back-up system; and….."* Please specify the detail function required as "software back-up system".	The Power SCADA must be designed with dual parallel redundant (main & back-up system). In the event when the main system fails or become out of service then the back-up system shall operate all the necessary functions/tasks of the main system. Contractor shall carry out a failure Mode Effect Analysis (FMEA) with SCADA design/suppliers and electrical equipment suppliers to develop the SCADA system architecture during the design stage.
119.	Volume II. Page POW-4-79 4.10.1 Overview	*"10. Provide displays for supervising of ITVs installed in BSS, TSS and SSS for the sight overview."* Please clarify if a contractor can propose the system of this supervising of the ITVs as an independent system not including into the SCADA system.	Contractor is advised to include P-SCADA at the design stage in consultation with SCADA Design and Supplier.
120.	Volume II. Page POW-4-80 4.10.4 Design Reliability; a) System Availability	- We interpret "The complete Power SCADA system" is the SCADA system with the items specified in 4.10.14 in the page POW-4-85. Please clarify if it is correct. - Please specify "Traction Power functionality" and "Traction power decision support facilities"	Yes, you are correct items specified in 4.10.14 is Power SCADA system Traction Power decision support facility is Power SCADA.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
		- Please clarify what the users intend to do with "Software Development"	The software development plan and process shall be part of the design. The Engineer to review and approve. The "Traction Power functionality" and "Traction power decision support facilities" to be developed by CP106 Contractor in conjunction with equipment and SCADA design at the detailed design. This also depends on I/O schedules. The end user / The Employer may use the software to develop and make changes to the Power SCADA control and indication panel The Contractor is responsible to prepare the detailed design of the Power SCADA as per the Employer's Requirements specified in Vol ll ERT. under section 4.10. The interfaces with electrical equipment for the detail SCADA architecture System to be developed at the design stage, taken into consideration of safety, reliability, availability and maintainability.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
121.	Volume II. Page POW-4-80 4.10.4 Design Reliability; a) System Availability	*"v. Any degraded mode of operation or re-configuration functions provided by the Delivered System shal not be included in the determination of the Delivered System availability."* Please clarify if "the Delivered System" is equal to the SCADA system.	Yes. Delivery system is equal to the SCADA system.
122.	Volume II. Page POW-4-82 4.10.7 Event Record	*"2. A Central recording system shall….* *vii) Text entered by operations personal."* Please clarify specify the detail function required as "Text". Is this the function such sticky-note? And please also clarify what information should be recorded.	The Event Records shall have a facility for manually entering massages by the authorized operator(s). The information entered manually should be recorded with time stamp against the related event occurrence time.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
123.	Volume II. Page POW-4-82 and 83 4.10.7 Event Record	*"4. The event records shall be available as a text table, with each event classified by its priority level and shall be tagged with details of the date and time at which the event occurred. Additionally, the operations personnel identification code shall be recorded for each event that is initiated by the operations personnel."* Please clarify if user log-in code can be used for operations personal identification code.	Contractor to propose at the design stage the advanced technology method that are available instead of just using log-in code method only.
124.	Volume II. Page POW-4-83 4.10.8 Alarms	*"All alarm appearance events shall generate a record in the alarm list. This record shall only be erased by the System Administrator after a predefined period (minimum one year) or number of events (minimum 2,000,000 events) whichever is more."* Please clarify if contractor can propose the way to record events. (e.g. CSV)	There are better types of format currently available in the market. The Contractor shall propose at the design stage the advanced technology that are available today. Contractor to analysis and advise the benefits that best suit for MMSP Power-SCADA, at the design stage.
125.	Volume II. Page POW-4-83 4.10.9 Response Times	*"3. Housekeeping" commands such as changes of the display format or colour scheme philosophy shall be executed by the Power SCADA system within 5 seconds of the completion of the input procedure."*	Yes, housekeeping commands shall include the status changes i.e. changes of display, or colour schematic due to faults and so on, if occurred.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
		Please clarify the details of Housekeeping" commands such as changes of the display format or color scheme philosophy.	
126.	Volume II. Page POW-4-83 4.10.9 Response Times	*"5. The Safety Critical systems for this Power SCADA shall include, but shall not be limited to the following.."* Please clarify the requirement of No.5 in the clause 4.10.9 on the page POW-4-83	Requirement of item no. 5 is specified in the items or functions of Power SCADA that need to be delivered by the Contractor as described in items 1 to 4 of this clause.
127.	Volume II. Page POW-4-83 4.10.9 Response Times	Please specify the detail of "Monitoring system".	Contractor shall propose and specify the detail of monitoring system during detailed design stage for The Engineer review and approval with O&M operator for the Employer approval.
128.	Volume II. Page POW-4-84 4.10.10 Noise	*"1. All SCADA equipment shall be fully protected against the effects of power supply surges and transients."* Please clarify if "fully protected" means protections at the all points between SCADA system and other power supply equipment.	Yes, the design of P-SCADA to ensure that electrical surges and transients during switching and or lightning etc. shall not affect the operation of P-SCADA system.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
129.	Volume II. Page POW-4-84 4.10.10 Noise	*"6. The SCADA system shall have 20% spare capacity (to be confirmed). In addition, the system shall have 20% expandability to incorporate additional functions and facilities…."* This specification seems not to be for Noise. Please clarify it. We interpret that "20% spare capacity" plus "20% expandability", total 40% is required. Is our understanding correct?	Yes, your understanding is correct.
130.	Volume II. Page POW-4-84 4.10.10 Noise	*"7. Communication: Communication backbone shall be provided by Telecom and however Contractor shall provide FO cable between the RTU/PLC/Gateway & Telecom Equipment Room. Server shall communicate with RTU/PLCs & RSS gateway on IEC 60870-5-104 communication protocol."* This requirement seems to be an "Interface Requirement" and not a requirement on the "Noise". Please clarify it.	Yes, it's an interface requirement. The communication between the networks are to be interference free.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
131.	Volume II. Page POW-4-85 4.10.13 Power Supplies	*"2. The power supply for Power SCADA shall be supplied through UPS. UPS shall be capable of providing the specified performance continuously for a minimum period of four hours."* Please clarify "the specified performance" of the UPS.	The Contractor responsibility to produce a UPS with backed up power in the Technical Specification at the design stage.
132.	Volume II. Page POW-4-85 4.10.14 Power SCADA (P SCADA) Requirements	*"P-SCADA will have redundant system and shall have enough reliability and functions. To realize easy extension in the future, available distance for controlling is 30 km or more, and extension of controlled posts of further 20 or more shall be possible."* Please clarify upper limit.	Please clarify the question.
133.	Volume II. Page POW-4-86 4.10.14 Power SCADA (P SCADA) Requirements	*"2. Central control facilities (Servers, workstations, LAN equipment's UPS of appropriate capacity etc.) at the Operational Control Centre (OCC) Depot. Including Video Display Wall & Training Simulator."* Please specify quantities and size of the "Video Display Wall"	Contractor shall propose quantity and size of the Wall mounted Video display units which shall be integrated with other systems of MMSP such as Signaling, CCTV, P-SCADA etc. Contractor to take the responsibility and work with SCADA designer/supplier at the detailed design level to develop the complete Architecture SCADA System and SCADA Technical

Metro Manila Subway Project Phase 1 Package CP106: E&M Systems and Track Works			
ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
			Specification.
134.	Volume II. Page POW-4-86 4.10.14 Power SCADA (P SCADA) Requirements	*"9. The Contractor shall define the philosophy and furnish a scheme of protection with fast discrimination and reliable operation based on latest state-of-the-art computerized logic protection scheme. The zones of protection shall overlap providing second and third tier back-up protections."* We interpret that the requirement on this clause is to provide redundancy parallelly/triplicated.	Yes. Your understanding Is correct. In addition, the Contractor shall prepare failure mode effects analysis to support the design solutions presented at the design stage for The Engineer's review and approval.
135.	Volume II. Page POW-4-87 4.10.15 Power SCADA (P SCADA) Distribution and Operation Control Centre (OCC)	*"3. One OCC to be provided (and BCC as an OPTION for future to be confirmed). Central workstations shall be provided giving an effective means of display and control. Simultaneous control operations from the OCC and BCC….."* To prevent the possibility of the failure on the changeover operational authority, please clarify if the following option is acceptable: 1. Main Control is at OCC 2. BCC has independency	Yes, your understanding is correct. Back-Up OCC (BOCC) to operate the railway under emergency when the main Depot OCC either totally is shut down and/or the Depot OCC building is evacuated.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
		3. BCC has the funtion to aqcuire and to release control authority in emergency only.	
136.	Volume II. Page POW-4-87 4.10.15 Power SCADA (P SCADA) Distribution and Operation Control Centre (OCC)	*"7. Necessary RTU/PLC shall be installed throughout the network for process bus related to BSS, SSS, TSS & OCS for Main Line and Depot. At TSS & SSS locations, a separate RTU each for ….."* We interpret that "for traction" is the RTS installed at TSSs and "for auxiliary" is the RTU installed at SSSs. Is our understanding correct? And please also clarify the environment specifications.	Yes, your interpretation is correct.
137.	Volume II. Page POW-4-87 4.10.15 Power SCADA (P SCADA) Distribution and Operation Control Centre (OCC)	*"9. Provide clear, comprehensive displays and printed logs of equipment status, based upon historical data, with the option of overlaying data from earlier periods; to each operator workstation."* Please specify the "option of overlaying data".	"option of overlaying data" means Multiple displays of future or current performance data and/or functions that can be viewed in one screen by the operator for flexibility of P-SCADA screen viewing.
138.	Volume II. Page POW-4-87 4.10.15 Power SCADA (P SCADA) Distribution and Operation Control Centre (OCC)	*"12. Provide centralized data storage and software back-up system."* Please specify the "software back-up system" and where it should be provided with.	The Power SCADA are dual parallel redundant system where both main system and back-up system are identical in the OCC and BOCC.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
139.	Volume II. Page POW-4-88 4.10.15 Power SCADA (P SCADA) Distribution and Operation Control Centre (OCC)	*"18. Implement necessary interlock logics to prevent inadvertent wrong operations. All hard-wired interlocks……. The interlocks, which are not possible through hard wiring, shall also be identified and provided in soft."* Please specify "The interlocks, which are not possible through hard wiring".	Contractor shall identify and define the interlocking logics to prevent inadvertent operation at the detailed design stage for The Engineer review and approval and The Employer approval.
140.	Volume II. Page POW-4-88 4.10.15 Power SCADA (P SCADA) Distribution and Operation Control Centre (OCC)	*"19. Define subroutines for quick isolation of faulty equipment & restoration of power supply."* Please specify "subroutines" such type, format, etc.	Contractor shall propose and define the subroutines of this requirement for The Engineer review and approval and The Employer approval.
141.	Volume II. Page POW-4-88 4.10.15 Power SCADA (P SCADA) Distribution and Operation Control Centre (OCC)	*"21. Control and Monitoring…..* *(d) A central recording system shall be provided to record the following events, including but shall not limited to:*	The central recording shall record all the RTU inputs. The list of RTU functions shall be identified at the design stage.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
		i. Change of state of remote terminal unit input parameters;" Please specify "input parameters".	
142.	Volume II. Page POW-4-90 4.10.16 SCADA Architecture	*"9. Status for all operation of protection devices;* *10. Rectifier disturbances;* *11. Transformer disturbances;* *12. Tap changers;* *13. Regenerative braking convertor;* *14. Battery and battery chargers;* *15. RTU/PLC;* *16. UPS; and* *17. Diesel generators."* Item 9 to 17 seem to be xi. under item number 8 in 4.10.16 SCADA Architecture. Please clarify it.	Yes, bidder's understanding is correct.
143.	Volume II. Page POW-4-90 4.11 DOCUMENTS REQUIRED FROM CONTRACTOR: 4.11.1 General	Please also clarify the environment specifications.	Refer to section 4.1.13 of the bidding document.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
	1. Design Stage		
144.	Volume II. Page POW-4-6 and 7 Figure 3 and Figure 4	Depot TSS is seemed to connect to main track only. It seems that further poer supply equipment such switches to sectionalize power supply in every tracks of Depot for maintenance of rolling stock is provided. Please clarfiy the traction power supply arrangement for Depot.	The Depot TSS shall feed both the main line, depot yard and test track in PRI. Please refer to OCS drawing No. MMSP-OCS-0000-DD-0101 for Depot Traction supply arrangement.
145.	Volume II. Page POW-4-41 4.6.16 115/34.5kV Grid Main Power Transformers	Please clarify the following items. 1. Voltage regulation 2. Tempurature Class 3. Climatic Class, Enviroment Class and Fire Class	Contractor to consult with Local Power Supply (MERALCO) for the details of Main Power Transformers technical specification, at the design stage. Specifications of Main Power Transformer shall be compatible with MERALCO's facilities as they will be the one to supply the power required for the system.
146.	Volume II. Page POW-4-54 4.8.4 Traction Substation (TSS) Equipment	Please clarify the location, indoor or outdoor, of following traction equipments in Depot. - Rectifier Transformer - Rectifier - DC switchgear - Negative Panel - OPVD	Confirm that all equipment shall be indoor types.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
147.	Volume II. Page POW-4-48 and 55 4.8.4 Traction Substation (TSS) Equipment E. 1500V DC Switchgear	On the page POW-4-48, there is a description stating "*For connecting the negative terminals of the rectifiers with negative bus bars, motorized no load switches, interlocked with corresponding HSCB & Disconnector Switches shall be provided."* This seems to require the installation of the DC isolator in the Rectifier cubicle. On the other hand, DC Negative Disconnecting Switch (manual) is required in the specification D. 1500 DC Switchgear HSCB, Isolators, E. 1500V DC Switchgear and G. Negative Disconnect Switch and Negative Switchboard Assembly. Please clarify the location of the DC Negative Disconnector.	DC Negative Disconnector is a disconnector/isolator between negative busbar return and negative rectifier cubicle.

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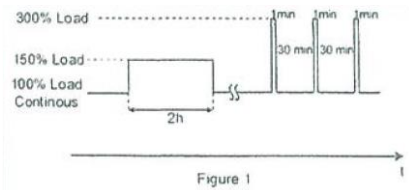
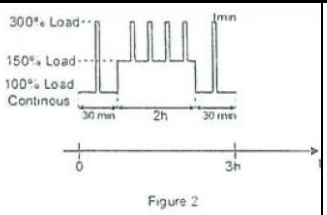
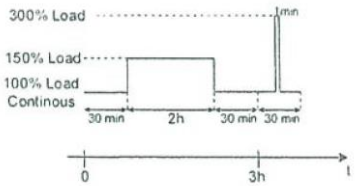
ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
148.	Volume II. Page POW-4-51 and 53 4.8.4 Traction Substation (TSS) Equipment B. Rectifier Equipment Table 7: Rectifier Rating C. Rectifier Transformer Table 8: Rectifier Transformer Rating	 Figure 1  Figure 2  Figure 3 In the above figures which condition is appplicable for Rectifier Transformer/Rectifier based on the Table 7 and Table 8 specifications of power system supply. Please clarify.	Figure 3 is approximate, however during FAT test of transformer rectifier unit shall include the testing at 200% for 5 min.
149.	Volume II. Page POW-4-52 and 54 B. Rectifier Equipment Item d)	*"The rectifier cubicles shall be protected against fire by means of an 'automatic fire detector and extinguisher system', 'Fire trace' type or equivalent, with provision of alarm."* Please clarify what the IP rating for Rectifier Transformer cubicle.	IP Rating to be decided by Contractor in consultant with equipment supplier at the design stage that suitable for indoor installation and that comply to IEC/BSEN or JIS standards. Note: Automatic fire detector, a device which detect the fire occurs inside the panel and quickly suppresses to minimize disruption. Contractor is advised to speak with manufacturers to seek information and

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			understand its applications that have been applied/installed to similar Metro Subway projects around the world.
150.	Volume II. Page POW-4-43 4.7 POWER SUPPLY SYSTEM DESIGN REQUIREMENTS	Please clarify the pollution level for following equipments. • Incoming Transformer in BSS • 34.5kV outdoor type Switchgear • Indoor type equipments	Please refer to section 4.1.13 of the bidding documents.
151.	Volume II. Page POW-4-43 4.7 POWER SUPPLY SYSTEM DESIGN REQUIREMENTS	Please clarify the requirement of color on each equipments.	To be advised during detailed design stage
152.	Volume II. Page POW-4-49 4.8.4 B Rectifier Equipment	When one spare diode in rectifier fails, is there any limit to operate or not? For example 100% load only, limit to 150%-2h or permit to 300%-1 min. Please clarify.	Yes, the remain rectifier shall be able to withstand the load capacity as specified. Refer also to item 148.
153.	Volume II. Page POW-4-49 4.8.4 A 34.5kV Switchgears	Please clarify the rated operation rating at 34.5kV SWG: a) O-3min-CO-3min-CO b) O-0.3sec-CO-3min-CO	It's Contractor responsibility to design a 34.5kV Switchgear that shall be compliant to BSEB/IEC and or JIS standards for MV Switchgear.

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			Refer to BSEN/IEC and or JIS standards.
154.	Volume II. Page POW-4-49 4.8.4 A 34.5kV Switchgears	Please clarify which the entry type, inner cone type or outer cone type, for 34.5kV Switchgear.	Please see response 153 above.
155.	Volume II. Page POW-4-12 and 16 4.1.6 MMSP: P.O. Section Feeding Arrangement Table 2: Installed Capacity proposed for P.O. Section-Main Line 4.2 SCOPE OF WORKS 4.2.1 General Table 4: Location of Station Substation (SSS) and relate equipment to be installed.	a) In Table 2 No.2 Quirino Highway SSS capacity is 2x2500kVA while for Table 4 No.1 Quirino Highway SSS capacity is 2x1500kVA. Kindly clarify which capacity will be applicable for the present project phase 1. b) Similarly in Table 2 No.6 North Avenue SSS capacity is 2x3500kVA while for Table 4 No.3 North Avenue SSS capacity is 2x2500kVA. Please clarify which capacity is applicable.	a) Table 2 is correct, however CP106 Contractor shall work closely with Civil Contractor(s) who will be responsible for the final E&M electrical load to finalize the size of all distribution transformers. b) Table 4 is correct. Also see comments above in a)

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156.	Volume II. Page POW-4-66 4.8.7 Dry Type Transformer (Delta-Star) for Depot and Main Line	Regarding LV winding lightning impulse and power frequency withstand voltages. For 34.5kV/0.4kV distribution transformers and 34.5/1.18kV rectifier transformer, based on IEC 60076-3 of Table 2, (Distribution and Rectifier Transformer), the Applied voltage or line terminal AC withstand voltage for low voltage winding is 3kV; While the 45kVp and 16kV for low voltage windings will not be applicable. Please clarify.	It's Contractor responsibility to design and test electrical equipment that shall be compliant to BSEB/IEC standards. So please refer to BSEN/IEC and or JIS standards.
157.	Volume II. Page POW-4-68 4.8.11 Emergency Tripping System	We understand the heavy duty lot line telephone handset between ETS box and station controller/OCC is provided by TELECOMMUNICATION contractor. Please specify the telephone handset specification if it is the scope under the Power supply system contractor.	To be confirmed. However, there is no such technical specification available at this stage. It's Contractor responsibility to develop the related technical specification.
Volume IV, Part 3 — Condition of Contract and Contract Forms			
158.	Section VIII, Page PC – 6 and 7 SCHEDULE OF KEY DATES and SCHEDULE	Please clarify the detail of East Valenzuela such as the drawing, the accompanying technical information and requirements related to it.	Please refer Annex "C" of this General Bid Bulletin for the layout of East Velenzuela Station.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
	OF ACCESS DATES		
159.	Section VIII, Page PC – 6 and 7 SCHEDULE OF KEY DATES and SCHEDULE OF ACCESS DATES	We understand that all the Key Dates and Access given in these Schedules are just assumption data for time being and these may be subject to change(s) even before/after the effective date of commencement of contract because of several reasons, such as delay in land acquisitions by the Employer, delay in works by the other package contractor(s), and/or any other reasons which should not be liable to the Contractor for CP106. Since such situation may cause necessity of extension of time and additional cost to be granted or paid by Employer to the Contractor, we believe that the Employer and the Contractor should agree to have any fair and transparent mechanism and/or conditions than the existing clause such as Clause 13, 16 and any other related clauses in the General Conditions of Contract in order to avoid endless argument and/or unnecessary dispute at the later stages for the mutual benefit for both of the Employer and the Contractor. Please clarify how to handle unexpected situations during contract fulfillment.	Please refer to Item 11 of Annex "A" of General Bid Bulletin No. 1.

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ITEM NO.	**REFERENCE**	**QUERIES**	**RESPONSE**
160.	Section VIII, Page PC-5 ATTACHMENT 1 TO PARTICULAR CONDITIONS SCHEDULE OF KEY DATES General Bid Bulltin No.1, Item 10	According to Items 10 of Annex B, the Key Date of HV Power On at PO section is shown 205 Weeks. Please clarify definition of partial operability in 2022	Please refer to Particular Conditions Part B - Specific Provisions, Page PC-8, Sub-Clause 1.1.6 Other Definitions