| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | | ***Volume I, Part 1 — Bidding Procedures*** | |
| 1 | Volume I Page BF-16<br>Sub-Clause 38.2<br>JAPANESE ORIGIN OF PLANT, MATERIALS AND SERVICES (FORM ELG) | Document CP106 Vol I P1 ITB BDS EQS BF_12 Dec 2019 (PA) page BF-16 indicates that "In accordance with ITB 5.1 Eligible Plant, Materials and Services, PC 4.1 Contractor's General Obligation and Section V Eligible Source Countries of Japanese ODA Loans, the goods and services at minimum Fifty Eight percent (58%) of the Accepted Contract Amount shall be procured from Japan". Please do enlighten us further details of this:<br>a. Should 58% be Japan branded product? (example: Panasonic Network Switch – Japan Brand)<br>b. Should 58% be provided by a Japanese company regardless of product brand origin? (example: Cisco Network Switch – USA Brand) | Please refer to Clause 6 of the following document available on JICA website:<br><br>"Operational Rules of Special Terms for Economic Partnership (STEP) of Japanese ODA Loans (dated 21st December 2018)" |
| 2 | Volume I, page BDS-3<br>Clause 18.7: Bid Prices and Discounts | Please confirm that the following understanding for tax assumption is correct. | Please refer to Item No.6 of Addendum No.1 contained in General Bid Bulletin No.1 dated 4th February 2020 and the "Bureau of Internal Revenue (BIR) Memorandum Circular (RMC) No. 8-2017 dated 9 January 2017 Clarifying the Tax Treatment of Value-Added Tax |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | | | (VAT) on Government Money Payments for OECF Funded Projects under Exchange of Notes Between Republic of the Philippines and the Government of Japan" . |
| | | (1) VAT for local payment shall be paid by Employer to the Contractor, against the Contractor's billing claiming 12% on top of local payment. | (1) Yes, your understanding is correct. |
| | | (2) Import Duty and Import VAT for importation of any goods and materials related to the Project shall be paid and settled by the Employer in coordination with Bureau of Custom. | (2) Yes, your understanding is correct. |
| | | (3) Corporate Income Tax of Japanese Companies shall be settled by the Employer, while the Contractor shall file for the Tax related only for this Project. | (3) Yes, your understanding is correct. |
| | | (4) The Employer shall not withhold Corporate Income Tax Withheld at Source for the services and goods. | (4) Yes, your understanding is correct. |
| | | (5) Personal Income Tax of Japanese Nationals employed shall be settled by DOTr, while the Contractor shall file for the | (5) Yes, your understanding is correct. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | | tax related only for this project.<br>(6) Local Business Taxes related to this project shall be paid and settled by the Employer in coordination with the Local Government Units. | (6) Yes, your understanding is correct. |
| | | ***Volume II, Part 2 – Employer's Requirements*** | |
| 3 | General | Will each station have 2 stations? (example: North Ave will have 2 stations; 1 station going to North & 1 station going to South) | We assume you are referring to platform in the station but not station in the station.<br><br>Refer to Volume III, Part 2 d), Dwg. No. MMSP-SIG-0000-DD-0201, there are two types of station platform to be designed or constructed along the MMSP line which are;<br>1. "Island/Center Platform" - 2 platforms located in between tracks.<br>2. "Side Platform" – Platforms located on the side of tracks or stacked (UPPER & LOWER level)<br><br>Generally, each station will have 2 platforms (1 platform is heading North and the other platform heading to South) except Senate Station (formerly known as Lawton West Station), where |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | | | it will have 4 platforms (2 platforms "North & South" at UPPER level and 2 platforms at LOWER level "North & South"). |
| 4 | Section VI, c) Technical Requirements, page ERG-35, 36<br>Clause 10: Inspection, Testing and Commissioning, | Please clarify which will be applied in the below sentence, five or 7 in the Clause 10.1 of Technical Requirements.<br><br>*"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. "* | It should be "seven (7) days".<br><br>Please refer Annex "B for addendum. |
| 5 | 4) Power Supply System (POW)<br>Page: POW-4-2<br>Clause: 4.1 Overview<br>'the Contractor shall also consider and verify the emergency loads to minimise the number of emergency generators…' | Please clarify the location and quantity of emergency generator sets required. | Generators are to be located at ground level in the vicinity of the station.<br>i/ Contractor shall discuss and work closely with Civil/Architecture Contractors to identify appropriate location for Emergency Generator prior to commencement of design. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | | | ii/ Currently one (1) Emergency Generator is proposed to be installed at each Station. Contractor(s) are requested to calculate the emergency load required at each station to size the rating of emergency generator at the design stage. |
| 6 | 4) Power Supply System (POW)<br>Page: POW-4-6 and POW-4-9<br>Fig.3 and Fig.6 | - It seems that T3 TSS is feeding both the mainline and the airport in future. However there are no switches between connection points for the mainline and the line to the airport. On the other hand, on Fig.6, T3 TSS is feeding to airport line only. Please clarify which connection logic is correct.<br>- In 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.<br>The locations of the SPs shown on Fig.3 and Fig.6 are different to each other. Please clarify the current location of SP. | 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.<br>Response to question regarding '*switches between connection points for the Mainline and the line to the airport*'. Please clarify why these switches are required and for what purpose? |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | | | i/ Fig. 3 (Traction Feeding Line Diagram - TFLD) is to be referred. However, it is a high-level design. It's Contractor's responsibility to carry out the detailed design to determine the necessary changes to TFLD to ensure the complete MMSP Traction Power System is highly secure, safely operable and reliable.<br>ii/ The physical location of SP shall be determined by the Contractor at the design stage taken into consideration of ease access for operation and maintenance. |
| 7 | 4) Power Supply System (POW)<br>Page: POW-4-13<br>Clause: 4.1.8 34.5kV Incoming Feeder Capacity (Note to Contractor)<br>'Reference to Power Supply Utility Provider MERALCO confirmed that the 'allowance capacity' of each | Allowable capacity of 28MVA x 70% at 34.5kV incomer feeder point is too small for 60MVA bulk transformer.<br>Please clarify.<br><br>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 | This is not applicable to newly built 115kV/34.5kV Bulk Substation.<br><br>With respect to short circuit current level at 115kV system on MERALCO side, Contractor is advised to seek for |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | 34.5kV Income Feeder fed from 115kV/34.5kV Bulk Supply Substation to MMSP Traction Substation (TSS) and Station Substation (SSS) is 28MVA max per circuit. However, the maximum design allowance of each circuit is to be 70% of 28MVA.' | consideration for short circuit current? Please confirm. | this information from MERALCO at the design stage.<br>With respect to short circuit current level at 115kV, 34.5kV, 400V and 1500V DC system on MMSP side are under CP106 scope, Contractor shall undertake the full detailed AC and DC power supply system studies and analysis at the design level as specified under section 4.6. |
| 8 | 4) Power Supply System (POW)<br>Page: POW-4-17<br>Clause: 5. Manila Electric Company (MERALCO) power connection works.<br>'ii) Bring in and installation of two 115kV Incoming Feeder power cables and associated pilot protections and control cables fed from 115kV MERALCO GRID Substation.' | 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. | The 115kV pilot wire protection between 115kV Transmission Lines and the Switching Compound shall be under MERALCO's scope. However, the 115kV pilot wire protection from Switching Compound to 115kV GIS at the Bulk Substation shall be under CP106 scope. |
| 9 | 4) Power Supply System (POW) | Please clarify IEC 60815 is typo for IEC 61850. | IEC 61850 is correct. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | Page: POW-4-18<br>Clause: 4.2.1 General 5.<br>'Manila Electric Company (MERALCO) power connection works.<br>iii) Procurement and installation of all equipment but shall not be limited to the following:'<br>・ Substation Automation System to IEC 60815;' | | |
| 10 | 4) Power Supply System (POW)<br>Page: POW-4-25<br>Clause: 4.4.2 Proven Design<br>'4. The system and sub-systems equipment shall be designed to comply with FEMA1050.' | FEMA 1050 is applied for the seismic reinforcement for building and structures by the Civil contractor.<br>We understand FEMA 1050 is not applied for power supply equipment.<br>Please confirm | Agree. However, it is anticipated that all major electrical equipment shall be designed/installed to withstand the seismic as per FEMA 1050 recommendation, where applicable. Also, Contractor is advised to study the report titled '*A Report Seismic Structure Design for MMSP Stations*' published by MMSP JICA Design Team, dated May 2019 and the Presentation Slides titled '*Detailed* |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | | | *Design Study of The Metro Manila Subway Project Seismic Structure Design*', dated 17th May 2019. |
| 11 | 4) Power Supply System (POW)<br>Page: POW-4-25 to 29<br>Clause: 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 if required. | Yes, IEC 61850 is required. IEC 61508 is not applicable and is a typo error. |
| 12 | 4) Power Supply System (POW)<br>Page: POW-4-35<br>Clause: 4.6.2 115kV/34.5kV Grid Main Power Transformer Capacities<br>'Each BSS shall install with two 600MVA, 115kV/34.5kV.' | Please confirm the statement as 600MVA is typo for 60MVA. | Yes. It's a typo error. |
| 13 | 4) Power Supply System (POW)<br>Page: POW-4-37<br>Clause: 4.6.8 Design and Construction of 115/34.5kV Bulk Supply Substations<br>'The scope of work includes the construction of two complete Bulk Supply Substations (BSSs),…' | 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). | The scope of works for the Contractor of the Power Supply System (POW) shall be a complete design and built of 115/34.5kV Bulk Supply Substations, which covers Civil/Structure and Electrical. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | 'The scope of work also …., complete with Automation Substation Protection and Control System…… This include fibre optic cables to the MERALCO Grid Substations (GSS)….' | | |
| 14 | 4) Power Supply System (POW)<br>Page: POW-4-38<br>Clause: 4.6.9 Design and Testing Approvals<br>'Boundary walls, entrance…. shall also be constructed to be earthquake proof, … displacement.' | Please clarify the intended earthquake level in this specification. | Due to natural disasters occurred in Manila such as: earthquakes, typhoons, volcano eruptions etc. which can cause the vibration and or displacement of the ground thus the construction of boundary walls, entrance gate, baffle walls between the main power transformers etc. shall be able to withstand such calamities.<br>Please also refer to Item No. 10 above. |
| 15 | 4) Power Supply System (POW)<br>Page: POW-4-38 and POW-4-39<br>Clause: 4.6.10, 4.6.11 and 4.6.12 | Please clarify the difference between "switching compounds" and switchgears. | Switching Compound is a 'switching device' to be built by MERALCO. It comprised of motorized isolators, circuit breakers and metering which |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | | | are connected between 115kV Grid Lines and 115kV GIS Bulk substation. It uses for isolation purpose.<br>The term Switchgear is defined as per relevant IEC/BSEN Standards, typical IEC 62271. |
| 16 | 4) Power Supply System (POW)<br>Page: POW-4-40<br>- Clause: 4.6.13 CP106 Scope of Work<br>- 2. Capacitor Voltage Transformers;<br>15. Metering equipment | - List of CP106 scope doesn't show the DC switchgear equipment, please clarify this point.<br>- 2. **Capacitor Voltage Transformers**<br>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<br>- 15. **Metering equipment**<br>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. Please Confirm | - 115kV/34.5kV Bulk Supply Substation does not have 1500V DC Switchgear equipment.<br>- Capacitor Voltage Transformer (CVT) shall be installed inside the BSS on the HV side of the 60MVA transformer, at the entry point of the 115kV cables before the CTs in order to enable voltage indication and measurement including power measurement.<br>The CP106 scope starts from the termination of 115kV cable onto the Meralco 115kV switching compound. Therefore, 115kV CVTs |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | | | and CTs are under CP106 scope of work.<br><br>- Metering equipment shall be installed inside the Switch Compound so 'YES' it is under MERALCO's scope.<br>Note to bidder: *The 115kV GIS (Gas Insulated Switchgear) that feeds into two main power transformers which comprised of double busbar chambers, circuit breaker, motorized isolators, earthing switch and protection and control panels compatible with IEC 61850.* |
| 17 | 4) Power Supply System (POW)<br>Page: POW-4-41<br>Clause: 4.6.16 115/34.5kV Grid Main Power Transformers<br>'Voltage Ratio: 115/34.5kV (step down double winding transformer) | Please clarify following items;-<br>a) winding vector.<br>b) tap changer range, and step.<br>c) the voltage impedance.<br>d) the interface of primary side, overhead line or cable.<br>e) the difference of specification between ONAF1 and ONAF2. | The main power transformer shall be designed as per Power Supply Utility Provide (MERALCO's technical specification).<br><br>The Contractor is advised to contact |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | Power Rating: 60/80/100MVA<br>Cooling: ONAN/ONAF1/ONAF2<br>Tap Changing: On load tap changing on the HV tap winding' | f) the installation condition (Outdoor/Indoor, IP rating) of main transformer. | MERALCO for the details of main transformer's technical specification and electrical characteristics prior to commencement of design. |
| 18 | 4) Power Supply System (POW)<br>Page: POW-4-42<br>Clause: 4.6.21 115/34.5kV Main Transformer Protection 1. Main Protection<br>'b) LV Balanced Earth Fault or Restricted Earth Fault' | Please clarify LV Balanced Earth Fault function. | This type of protection is an earth fault protection which is also known as Restricted Earth Fault protection for the LV (34.5kV) Star winding ONLY. This is a unit protection scheme for one winding of the transformer, where it protects the zone between the phase CTs and the neutral CT of the solidly earthed on the LV winding of the transformer.<br>However, it is Contractor's responsibility to carry out the complete power system and protection studies to ensure the complete Power Supply System is safe and reliable for operation and maintenance purposes. Contractor also needed to seek advice |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | | | and interface with the Power Supply Utility Provide (MERALCO) on this matter. |
| 19 | 4) Power Supply System (POW)<br>Page: POW-4-42<br>Clause: 4.6.21 115/34.5kV Main Transformer Protection 2. Back-up Protection<br>'b) LV Balanced Earth Fault or Restricted Earth Fault...<br>j) Earth Fault;<br>l) Tank Earth Fault;' | j) Earth Fault;<br>Please clarify if it is standby earth fault.<br><br>l) Tank Earth Fault;<br>Please clarify what the difference between (b), (j) and (l) earth fault is. | Please refer to response Item No. 17 & 18 above. |
| 20 | 4) Power Supply System (POW)<br>Page: POW-4-44 and POW-4-69<br>Clause: 4.7.1 and 4.8.12<br>'For numerical relays, the scope shall include the following:<br>4. The relay shall have four independent parameter setting groups.<br>5. The relay shall have provision of back up protection facility.' | 4. Please clarify what the four independent parameter setting groups are.<br>5. Please clarify if this statement intends for the provision of redundant protective relay in addition to original protective relay. | The relay shall have four independent parameter setting groups.<br>However, it is Contractor's responsibility to further investigate its application and discuss at the design stage. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| 21 | 4) Power Supply System (POW)<br>Page: POW-4-47<br>Clause: 4.7.4 DC Traction Power System<br>'Linked braking system utilizes optical fibre cables shall be prepared for DC traction feeder circuit protection between mainline TSSs.' | Please clarify the "braking" is typo for "breaking". | Yes, it's a typo error. |
| 22 | 4) Power Supply System (POW)<br>Page: POW-4-48<br>Clause: 4.8.2 115kV Bulk Supply Substation<br>'viii. Surge protection and Neutral Earthing Resistor etc.' | Please clarify the specification of Neutral Earthing Resistor. | Please refer to response Item No. 17 & 18 above. |
| 23 | 4) Power Supply System (POW)<br>Page: POW-4-48 and POW-4-54<br>Clause: 4.8.4 Traction Substation (TSS) Equipment<br>And<br>Clause: 4.8.4 D. 1500V DC Switchgear HSCB, Isolators | Please clarify which interlock, electrical interlock or mechanical interlock, is intended. | Please refer to section 4.8.12.<br>However, it is Contractor's responsibility to further develop at the design stage to ensure the complete Power Supply System is safe and reliable for operation and maintenance purposes. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | 'The 1500V DC Traction Substations shall include rectifier transformers, rectifiers, high speed circuit breakers, associated switches, protection, earthing, negative return panels and any other item required to complete the work.<br>Incoming Circuit Breakers (CB) of the single pole High Speed Circuit Breakers (HSCB) shall be installed between the rectifier group and 1500V DC Positive bus bars and shall be interlocked with the traction transformer incoming CB.' | | |
| 24 | 4) Power Supply System (POW)<br>Page: POW-4-49<br>A 34.5 kV Switchgears<br>'Depot TSS Installation<br>34.5 kV Outdoor type, metal enclosed gas insulated switchgear should be adopted.' | Please confirm the following equipment is to be outdoor and the IP rating required for the "*34.5 kV Outdoor type, metal enclosed gas insulated switchgear should be adopted".* Also clarify if all of other panels installed in Depot TSS are outdoor installation. | It's confirmed that 34.5kV switchgear shall be indoor type. This also applies to all other equipment. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| 25 | 4) Power Supply System (POW)<br>Page: POW-4-49<br>A 34.5 kV Switchgears f)<br>'34.5kV switchgear shall be the compact module type in design, metal enclosed and suitable for indoor and below ground level installation. The switchgear shall be protected from total dust ingress and protected from long term immersion up to specified pressure. The 34.5 kV switchgear shall be comprised of the following:<br>i) Air insulated vacuum circuit breakers which can withdraw;<br>ii) SF6 gas insulated fixed mounted vacuum circuit breakers; and<br>iii) SF6 gas insulated vacuum circuit breakers which can withdraw.<br>Note: All SF6 switchgears must be leakage free and are suitable for below ground level installation.' | Specification says that the 34.5kV switchgear shall be comprised of the following:<br>i) Air insulated vacuum circuit breakers which can withdraw;<br>ii) SF6 gas insulated fixed mounted vacuum circuit breakers; and<br>iii) SF6 gas insulated vacuum circuit breakers which can withdraw.<br>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). | Option (i) – Vacuum breakers with air insulated busbar chamber is preferable. However out of three types can Contractor advise the best available type of circuit breakers suitable to Modern Metro Subway installation and operation, taking into consideration safety, reliability and less maintenance as high priority. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| 26 | 4) Power Supply System (POW)<br>Page: POW-4-49 and 50 and 55<br>A 34.5 kV Switchgears g)<br>'The 34.5 kV 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. Rectifier, rectifier transformers and ESS cabinets also require Fire trace type or equivalent protection. All equipment and systems shall comply with the standards, rules and regulations which are applicable in Philippine.<br><br>Page: POW-4-52<br>B Rectifier Equipment e)<br>'The rectifier cubicles shall be protected against fire by means of an 'automatic fire detector and | Generally, the firefighting system is installed under the scope of Civil contractor as a room/building protection rather than individual equipment. Please clarify if this is to be applied at equipment level and the reason why this is applied to the equipment/. | This is electrical equipment called 'Cabinet Risk Zone' protection. A device which detect the fire occurs inside the panel and quickly suppresses to minimize disruption.<br>Contractor is advised to speak with switchgear manufacturers to seek information and understand its applications that have been applied/installed to the Metro Subway projects around the world. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | extinguisher system', 'Fire trace' type or equivalent, with provision of alarm.'<br><br>Page: POW-4-54<br>C Rectifier Transformer<br>'Temperature Protection<br>All transformers…windings. The cubicles shall be protected against fire by means of an 'automatic fire detector and extinguisher system', flooding type system, complete with CO2 Gas cylinder and alarm.'<br><br>Page: POW-4-55<br>D 1500V DC Switchgear HSCB, Isolators<br>'The DC switchgear shall be inclusive of circuit breakers and isolators<br>cubicles shall be protected against fire by means of an 'automatic fire | | |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | detector and extinguisher system', 'Fire trace' type or equivalent, with provision of alarm. In addition, Contractor shall comply with the standards, rules and regulations which are applicable in Manila, Philippines.' | | |
| 27 | 4) Power Supply System (POW)<br>Page: POW-4-50<br>Clause: 4.8.4 A 34.5kV Switchgears h) 'Switchgear shall be based on Air insulated vacuum / SF6 circuit breakers which can withdraw. Contractor shall study the effect of the overvoltage generated due to break of max. possible fault and its impact on the transformers. The transformers shall be designed accordingly.' | - 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?<br><br>Please clarify if the contractor can propose the Air Insulate Switchgear which can withdraw or Gas Insulated Switchgear. | Yes, your understanding is correct.<br><br>For below ground level installation Air Insulate Switchgear is preferable.<br>Please refer to item no. 25 above for preferable types. |
| 28 | 4) Power Supply System (POW)<br>Page: POW-4-50<br>Clause: 4.8.4 A 34.5kV Switchgears n) | 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 ignore statement '1250A for ring breaker'.<br>The rating of equipment shall be |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | 'Rated current: 1250A with busbar rating of 2500A (1250A for ring breakers) or…' | | decided by Contractor at the design stage.<br>This shall be based upon the AC and DC power supply system studies comprised of load flow, short circuit level, voltage drops, train simulations etc. taken into consideration of various scenarios to ensure the ratings of all equipment connected to system are safe to operate and reliable. They must be able to withstand the maximum short-circuit fault level. |
| 29 | 4) Power Supply System (POW)<br>Page: POW-4-50<br>Clause: 4.8.4 A 34.5kV Switchgears p)<br>'Auxiliary power supply voltage for auxiliary circuit: 230/110 V AC.' | Please clarify we can select the output voltage 230VAC or 110VAC.<br>*UPS specification doesn't show the output voltage ratings. | 230V or 110V AC are secondary voltages of VT for measurement metering and this depends on switchgear manufacturer.<br>Contractor to seek advice from switchgear manufacturer and produce appropriate technical specification. |
| 30 | 4) Power Supply System (POW)<br>Page: POW-4-50 | 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 | Noted that two clauses 4.8.4 and 4.7.4 are opposite, however, running in |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | Clause: 4.8.4 B. Rectifier Equipment<br>'Rectifier shall be designed to run in parallel.'<br><br>Page: POW-4-52<br>Clause: 4.8.4 C. Rectifier Transformer b)<br>'Rectifier transformers...They shall also be designed to meet the parallel operation requirements.' | 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."<br>Please clarify if 2 Rectifiers are to be run in parallel or separately as normal and standby. | parallel is preferable.<br>Contractor to consider the two transformer/rectifier units are running in parallel. |
| 31 | 4) Power Supply System (POW)<br>Page: POW-4-51<br>Clause: 4.8.4 B. Rectifier Equipment<br>'The output DC voltage for each rectifier transformer and rectifier set combination, at light transition load, shall not exceed the limit specified in EN 60163.'<br><br>'The DC traction supply system shall be designed to provide a voltage that | - Please clarify the statement of "EN 60163" is typo for "EN 50163.<br><br>In accordance with EN 50163, the statement related to "a voltage that is self-limiting at no load" is not found. Please clarify it. | Correct, it's EN 50163 not EN 60163.<br>Reference to EN 60163 for self-limiting voltage is incorrect.<br>'Self-limiting at no load voltage' must be specified in either IEC/BSEN standard. Contractor to seek and advise applicable IEC/BSEN standards for the DC traction voltage system. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | is self-limiting at no load as specified in EN 60163.' | | |
| 32 | 4) Power Supply System (POW)<br>Page: POW-4-51<br>Clause: 4.8.4 B. Rectifier Equipment<br>Rectifier Ratings<br>- 'Rectifier shall be rated in accordance with the parameters set out in Table 4 below:'<br>- Type: Indoor type twelve pulse converter with two parallel / series* connected six pulse converters<br>Internal impedance: 8%, however, shall be majorly governed by voltage drop study and determination of safe short circuit current. | - The Table number should be Table 7 not 4, please clarify.<br><br>- Type:<br>It is expected that a note is accidentally omitted since there is the asterisk after "series". Please clarify.<br><br>- Internal Impedance:<br>Please clarify how this value is derived. | Correct, the table number should be 7.<br><br>Please ignore the asterisk.<br><br>The internal impedance to be obtained from rectifier manufacturer. |
| 33 | 4) Power Supply System (POW)<br>Page: POW-4-52<br>Clause: 4.8.4 B. Rectifier Equipment a) | Please clarify if it is not applicable when disk type diode is adopted. | Contractor to advise the protection device if disk type diode is adopted and the benefits against Open-arm diode type. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | 'Open-arm diode detection shall be provided and shall be monitored by the SCADA system.' | | |
| 34 | 4) Power Supply System (POW)<br>Page: POW-4-52<br>Clause: 4.8.4 C. Rectifier Transformer | - Please clarify the contractor can propose the material of winding for Rectifier Transformer (Copper or Aluminum).<br><br>Please specify the coupling factor of rectifier transformers. | Copper is preferable.<br>Contractor to seek advice from Rectifier and Transformer manufacturer for the coupling factor and advise accordingly. This is necessary for the DC Traction Power System studies. |
| 35 | 4) Power Supply System (POW)<br>Page: POW-4-52 and POW-4-53<br>Clause: 4.8.4 C. Rectifier Transformer d)<br>'Off-load tapping links shall be provided on the high voltage winding to provide rated output at +5.0% to -5.0% of nominal supply voltage, in increments of 2.5%. Tap indicator position shall be visible through a viewing window.' | There seems to be discrepancies on the off-load tapings.<br>+/- 5.0% is required in the 'C Rectifier Transformer d)' but +/- 7.5% is required in the tapings in the 'Table 8'.<br>Please clarify. | Please use +/- 7.5%. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | Table8: Rectifier Transformer Rating<br>Off circuit tapping to be provided to give the rated voltage on the secondary for primary voltage variation of (+) 7.5% and (-) 7.5% in steps of 2.5 %. The tapping shall be on HV sides and capable of carrying full load current and over loads as specified. | | |
| 36 | 4) Power Supply System (POW)<br>Page: POW-4-53<br>Clause: 4.8.4 C. Rectifier Transformer f)<br>'Rectifier transformers shall be fitted with a temperature alarm device, and temperature tripping and pressure alarm and gas pressure tripping to be monitored by the SCADA.' | Dry type transformer is not equipped with gas pressure alarm and tripping device.<br>Please confirm. | Confirmed. |
| 37 | 4) Power Supply System (POW)<br>Page: POW-4-55<br>Clause: 4.8.4 E. 1500V DC | We interpret that transducers and shunts are also acceptable as well as Current Transformers and Voltage Transformers. Is our understanding correct? | Acceptable, as long as transducers and shunts are compliant with IEC/BSEN standards, however CTs and VTs are |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | Switchgear<br>'The DC switchgear shall be of metal-clad…and isolating. It shall be complete with all the current transformers and voltage transformers of adequate capacity and requirements and as per IEC 60044.'<br><br>'2. DS, isolation and protection for Rectifier Negative circuit minimum includes:<br>DC current transformer for measurement'<br><br>Page: POW-4-56<br>Clause: 4.8.4 E. 1500V DC Switchgear<br>'3. HSCB, protection for outgoing feeder circuit minimum includes:<br>DC current transformer for over current protection and rate of rise of | | preferable. Also, the DC Switchgear to be fully compliant with IEC 60044. Please refer also to section 4.8.4, under K section for further information. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | current protection' | | |
| 38 | 4) Power Supply System (POW)<br>Page: POW-4-55<br>Clause: 4.8.4 E. 1500V DC Switchgear<br>'2. DS, isolation and protection for Rectifier Negative circuit minimum includes:<br>DC Negative Disconnecting Switch (manual)' | "D 1500V DC Switchgear HSCB, Isolators" on the page of POW-4-54 specifies that:<br>'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.'<br>Please clarify which is correct, manual or motorized. | Motorized off-load switch is preferable. |
| 39 | 4) Power Supply System (POW)<br>Page: POW-4-56<br>Clause: 4.8.4 E. 1500V DC Switchgear<br>'4. Stand by HSCB for outgoing feeder minimum includes:<br>- DC current transformer for over current protection and rate of rise of protection | - We interpret that transducers is also acceptable as well as current transformers. Please clarify it.<br><br>Please clarify what the function of conversion switch is. | Please refer to response of Item No. 37 above.<br><br>Change-over switch is for localized operation. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | - DC current transformer for measurement<br>Conversion switch for stand by function' | | |
| 40 | 4) Power Supply System (POW)<br>Page: POW-4-58<br>Clause: 4.8.4 G Negative Disconnect Switch and Negative Switchboard Assembly<br>'Negative disconnect switches shall be mounted, have an insulated operating handle and shall be interlocked with the rectifier main circuit breaker.' | Please clarify which interlock, electrical interlock or mechanical interlock, is intended. | Please refer to response of Item No. 23 above. |
| 41 | 4) Power Supply System (POW)<br>Page: POW-4-62<br>Clause: 4.8.4 J. Sectioning Post (SP) Equipment | Please clarify the specific operation of Sectioning Post (SP). | For power supply back-up purpose. |
| 42 | 4) Power Supply System (POW)<br>Page: POW-4-63<br>Clause: 4.8.4 M. Short Circuiting | Please clarify the reason mentioning AC. | This depends on PLC supplier if AC auxiliary supplies are required. Please seek advice from supplier and advise |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | Devices<br>'The PLC shall have defined protective characteristics for DC and AC voltages. It shall be possible to define user characteristics for DC and AC voltages.' | | accordingly at the design stage. |
| 43 | 4) Power Supply System (POW)<br>Page: POW-4-64<br>Clause: 4.8.4 O. Battery and Battery Charger<br>'For better compatibility, the battery and battery chargers shall be supplied from same manufacturer.' | Please confirm, where applicable, it is acceptable that the battery charger supplier provide other brand batteries? | Preferable of the same supply. However, battery charger can be acceptable from different supplier(s) and they must be compatible with Battery. |
| 44 | 4) Power Supply System (POW)<br>Page: POW-4-65<br>Clause: 4.8.4 R. Uninterruptible Power Supplies (UPS)<br>'Backup period required for various subsystems shall not be less than 4 hours.' | Please detail the various subsystems referred to in this clause. | It is Contractor's responsibility to identify and verify with sub-systems at the design level and advise accordingly. |
| 45 | 4) Power Supply System (POW) | Please clarify if there is any specific restriction on the installation space. | At this early stage of design, the space |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | Page: POW-4-65<br>Clause: 4.8.4 R. Uninterruptible Power Supplies (UPS)<br>'Batteries shall be placed at least in 2 step 2 tier racks or cabinets for space saving.' | | is unclear. However, it is Contractor's responsibility to verify with Civil contractor at the design level and advise accordingly. |
| 46 | 4) Power Supply System (POW)<br>Page: POW-4-65<br>Clause: 4.8.4 R. Uninterruptible Power Supplies (UPS)<br>'The various modes of operation for UPS shall include:<br>a) mains UP<br>b) Mains Down<br>c) Mains restored.' | Please clarify these functions specifically. | Modes of operation specified for UPS are referred to its operation/isolation during normal and degraded modes.<br>It is Contractor's responsibility to identify and verify the needs at the design level with respect to the operation and maintenance. |
| 47 | 4) Power Supply System (POW)<br>Page: POW-4-65<br>Clause: 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. | All distribution transformers should be provided with enclosures, suitable for indoor installation.<br><br>It is Contractor's responsibility to identify and verify appropriate IP |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | | | rating for indoor installation in accordance with IEC / BSEN standards at the design level and advise accordingly. |
| 48 | 4) Power Supply System (POW)<br>Page: POW-4-66<br>Clause: 4.8.7 Dry Type Transformer (Delta-Star) for Depot and Main Line '34.5kV/0.4kV distribution transformers and 34.5kV/0.23-0.115 kV operation transformers shall comply with the requirements of JEC2200-1995 or equivalent equal. 34.5/1.18 kV Rectifier transformers shall comply with the requirements of JEC 2410-1998 or equivalent EN / IEC standards.' | Please clarify the specification and location of 34.5kV/0.23-0.115 kV, further please clarify which scope includes these transformers. | These are VTs for measurement purposes. This depends on switchgear manufacturer.<br>It is Contractor's responsibility to identify and verify with the suppliers at the design level and advise accordingly. |
| 49 | 4) Power Supply System (POW)<br>Page: POW-4-67<br>Clause: 4.8.7 Dry Type Transformer (Delta-Star) for Depot and Main Line | We interpret that this requirement is not applicable since SSS transformers are dry-type.<br>Please confirm. | Confirmed, gas pressure and gas temperature are not applicable for cast resin dry-type transformers. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | 'Fault detection: gas pressure and gas temperature' | | |
| 50 | 4) Power Supply System (POW)<br>Page: POW-4-68<br>Clause: 4.8.11 Emergency Tripping System<br>'An Emergency Tripping System (ETS) shall be installed in the SSS room of every station with ETS boxes on every platform in accordance with internationally accepted Fire Protection Standards for fixed guidance transit systems (NFPA 130).' | Please clarify further details:<br>- 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).<br>- Tripping zone when a certain plunger activated<br>- IP rating of ETS boxes<br>Demarcation of scope between power supply and other contractors such signalling contractor. | It is Contractor's responsibility to identify and verify the number of ETS required to install at Depot and at each Station.<br>The ETS location shall be located as per NFPA 130 recommendation.<br><br>For demarcations please refer to Interface Matrix which is in developing process. |
| 51 | 4) Power Supply System (POW)<br>Page: POW-4-69<br>Clause: 4.8.12 Protection Control and Monitoring, Interlocking<br>'The hard interlocks shall also be duplicated in soft using SCADA.' | 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. | A combined switching to be installed at TSS and/or SSS. Contractor shall develop the Power SCADA interface/communication between equipment. |
| 52 | 4) Power Supply System (POW) | - Please clarify the specifications of main transformers. | Please refer to response for Items No. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | Page: POW-4-69<br>Clause: 4.8.12 Protection Control and Monitoring, Protective Relays 7. b) '115kV power transformers: Transformer shall be protected by the protections based on the electrical parameter in addition to inherent protections like, bucholz, PRV, over temp, etc. The main protection shall be transformer differential, restricted earth fault on primary and secondary, over current, earth fault, overvoltage, over fluxing, standby earth fault Transformer shall also be protected from the overloading characteristics. The characteristics of this protection shall be based on the transformer overloading characteristics.' | - Please specify the detailed requirement of over fluxing relay.<br>In the clause 4.6.16 on the POW-4-41, double widing 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. | 17 & 18 above. |
| 53 | 4) Power Supply System (POW)<br>Page: POW-4-70<br>Clause: 4.8.13 Protection for 34.5kV | 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 | This refers to 34.5kV Power Cable Protection.<br>However, it is Contractor's |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | Network<br>'Distribution transformers as well as rectifier transformer with more than 630kVA capacity shall be provided with the transformer differential protection.' | confirm. | responsibility to carry out protection studies at the design level to ensure both equipment and the 34.5kV HV Cable Networks for Traction Ring, Non-Traction Ring and Depot Ring are all protected. |
| 54 | 4) Power Supply System (POW)<br>Page: POW-4-71 and POW-4-72<br>Clause: 4.8.15 Income from Rectifier<br>'The HSCB shall incorporate following minimum protections, however Contractor to design the protection to attain the RAMS values and to protect the system against the over-voltage of running rails and touch voltage exceeding the specified limits.<br>1. 76: DC over current series Trip relay;<br>2. 59: Over voltage relay; | 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. | Agreed. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | 3. 50,50N: Instantaneous over current protection;<br>4. 51,51 N: Time delayed over current protection;<br>5. 51 R: IDMT relay current not to exceed the thermal limit of diodes;<br>6. 32: Reverse power relay for internal faults;<br>7. 49: Rectifier transformer winding temperature Alarm/ Trip relays;<br>8. 39: Rectifier door open trip relay;<br>9. 26: Rectifier over temperature relay;<br>10. 58: Diode failure protection;<br>11. 98: Rectifier surge fuse failure check relay; and<br>12. 64: Enclosure Ground Relaying.' | | |
| 55 | 4) Power Supply System (POW)<br>Page: POW-4-72<br>Clause: 4.8.16 Feeders to OCS 7.<br>'21: Line protection device (Distance protection).' | We interpret that this requirement is Line test (Load measuring) function.<br>Is our understanding correct? | Yes. Correct. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| 56 | 4) Power Supply System (POW)<br>Page: POW-4-72<br>Clause: 4.8.17 Other Protection<br>'The DC switchgear shall be provided with the following additional protection in order ensure successful operation of the system.<br>- 1. 64: Frame leakage protection.'<br><br>'Design of protection system to overcome following major problems:<br>6. Temporary faults due to transients or birding' | - 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.<br><br>Please clarify the intention of "Temporary faults due to birding" is short-circuit faults caused by animals. | Yes, both are required.<br>One for Earthing Protection and<br>One for Frame Leakage Protection.<br><br>Short-circuit caused by falling objects and or birding which can cause nuisance tripping. Protection system shall be designed with auto-reclosed function to close circuit breaker after a short period. |
| 57 | 4) Power Supply System (POW)<br>Page: POW-4-105<br>Clause: 4.15.3 Availability<br>'Contractor shall provide built-in diagnostics and remote monitoring functions for each microprocessor-based equipment and module of the systems such that the performance | Please clarify what the expectation of built-in diagnostics and remote monitoring functions is. | Contractor to confirm at bidding stage that built-in diagnostics and remote monitoring functions are included. Contractor to discuss with system safety and performance requirement with the Contractor's RAM and Safety Engineers. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | requirements can be demonstrated.' | | |
| 58 | 4) Power Supply System (POW)<br>Page: POW-4-106<br>Clause: 4.15.8 Single Point Failure<br>'The System shall provide diagnostic information to the operator in the event of fault affecting the power supply.' | Please clarify the diagnostic information required is fault alarm information. | Yes, fault alarm can be acceptable.<br>Note. Further discussion with the Contractor's system Safety and RAM engineers at the design stage is required. |
| 59 | 4) Power Supply System (POW)<br>Page: POW-4-108<br>Clause: 4.15.16 Environment Compliance<br>'Design to comply with ISO 14000 environmental requirements and for this reason:<br>1. Synthetic transformer oil is preferred to mineral oil.' | 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.<br>Please confirm. | Confirmed, oil type transformers are for the 115kV/34.5kV main transformer only. All other distribution transformers are cast resin dry type. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| 60 | **NOTES TO BIDDERS:** | | Note:<br>1. The 115kV GIS (Gas Insulated Switchgear) shall comprise of double busbars fully equipped with Circuit Breakers, Bus-Couplers, Motorized Isolators, Earth Switches and Interconnectors, Protection and Control Panels and Cables.<br>The 115kV GIS shall have five (5) bays: two (2) incoming bays and three (3) outgoing bays (two bays for 60MVA Main Power Transformers plus one (1) bay allowance for future).<br>2. The 115kV Switching Compounds are under MERALCO's scope. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| *Volume III. Part 2 – Employer's Requirements* | | | |
| 61 | Volume III Page TEL-3-44 | Document 03 Telecommunication System_12 Dec 2019 (PA) page TEL-3-42~TEL-3-44 indicates the location & quantity of CCTV. But in document Vol III Part 2 EMPLOYERS REQUIREMENTS_d) Drawings_19 Dec 2019 page 85, quantity of CCTV is different. Which should we follow? | The Contractor shall propose final CCTV quantity after the coverage study for the areas stated in pages 3-42,43,44 of telecom chapter (03 Telecommunication System_12 Dec 2019 (PA)).<br><br>The Drawings (Drawings_19 Dec 2019 page 85) for telecommunication showing the overview of subsystems are only for reference. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| 62 | Volume III Page 81 | Document Vol III Part 2 EMPLOYERS REQUIREMENTS_d) Drawings_19 Dec 2019 page 81 indicates that Lawton West Station will have an Optical Fiber Connection going to T3. But on the MSN Diagram, Bicutan Station will be the one to connect to T3. Which is correct? | MSN diagram is accurate; it shows redundant Ring topology with redundant network path with L3 switches which includes all station in ring network, including future expansion (T2, T3 and Mall of Asia).<br><br>The optical fiber cable diagram is for reference only. The Network design shall be based on ring topology irrespective of station connection. The contractor shall propose an accurate ring topology connection for all stations as part of the detail design. |
| 63 | Volume III Page 84 | Document III Part 2 EMPLOYERS REQUIREMENTS_d) Drawings_19 Dec 2019 page 84 indicates MAIL SERVER and located at OCC.<br>a. Mail Server<br>i. On-prem or Cloud?<br>ii. How many users?<br>iii. Preferred Email System (Mdaemon, Lotus Domino, | a. Mail Server<br><br>i) On-Prem or cloud?<br><br>Ans: On-Prem. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | | O365, Google Suite, etc…)? | ii) How Many users?<br><br>Ans: - The number of users will depend on the O&M Concessionaries requirement.<br><br>iii) Preferred Email System (Mdaemon, Lotus Domino, O365, Google Suite, etc…)?<br><br>Ans: - Preferred email system is Subject to the O&M Concessionaries requirement. |
| 64 | General | Is there a document indicating the floor layout of OCC, Depot & each Stations? If so, please share with us. | For the floor layout of Depot, the bidders may refer to the following drawings in the Volume III, Part 2, d):<br>i) MMSP-OCS-0000-DD-0301 to MMSP-OCS-0000-DD-0306 (General Layout of Depot)<br>ii) MMSP-OCS-0000-DD-0305 (Location of OCC & Admin Building) |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| ***Volume IV, Part 3 – Conditions of Contract and Contract Forms*** | | | |
| 65 | Section VIII, page PC-1<br>Clause 1.1.3.3: Time for Completion<br><br>Section VII, page PC-5<br>Schedule of Key Dates | Please confirm that 297 weeks stand for completion of works for PO Section, instead of completion of whole works including Remaining Section.<br>Please also confirm that completion of whole works is 335 weeks as per the requirement of Schedule of Key Dates. | Please refer to Items No, 7, 10 and 11 of Annex "B" Addendum No.1 contained in General Bid Bulletin No.1 dated 4th February 2020. |
| 66 | Section VIII, page PC-5, 6, 7<br>Attachment 1, 2 to Particular Conditions Part A Contract Data | In the Pre-bid Conference on 24 January 2020, it was explained that General Project Timeline is as follows;<br>· Partial Operability (PO) Section Construction 2020<br>· Partial Operability (PO) Section Operation 2022<br>· Remaining Section Construction 2021<br>· Full Section Operation 2025<br><br>However, the above timeline is confusing with the tender document.<br>In Attachment 2 to Particular Conditions, Schedule of Access Dates, access to the main line for the PO section can be allowed | Please refer to response of Item No. 65 above and also refer to Minutes of Meeting from Pre-Bid Conference published by PS-DBM. |

| Metro Manila Subway Project Phase 1<br>Package CP106: E&M Systems and Track Works | | | |
|---|---|---|---|
| **ITEM NO.** | **REFERENCE/CLAUSE/SECTION** | **QUERIES** | **RESPONSE** |
| | | after 148 weeks at earliest. Even if we commence the work from the deadline of tender submission, it will be Jan 2023 so it is impossible to achieve the PO section operation in 2022.<br>As the above, we are required to complete the whole works within 335 week in accordance with Attachment 1 to Particular Conditions, Schedule of Key Dates, however, even we commence the work from the deadline of tender submission, it will be Aug 2026 so it is impossible to achieve full section operation in 2025.<br>Please clarify these difference between Schedule of Key/Access Dates and Presentation at the Pre-bid Conference. | |