**General Bid Bulletin No. 30**
24 September 2021

**THE MALOLOS-CLARK RAILWAY PROJECT AND THE NORTH-SOUTH RAILWAY PROJECT SOUTH LINE COMMUTER PACKAGE CP NS-01: PROCUREMENT OF ELECTRICAL AND MECHANICAL SYSTEMS AND TRACK WORKS (IFB No: 21-040-3)**

**TO ALL PROSPECTIVE BIDDERS:**

This General Bid Bulletin is issued to amend/clarify certain provisions in the Bidding Documents for the above-mentioned Project. Please refer to the attached Annexes of this General Bid Bulletin for details:

1. **Annex "A"** — Clarification to the Bidding Documents
2. **Annex "B"** — Addendum to the Bidding Documents with "**Attachment 1**"
3. **Annex "C"** — Not Applicable

All other portions of the Bidding Documents not affected by these revisions, amendments and/or clarifications shall remain unchanged.

Revisions/amendments/clarifications made herein shall be conserved as an integral part of the Bidding Documents of this Project.

For your guidance and information.

For the Bids and Awards Committee

SIGNATURE REDACTED

**ENGR. JAIME M. NAVARRETE, JR**
Chairperson

# Annex A

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| Item No. | Volume Section No.<br>Page No.<br>Clause No. / Title<br>Reference Text | Clarification Request | Proposed Revised Text<br>(if any) | Response |
|---|---|---|---|---|
| 1 | Part 3 – Conditions of Contract and Contract Forms<br>Section VIII. Particular Conditions, PC-15<br>PC-16, KD 4-3<br>KD 4-8 | The Contractor only has 1 month from Power On at all stations to complete the Integrated Testing and Commissioning.<br><br>We kindly request you to provide at least 3 months. | | The bidders can make the plan earlier when and which substations or stations for power on before month 40 to allow more time to complete the Integrated Testing and Commissioning. |
| 2 | Part 3 – Conditions of Contract and Contract Forms<br>Section VIII. Particular Conditions, PC-16<br>PC-31, KD 4-8<br>AD 6 Sec. 4 | The Contractor has ZERO months from the access to all stations for commencing Integration testing and commissioning activities for Section 4 for the Partial operation and only ONE month from the access to all stations and commencement of Integrated Testing Commissioning for Full operation. We kindly request the employer to amend this suitably and provide at least 3 months. | | Key dates KD 4-8 and AD 6 will be discussed during the contract finalization/negotiation. |
| 3 | GBB No. 6<br>Part 3 – Conditions of Contract and Contract Forms<br>Section VIII. Particular Conditions, PC - 12, Completion of Section 1, Achievement: Acceptance of the Platform Screen Door system for | In relation with Completion of the whole of works for Section 2 delayed to Month No. 40 DOTr is kindly requested to delay Completion of Section 1 also to Month No. 40, in order to have the possibility to complete trial running of Section 1 and Section 2 together | | Section 1 completion will be at Month 39.<br>Section 2 completion will be at Month 59.<br><br>Please refer to GBB26 for the response. |

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| | Section 1 certified as Substantially Complete. | | | |
| 4 | General Conditions<br>GC-55<br>13.8 Adjustments for Changes in Cost | The adjustment to be applied to the amount otherwise payable to the Contractor, as valued in accordance with the appropriate Schedule and certified in Payment Certificates, shall be determined from formulae for each of the currencies in which the Contract Price is payable. No adjustment is to be applied to work valued on the basis of Cost or current prices. The formulae shall be of the following general type:<br><br>Pn = a + bLn/L0 + c En/E0 + d Mn/M0<br><br>where: "Pn" is the adjustment multiplier to be applied to the estimated contract value in the relevant currency of the work carried out in period "n", this period being a month unless otherwise stated in the Contract Data;<br><br>Regarding the base amount for cost adjustment calculation which is the certified Payment, Is | | The cost adjustment calculations will be conducted against the amounts certified for interim payment applications for work physically completed at the site. |

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| | | this amount including Advance Payment, Retention and its recovery? | | |
| 5 | GBB 24, Item 35<br>Page 16 of 19<br>Form SCJ | Clarification Request:<br>For the Form SCJ, please confirm that VAT (12%) must be computed "on the local PHP amount only" instead of "on both the local PHP and foreign JPY amounts".<br><br>Response:<br>The bidder's understanding is incorrect. Reference to the Part 1 – Bidding Procedures, Section IV – Bidding Forms, Grand Summary, Note 3, The Value Added Tax (VAT) for the Foreign Currency portion shall be converted to the Local Currency according to ITB 37.1 and added to the VAT for the Local Currency portion. Please refer to the Revenue Memorandum Circular RMC No. 8-2017 and RMC No. 42-99 for more information.<br><br>If VAT (12%) must be computed on both the local PHP and foreign JPY amounts, it contradicts actual VAT payment as ITB18.7 (Page BDS-5) stipulates "VAT, except VAT on | | VAT is imposed on the importation or on services rendered in the Philippines. If Foreign Currency amount is for work done outside the Philippines, this is not subject to VAT. Consequently, this should not be included in computing the 12% VAT.<br><br>If it pertains to work done in the Philippines or for importation, the same is subject to VAT and the computation should be for both the local and foreign portion but subject to the tax assumption according to RMC No.42-99 and RMC No. 8-2017. |

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| | | imports, shall be incorporated into the Local Unit Prices (PhP) and Local Amounts (PhP) of the Bid Price", and to be consistent, actual VAT payment shall be applied to calculation of Japanese Content. Based on this, please confirm once again that for calculation in Form SCJ, VAT (12%) must be computed "on the local PHP amount only" instead of "on both the local PHP and foreign JPY amounts". | | |
| 6 | Volume. I Section II<br>BDS-5<br>ITB 18.7<br>RMC 42-99: Japanese contractors and suppliers shall file its own tax returns, DOTr mandated to assume the payment thereof. | Re: Income Tax<br>How will income tax apply to in terms of a joint venture wherein one member is the Local Contractor? | | In cases of unincorporated Joint Ventures, it is not the JV itself that is taxed but rather the entities/members comprising the Joint Venture. They are taxed separately once the income has been duly distributed.<br><br>The tax assumption scheme only benefits the Japanese Contractors.<br><br>In this case, should there be local contractors who are members of the JV they will be taxed accordingly. |

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| | | | | Please note that this will not be applied to incorporated Joint Ventures registered in the Philippines. |
| 7 | Volume. I Section II<br>BDS-5<br>ITB 18.7<br><br>RMC 08-2017 - "VAT will be collected and received by the Japanese Contractors or national from executing government agencies as part of the total billing/invoice price" | Re: Value-Added Tax<br>1. Kindly confirm that our understanding is that DOTr will not withhold any part of VAT when making payment for the progress billing of the Contractor and the Contractor will directly withhold its VAT to BIR.<br>2. Will the same apply to Local Contractors? What will be the treatment for joint ventures wherein there are members are composed of both Japanese Contractors, and contractors of other nationalities? Will the JV contractor be treated wholly as a Japanese contractor? | | 1. DOTr will pay the Contractor the full amount of the VAT due against the gross value of the Contractor's billings, and the Contractor will be responsible for making VAT payment to BIR net of the corresponding input VAT.<br><br>2. Please refer to Item 1 with reference to RMC 8-2017 and in accordance to Section 114 C of the Philippine Tax Code. There will be no different treatment in respect of VAT between local and foreign contractors, as long as the billing is for an ODA funded project.<br><br>3. The VAT Treatment on ODA funded projects is the same regardless of the nationality of the contractors comprising the JV as long as the project is ODA funded. (See Section 114 C of the Philippine Tax Code) |

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| 8 | Volume. I Section II<br>BDS-5<br>ITB 18.7<br><br>In accordance the Exchange of Notes, Japanese Companies shall be either exempted, reimbursed or paid by the Employer on behalf of the Contractor. It is also stated that the Government of the Republic of the Philippines shall by itself or through its executing agency, assume all fiscal levies and taxes imposed in the Republic of the Philippines. | Re: Local Business Tax<br>1. It is our understanding that the Bidder will not include relevant amount in price for local business tax to be imposed by the local government to secure business permit to operate the construction of the Project. The DOTr, as executing agency, shall assume and pay the local business tax to the relevant local government. Kindly confirm if this is correct.<br><br>2. What will be the treatment for joint ventures wherein there are members are composed of both Japanese Contractors, and contractors of other nationalities? Will the JV contractor be treated wholly as a Japanese contractor?<br><br>3. Will this be applicable to the whole of the Works, or only to payments less the contract price of the subcontractor/s? | | 1. Reference to the ITB 18.7, Local Business Tax will be assumed by the Employer, following the tax assumption scheme.<br><br>2. Please refer to the Part 3 - Conditions of Contract Section VIII - Particular Conditions, Appendix 1: Eligible Source Countries of Japanese ODA Loans for the requirement for the forming of JV and definitions of Japanese company.<br><br>Reference to the RMC No. 8-2017, the clauses are pertaining to the tax treatment of participating Japanese contractors and nationals only.<br><br>Please note that in this case, the JV is unincorporated. As explained earlier, taxes are imposed separately on the individual members of the JV and not on the JV itself. As applied to local business taxes (“LBT”), only the LBT imposed on the Japanese Contractors shall be assumed by the government. |

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| | | | | 3. Local Business Tax are applicable to whole of the works as LBT is based on gross income. Reference to the ITB 18.7, RMC 8-2017 and RMC 42-99, the clauses are pertaining to the tax treatment of participating Japanese contractors and nationals only. This does not include subcontractors. |
| 9 | Volume. I Section II<br>BDS-5<br>ITB 18.7<br><br>RMC 42-99: The Japanese Contractor shall file the necessary Income Tax Returns without paying the subject taxes. The concerned Revenue District Office would collect the subject taxes from the implementing agency, i.e. DOTr | Re: Personal Income Tax & Fringe Benefit Tax of Japanese Employees<br>1. The Japanese contractor and its Japanese subcontractors and suppliers will be exempted and not be required to pay personal income tax on Japanese employees engaged in the implementation of the Project. Kindly confirm if our understanding is correct.<br>2. Will the Japanese Contractor file withholding tax on compensation returns and Fringe Benefit Tax returns, payable by DOTr?<br>3. Or will Japanese Employees file their own tax returns payable by DOTr? | | 1. The bidder's understanding is correct for the prime contractor. Reference to the RMC 8-2017 and RMC 42-99, the clauses are pertaining to the tax treatment of participating Japanese contractors and nationals only. This does not include subcontractors. Please refer to the Bid Data Sheet (BDS) ITB 18.7, sub item 3 (vi) for the detail description for Corporate Income Tax, Personal Income Tax and Fringe Benefit Tax.<br><br>2. Please refer to the Revenue Memorandum Circular (RMC) 45-2015 for clarifying Withholding tax. Please refer to |

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| | | 4. Or shall tax be incorporated in the bid price? | | the Bid Data Sheet (BDS) ITB 18.7, sub item 3 (vi) for the detail description for Corporate Income Tax, Personal Income Tax and Fringe Benefit Tax. Japanese Contractor shall file its income tax return, the tax liability shall be assumed by the government executing agency and be paid to the BIR.<br><br>3. Please refer to the response above.<br><br>4. Please refer to the response above. |
| 10 | Volume. I Section II<br>BDS-8<br>ITB 20.3 | 1. We kindly request for the reference for the Labor Cost Index, as there is none publicly available at the time of this writing.<br>In the event that the material price index reflects an unforeseeable rise, what will be the treatment/remedy available to the awarded contractor? | | 1. Please refer to the statistics e.g. minimum wage rates announce by DOLE agency e.g. National Wages and Productivity Commission.<br><br>2. Please refer to the Part 3 - Conditions of Contract, Section VII General Conditions, article 13.8 for the detail description on Adjustments for Changes in Cost. |
| 11 | Volume. I Section II<br>BDS-5<br>ITB 18.7 | Re: Income Tax<br>How will income tax apply to in terms of a joint venture wherein one member is the Local Contractor? | | Refer to the GBB No. 30 Annex A, Item 6 shown above. |

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| | RMC 42-99: Japanese contractors and suppliers shall file its own tax returns, DOTr mandated to assume the payment thereof. | | | |
| 12 | Volume. I Section II<br>BDS-5<br>ITB 18.7<br><br>RMC 08-2017 - "VAT will be collected and received by the Japanese Contractors or national from executing government agencies as part of the total billing/invoice price" | Re: Value-Added Tax<br>1. Kindly confirm that our understanding is that DOTr will not withhold any part of VAT when making payment for the progress billing of the Contractor and the Contractor will directly withhold its VAT to BIR.<br>2. Will the same apply to Local Contractors?<br>3. What will be the treatment for joint ventures wherein there are members are composed of both Japanese Contractors, and contractors of other nationalities? Will the JV contractor be treated wholly as a Japanese contractor? | | Refer to the GBB No. 30 Annex A, Item 7 shown above. |
| 13 | Volume. I Section II<br>BDS-5<br>ITB 18.7<br><br>In accordance the Exchange of Notes, Japanese Companies shall be either exempted, reimbursed or paid | Re: Local Business Tax<br>1. It is our understanding that the Bidder will not include relevant amount in price for local business tax to be imposed by the local government to secure business permit to operate the construction of the Project. The DOTr, as executing agency, shall assume and | | Refer to the GBB No. 30 Annex A, Item 8 shown above. |

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| | by the Employer on behalf of the Contractor. It is also stated that the Government of the Republic of the Philippines shall by itself or through its executing agency, assume all fiscal levies and taxes imposed in the Republic of the Philippines. | pay the local business tax to the relevant local government. Kindly confirm if this is correct.<br>2. What will be the treatment for joint ventures wherein there are members are composed of both Japanese Contractors, and contractors of other nationalities? Will the JV contractor be treated wholly as a Japanese contractor?<br>3. Will this be applicable to the whole of the Works, or only to payments less the contract price of the subcontractor/s? | | |
| 14 | Volume. I Section II<br>BDS-5<br>ITB 18.7<br><br>RMC 42-99: The Japanese Contractor shall file the necessary Income Tax Returns without paying the subject taxes. The concerned Revenue District Office would collect the subject taxes from the implementing agency, i.e. DOTr | Re: Personal Income Tax & Fringe Benefit Tax of Japanese Employees<br>1. The Japanese contractor and its Japanese subcontractors and suppliers will be exempted and not be required to pay personal income tax on Japanese employees engaged in the implementation of the Project. Kindly confirm if our understanding is correct.<br>2. Will the Japanese Contractor file withholding tax on compensation returns and Fringe Benefit Tax returns, payable by DOTr?<br>3. Or will Japanese Employees file their own tax returns payable by DOTr? | | Refer to the GBB No. 30 Annex A, Item 9 shown above. |

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| | | 4. Or shall tax be incorporated in the bid price? | | |
| 15 | Volume. I Section II<br>BDS-8<br>ITB 20.3 | 1. We kindly request for the reference for the Labor Cost Index, as there is none publicly available at the time of this writing.<br>2. In the event that the material price index reflects an unforeseeable rise, what will be the treatment/remedy available to the awarded contractor? | | Refer to the GBB No. 30 Annex A, Item 10 shown above. |

# Annex B

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| ITEM NO. | REFERENCE/CLAUSE/ SECTION | REVISIONS / AMENDMENTS |
|---|---|---|
| **Volume II Part 2 – Employer's Requirements** | | |
| 1 | ERT 609. Clause 6.4.40 | New text added "Appropriate signs shall be provided for the identification of mast/support locations, isolator identities and operation, warnings, and operational details. " |
| 2 | ERT 442. Clause 4.4.6 (2) I & iv | Solar power requirements amended for all SC stations |
| 3 | ERG 180 : Appendix 7 Annex 4 A.7 – Platform Screen Doors | Change CP05 to CP01 and CP02. |
| 4 | ERG-96, Clause - 21.3.21 | The below clause has been removed due to its ambiguity:<br>"The contractor must provide a Maintenance Level 1 turnaround time of not more than 7 days and a Maintenance Level 2 turnaround time of not more than 30 days." |
| 5 | ERT1.1.2 3) | New text added "The contractor shall also provide the transition slabs in the in the depot areas." |
| 6 | Chapter 8, Clause 8.9.2.2 (d) (vi)<br>Page ERT-706 | Added Clause 8.9.2.2. (d) (vi) to read as:<br><br>8.9.2.2 (d) Car body repair facilities (N13)<br><br>(vi) Lifting of one car, group/set of cars or a complete 8-car trainset with bogies can be performed here with Car Body Lifting Jacks (N12.02). |

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| 7 | Chapter 8, Clause 8.10.3.2 (c)<br>Page ERT-716 | Added Clause 8.10.3.2. (c) to read as:<br><br>8.10.3.2 Unscheduled Repair Shop (S02)<br><br>(c) Car Body Lifting Jacks (S02.11) have been provided in the shop to lift the train car with bogies attached. |
| 8 | Chapter 8, Part A of Appendix 8.1, N12.02 Car Body Lifting Jack,<br>Page ERT-763-764 | Revised/updated description of N12.02 Car Body Lifting Jack to read as:<br><br>1. Quantity: Twenty-Five (25) sets of Lifting Jacks, to lift the entire 8-car trainset (10-car trainset for future) as well individual or set/group of cars shall be supplied on three tracks within Bogie Removal/Installation Shop (N12) and Carbody Shop (N13).<br><br>2. Function Requirements<br><br>Lowest position of cantilever (claw) 400mm above T.O.R.<br>Highest position of cantilever (claw) 2,500 mm above T.O.R.<br>Vertical stroke 2,115 mm<br><br>2.1 One car body lifting jack set shall consist of four (4) on-floor type mobile jacks of electric motor driven screw type having self-locking features when the power fails, and a control system for lifting of single car. Three (3) sets of four jacks shall be provided in the N12 Bogie Removal/Installation Shop and twenty-two (22) sets of four jacks shall be provided in N13 Carbody Shop. Lifting configuration in Carbody Shop can be a single car, a unit of 4 cars and a complete trainset of 8 cars (5 cars / 10-car trainset for future).<br><br>2.2. The jacks shall be synchronized during the lifting process after confirming enough contact with jacking pads on the car within a tolerance of +/- 5 mm. Operating a set |

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| | | of Lifting Jacks, movable Master Control Console (MCC) shall be delivered. In N12 shop, one MCC and four jacks shall be provided for one car body lifting while in N13 shop, number of MCCs' to be designed for Engineer's approval and shall be provided on each track for lifting of single car / 4 car / 8car trainset (5car / 10 car trainset for future). MCC shall be fitted with programmable touch screen-based HMI for selecting group of cars to be lifted.<br><br>3.3 The jacking operation shall be carried out and controlled on the central control panel, and remote-control box shall be provided for single jack operation. For each set of lifting jacks, operating by columns (by group of four) can be chosen according to the type of rolling stock to be lifted. The software shall automatically reconfigure the system. Additional option for wireless operation and control of a group of lifting jacks over a secured and safe industry standard Wi-Fi network shall be offered for redundancy in addition to control cable-based system.<br><br>3.12 Power and control cables for jacks set shall be provided with multipin connectors and<br>sufficient length covering each jack's position. Connecting cables for the main and control current shall be delivered. Cables shall be divided into individual lengths and to be provided with necessary plugs and couplings. Sockets shall be IP65. All cable containment works shall be in the scope of the contractor. Necessary interface with building contractor shall be done.<br><br>3.13 All integral wirings to the control panel and individual jack shall be factory-wired. Other<br>wirings shall be completed on site during installation. All equipment shall be suitably earthed. All works related to wireless and cable control like LAN, secured Wi-Fi will be under contractor scope. Remote assistance via internet shall be possible.<br><br>4.1. (iv) Power and control cable pipe, pit/trench, route, location and dimension. |
| 9 | Chapter 8, Part B of | Revised/updated description of S02.11 Car Body Lifting Jack to read as: |

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| | Appendix 8.1, S02.11 Car Body Lifting Jack,<br>Page ERT-983-984 | 2. Functional Requirements<br><br>Quantity of Lifting Jacks: 4 Nos per Set<br>Lifting capacity per Jack 10t Min.<br>Lifting capacity per set 04 x 10t =40t Min.<br>Lowest position of cantilever (claw) 400mm above T.O.R.<br>Highest position of cantilever (claw) 2,500 mm above T.O.R.<br>Vertical stroke 2,115 mm<br>Regulating range of the cantilever 475mm in horizontal direction<br>Lifting/lowering speed approx. 300mm/min<br>Operating voltage 400V±10% / 60Hz±5%/ 3 phases<br>Control voltage 230V±10%/ 60Hz±5%/ 24V DC<br>Protection of electrical equipment IP55<br>Isolation class F<br>Synchronization tolerance ±5mm<br>Noise level Max 75 dB(A) in a distance of 1m<br>Floor flatness Max ±5mm in a distance of 2m<br><br>2.2 Each lifting jack will be overload tested Dynamically with 115% load of the SWL and<br>Statically with 150% of the SWL<br><br>3.3. The jacking operation shall be carried out and controlled on the central control panel, and remote-control box shall be provided for single jack operation. For each set of lifting jacks, operating by columns (by group of four) can be chosen according to the type of rolling stock to be lifted. The software shall automatically reconfigure the system. Additional option for wireless operation and control of a group of lifting jacks over a secured and safe industry standard Wi-Fi network shall be offered for redundancy in addition to control cable-based system. |

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| | | 3.11. Power and control cables for jacks set shall be provided with multipin connectors and sufficient length covering each jack's position. Connecting cables for the main and control current shall be delivered. Cables shall be divided into individual lengths and to be provided with necessary plugs and couplings. Sockets shall be IP65. All cable containment works shall be in the scope of contractor. Necessary interface with building contractor shall be done.<br><br>3.12 All integral wirings to the control panel and individual jack shall be factory-wired. Other wirings shall be completed on site during installation. All works related to wireless and cable control like LAN, secured Wi-Fi will be under contractor scope. Remote assistance via internet shall be possible.<br><br>3.16. In-floor socket boxes including plugs shall be provided.<br><br>3.17. All the basic components in the system will be interchangeable. In case of emergency, components can be used in Mabalacat Depot and vice versa.<br><br>4.1. (iv). Power and control cable pipe, pit/trench, route, location and dimension. |
| 10 | Part 2 Section VI Technical Requirements AFC ERT 623 | Changes on clauses 7.4.1.2 and 7.4.1.3. |
| 11 | Part 2 Section VI Technical Requirements AFC ERT 665 | Changes to include intercom and audio frequency induction loop system (AFILS) in Clause 7.9.3.3 |
| 12 | ERT-247- Interface with Civil/ Architecture system. | Updated Statement:<br><br>CCTV System: |

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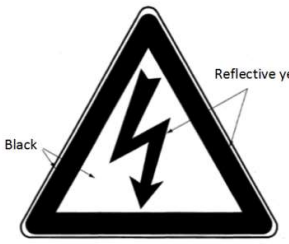
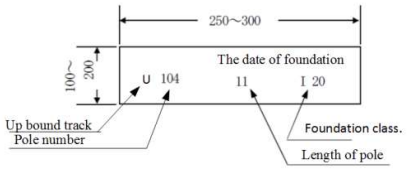
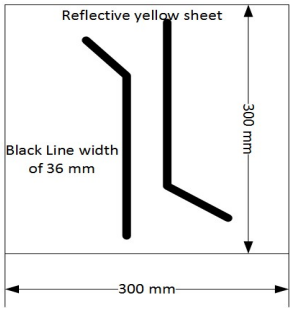
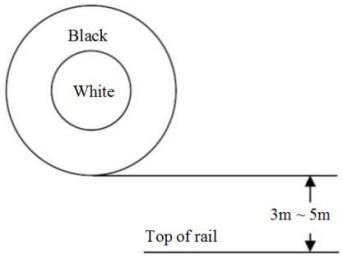
| | | "Coordination during the DED - Location of CCTV Cameras. (As stated above on the Responsible Area of CCTV System.)<br><br>Identification of CCTV Cameras for their BMS including EAC." |
| 13 | ERT-248- Interface with Civil/ Architecture system. | Deleted Item:<br><br>"CCTV System installed by Architecture" Section |
| 14 | ERT-324: 9) General Coverage | Added: "Perimeter Fence" |
| **Volume III Part 2 – Employer's Requirements d) Employer's Drawings** | | |
| 15 | Volume III Part 2- Employers Requirements Drawings (a) | Added a reference drawing regarding Transition slabs.<br>NSCR-GCR-NS01-SWEM-DWG-TK-000001<br>NSCR-GCR-NS01-SWEM-DWG-TK-000002 |

# Annex B – Attachment 1

6.4.40 Signage

Appropriate signs shall be provided for the identification of mast/support locations, isolator identities and operation, warnings, and operational details. Signs shall be installed based on Internationally accepted design. The design shall be given a Notice of No Objection by the Engineer.

**Table 6.4.22 Example of Precaution / Warning Signs**

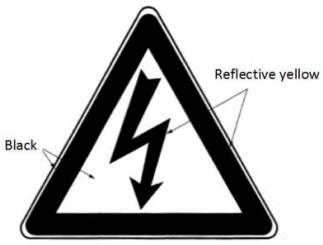
| Items | Objective | sign | Application | Note |
|---|---|---|---|---|
| Electric warning sign | Caution, risk of electric shock |  Warning sign | • Place with enough clearance prescribed by regulation<br>• Crossing in the depot | ISO 3864-1 |
| Operation | Guidance board |  | Pole number plate | Installation height from TOR: 2.5 m |
| | Advanced notice for insulated section |  | Prohibition for train to stop and power at insulated section, as section insulator and insulated overlap section. | |
| | Starting point to power |  | After the last pantograph of train passed through the Insulation section, train can start powering at a point of the | |

| Items | | Specifications | Note |
|---|---|---|---|
| Power frequency withstand voltage | 1.2/50μs | 50 kV | |
| | Only part of porcelain | 20 kV | |
| Voltage under lightning impulse condition<br>Operating duty | At 8/20μs | 3000 V | |
| | At 8/20μs | 3000 A | |
| Discharge withstand current rating | At 4/10μs | 30 kA<br>2 times | Under lightning impulse condition |
| | At 2 ms | 100 A<br>100 times | Under lightning impulse condition |
| Mass | | About 2 kg | |
| Range of temperature to use | | -20 to 40 degrees | |
| Attitude | | 1km or less | |

6.4.40 Signage

Appropriate signs shall be provided for the identification of mast/support locations, isolator identities and operation, warnings, and operational details. Signs shall be installed based on Internationally accepted design. The design shall be given a Notice of No Objection by the Engineer.

**Table 6.4.22 Example of Precaution / Warning Signs**

| Items | Objective | sign | Application | Note |
|---|---|---|---|---|
| Electric warning sign | Caution, risk of electric shock |  <br>Warning sign | • Place with enough clearance prescribed by regulation<br>• Crossing in the depot | ISO 3864-1 |

xii) Web-based remote monitoring system

xiii) All weather type display monitor installed in the station concourse for public awareness.

xiv) Other materials and parts which are not specifically mentioned herein but are necessary for the proper assembly, installation, and safe operation of the equipment shall be furnished including special tools and all required spare parts and consumables during the warranty period.

3) Construction/Complete Installation

4) Testing and Commissioning

5) Performance Warranty

6) Data Logging System

i) Performance monitoring of Solar PV System

ii) Periodic electrical testing (power quality assessment, thermo-graphic inspection, solar panel power output measurements, etc.)

iii) Provide monthly energy generation and revenue data.

iv) Cleaning of Solar Panels, semi-annual schedule

7) The following works are not included in the Scope of this Division:

ii) Furniture including desks and chairs in the PV Control Room

8) Photovoltaic Power Generation System shall be interfaced with Power SCADA

(2) System Design and Performance Requirments

1) General

i. The PV modules shall be installed with aluminum fittings for mounting installation on the rooftop of stations (Blumentritt, Espana, Santa Mesa, Paco, Buendia, Nichols, FTI, EDSA, Bicutan, Sucat, Alabang, Muntinlupa, San Pedro, Pacita, Binan, Santa Rosa, Cubuyao, Banlic, Calamba), Light Repair shop and OCC building.

ii. The Display Monitor for publicity shall be indoor type wall-mounted structure and shall be installed in the concourse, however the installation location shall be determined during the detail stage in cooperate with civil works.

iii. The proposed installation location shall be coordinated with the station design.

iv. The Power Conditioners and Remote Monitoring System shall be installed in the PV System Control System located at the station building ground floor.

v. The exact number, the location and the method of installation of solar panels shall be determined during the detail design stage in cooperate with civil works.

vi. Proposed approximate peak solar power output shall be as following:

- Blumentritt Station : 750 kWp
- Espana Station : 750 kWp
- Santa Mesa Station : 750 kWp
- Paco station : 750 kWp
- Buendia Station : 750 kWp
- Nichols station : 750 kWp
- FTI station : 750 kWp
- EDSA Station : 750 kWp
- Bicutan Station : 750 kWp
- Sucat Station : 750 kWp
- Alabang Station : 750 kWp
- Muntinlupa Station : 750 kWp
- San Pedro Station : 750 kWp
- Pacita Station : 750 kWp
- Binan Station : 750 kWp
- Santa Rosa Station : 750 kWp
- Cubuyao Station : 750 kWp
- Banlic Station : 750 kWp
- Calamba Station : 750 kWp
- Light Repair Shop in Depot : 310 kWp
- OCC building in Depot : 100 kWp

(3) Particular Requirements

1) PV Module

i. Cell Type: Crystalline Silicon

ii. Compliance: IEC 61215/61730

iii. Nominal Max. Power (Pmax): not less than 300W (under Standard Test Conditions of 1 $kW/m^2$ at 25 deg C, Aie Mass 1.5)

iv. Operating temperature : - 40 deg C ~ +85 deg C

v. Conversion efficiency : not less than 18%

vi. Front Cover Material : Tempered glass (not less than 3mm thick)

vii. Frame Material: Anodized aluminium

viii. Power output warranty: not less than 25 years, linear

ix. Warranty on Materials and Workmanship: not less than 12 years

2) Power Conditioner

i. Compliance: IEC61727

ii. Panel Type: Outdoor IP65 (per IEC 60529), closure type, wall mount or free-standing

1) General

i. The PV modules shall be installed with aluminum fittings for mounting installation on the rooftop of stations (Blumentritt, Espana, Santa Mesa, Paco, Buendia, Nichols, FTI, EDSA, Bicutan, Sucat, Alabang, Muntinlupa, San Pedro, Pacita, Binan, Santa Rosa, Cubuyao, Banlic, Calamba), Light Repair shop and OCC building.

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iii. The proposed installation location shall be coordinated with the station design.

iv. The Power Conditioners and Remote Monitoring System shall be installed in the PV System Control System located at the station building ground floor.

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vi. Proposed approximate peak solar power output shall be as following:

- Blumentritt Station : 750 kWp
- Espana Station : 750 kWp
- Santa Mesa Station : 750 kWp
- Paco station : 750 kWp
- Buendia Station : 750 ~~100~~kWp
- Nichols station : 750 ~~100~~kWp
- FTI station : 750 ~~39~~kWp
- EDSA Station : 750 kWp
- Bicutan Station : 750 kWp
- Sucat Station : 750 kWp
- Alabang Station : 750 kWp
- Muntinlupa Station : 750 kWp
- San Pedro Station : 750 kWp
- Pacita Station : 750 kWp
- Binan Station : 750 kWp
- Santa Rosa Station : 750 kWp
- Cubuyao Station : 750 kWp
- Banlic Station : 750 kWp
- Calamba Station : ~~100~~750 kWp
- Light Repair Shop in Depot : 310 kWp
- OCC building in Depot : 100 kWp

(3) Particular Requirements

1) PV Module

i. Cell Type: Crystalline Silicon

| | | | | | | |
|---|---|---|---|---|---|---|
| 6 | Facilities in PSD room i.e earthing terminals, air conditioning, lighting, fire protection, concrete plinth, floor and wall finishes, | CP NS-01 | CP-01& CP02 | CP-01& CP02 | CP-01& CP02 | CP01, CP02 and NS-01 Contractors shall coordinate and agree on the sizes and locations..<br><br>Main earthing system and connection to earthing terminal for PSD room shall be provided by CP01 & CP02 Contractor. |
| 7 | Power supply : The power supply shall be connected from the System Main Power Distribution Board | CP NS-01 | CP NS-01 | CP NS-01*, CP-01& CP02 | CP NS-01*, CP-01& CP02 | CP01, CP02 and NS-01 Contractors shall coordinate and agree on the sizes and locations. |
| 8 | Insulation Membrane | CP NS-01 | CP01 and 02 | CP01 and 02 | CP01 and 02 | Membrane to be installed by CP01 and CP02. CP NS-01 to supervise and assist in the testing of the insulation of the platform floor insulation membrane installed by the civil contractor. |

*If NS-01 do not provide information timely then the material and installation work shall be undertaken by NS-01

Please note that design requirement mentioned in the above Annexes are not exhaustive. The Contractor will further elaborate the requirements in close co-ordination with interface Contractors. Associated Interfaces works not mentioned in the above tables but which may be inferred to be necessary for stability, or completion, or effective interface & integration or the safe reliable and efficient operation of the Works to be carried out by the Contractor. The Interface work shall include any work which is necessary to satisfy the Employer's Requirements, the Contractor's Proposal and Schedules, or is implied by the Contract, or arises from any obligation of the Contractor and shall be Fit for the Purposes for which they are intended.

| | | | | | | |
|---|---|---|---|---|---|---|
| 6 | Facilities in PSD room i.e earthing terminals, air conditioning, lighting, fire protection, concrete plinth, floor and wall finishes, | CP NS-01 | CP-01& CP02 | CP-01& CP02 | CP-01& CP02 | CP01, CP02~~5~~ and NS-01 Contractors shall coordinate and agree on the sizes and locations..<br><br>Main earthing system and connection to earthing terminal for PSD room shall be provided by CP01 & CP02 Contractor. |
| 7 | Power supply : The power supply shall be connected from the System Main Power Distribution Board | CP NS-01 | CP NS-01 | CP NS-01*, CP-01& CP02 | CP NS-01*, CP-01& CP02 | CP01, CP02 and NS-01 Contractors shall coordinate and agree on the sizes and locations. |
| 8 | Insulation Membrane | CP NS-01 | CP01 and 02 | CP01 and 02 | CP01 and 02 | Membrane to be installed by CP01 and CP02. CP NS-01 to supervise and assist in the testing of the insulation of the platform floor insulation membrane installed by the civil contractor. |

*If NS-01 do not provide information timely then the material and installation work shall be undertaken by NS-01

Please note that design requirement mentioned in the above Annexes are not exhaustive. The Contractor will further elaborate the requirements in close co-ordination with interface Contractors. Associated Interfaces works not mentioned in the above tables but which may be inferred to be necessary for stability, or completion, or effective interface & integration or the safe reliable and efficient operation of the Works to be carried out by the Contractor. The Interface work shall include any work which is necessary to satisfy the Employer's Requirements, the Contractor's Proposal and Schedules, or is implied by the Contract, or arises from any obligation of the Contractor and shall be Fit for the Purposes for which they are intended.

21.3.19. Correction shall be made to components or subsystems that either fail to attain predicted availability levels or show Pattern Failure at the Contractor's expense.

21.3.20. During the in-service Defects Notification Period (DNP), the E&M Systems and Track works shall demonstrate successful achievement of the RAM targets, which will be a prerequisite of the application for a Performance Certificate to be issued by the Employer.

Failure to meet the E&M Systems and Track works RAM targets within the DNP shall mean that the DNP shall be extended until such time as the RAM targets has been met.

Regardless of the above, the maximum DNP is 4 years from the date of issue of the Taking Over Certificate.

21.3.21. Availability shall be assessed by the following measure:

Percentage Availability = MTBF / (MTBF + MTTR) x 100%

Where:

(1) MTBF (Mean Time Between Failure) of an element is the average time (usually expressed in hours) an element works without failures. It is calculated by dividing the total number of operating hours by the total number of failures;

(2) MTTR (Mean Time To Restore) is the mean active repair time required, after arrival of the maintenance team, to locate and isolate the fault, make repairs, and perform a functional checkout to verify that the equipment has been restored to operational status. It is calculated as the total active repair time divided by the total number of failures requiring corrective maintenance. This classification excludes preventive maintenance downtime, logistic delays, supply delays and administrative delays;

(3) DT(CM), or Down Time due to Corrective Maintenance, is the total downtime in hours due to Corrective Maintenance, summed over all sessions carried out on all E&M systems, and Track Works, commissioned under the contract during the assessment period. Any unreasonable delay in handing – over the E&M systems and Track Works for repairs for reasons not attributable to the Contractor shall be excluded.

21.3.22. Maintainability Requirements: Simplicity of maintenance, operation, emergency procedures, and ease of restoration of equipment; these together with ease of access inside the equipment shall be taken into account throughout the development of the design.

The maintenance regime proposed for the E&M systems and Track Works shall be developed design stage. A Failure Mode Effect Criticality Analysis (FMECA) shall be developed to include required maintenance derived from each failure mode.

The E&M systems and Track Works shall incorporate design, which reduces maintenance, substantially improving service intervals and component replacement. The design shall also minimize Mean Time To Repair (MTTR) and costs throughout the design life.

The MTTR time measurement shall include on-site diagnostics and rectification of the

21.3.19. Correction shall be made to components or subsystems that either fail to attain predicted availability levels or show Pattern Failure at the Contractor's expense.

21.3.20. During the in-service Defects Notification Period (DNP), the E&M Systems and Track works shall demonstrate successful achievement of the RAM targets, which will be a prerequisite of the application for a Performance Certificate to be issued by the Employer.

Failure to meet the E&M Systems and Track works RAM targets within the DNP shall mean that the DNP shall be extended until such time as the RAM targets has been met.

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~~The contractor must provide a Maintenance Level 1 turnaround time of not more than 7 days and a Maintenance Level 2 turnaround time of not more than 30 days.~~

21.3.22. Maintainability Requirements: Simplicity of maintenance, operation, emergency procedures, and ease of restoration of equipment; these together with ease of access inside the equipment shall be taken into account throughout the development of the design.

The maintenance regime proposed for the E&M systems and Track Works shall be developed design stage. A Failure Mode Effect Criticality Analysis (FMECA) shall be developed to include required maintenance derived from each failure mode.

The E&M systems and Track Works shall incorporate design, which reduces

providing the complete track system. The Contractor shall design and test the elastic sleeper directly fastened track/non-ballasted track system for the elevated/embankment section of this Project. Vertical and horizontal adjustment shall be adequately built into the fastenings and/or adjustable to track bed.

2) Design, Supply and Installation of main line and crossovers applying the direct fixation method, including all turnout parts. The Contractor shall provide and install power operated scissors crossings (double crossover), single crossovers and simple turnouts on the elevated/underground track structure using resiliently mounted FFU sleeper and base plates.

3) In the Depot, the main track structures are ballasted track jointed with short welded rails and fishplates. In the Inspection and Repair bays, the rail is supported on concrete or steel stumps/poles. The Contractor shall provide a track structure in the Workshops and at level crossing in which the top surface of the rail head is flush with the adjacent paved area and the elevation is determined by the rail level. Resilience shall be provided between the rail and the paved area.

4) It is proposed to use 4 types of buffer stops namely Friction sliding buffer stop, fabricated buffer stop, stop block type and Ballast mound type. The Contractor shall provide Friction sliding buffer stops at the ends of the main lines for appropriate speeds. The Contractor shall provide appropriate type buffer stops at all track ends in the Depot. The Buffer stops shall be the insulated type so as not to short-circuit the running rails of tracks.

## 1.2 Definitions and Abbreviations

Whenever the following terms are used in this Track Works requirements, the intent and meaning shall be interpreted as follows:

### 1.2.1 Commissioning

The process of setting to work the complete transportation system through a series of integrated tests that demonstrate the installation and performance in accordance with the specified criteria.

### 1.2.2 Consumables

Consumables means those parts that are not repairable and usually have a relatively short life span.

### 1.2.3 Drainage System

The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the Project/ building area.

### 1.2.4 Equipment

All machinery, together with the necessary supplies for upkeep and maintenance, and also all tools and apparatus necessary for the proper construction and acceptable completion of the Work.

### 1.2.5 Interface

Interface coordination with Civil & Structural and System wide contracts related to track works like rolling stock, electrification and traction, signal system and telecommunications.

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3) In the Depot, the main track structures are ballasted track jointed with short welded rails and fishplates. In the Inspection and Repair bays, the rail is supported on concrete or steel stumps/poles. The Contractor shall provide a track structure in the Workshops and at level crossing in which the top surface of the rail head is flush with the adjacent paved area and the elevation is determined by the rail level. Resilience shall be provided between the rail and the paved area. The contractor shall also provide the transition slabs in the in the depot areas.

4) It is proposed to use 4 types of buffer stops namely Friction sliding buffer stop, fabricated buffer stop, stop block type and Ballast mound type. The Contractor shall provide Friction sliding buffer stops at the ends of the main lines for appropriate speeds. The Contractor shall provide appropriate type buffer stops at all track ends in the Depot. The Buffer stops shall be the insulated type so as not to short-circuit the running rails of tracks.

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Interface coordination with Civil & Structural and System wide contracts related to track works like rolling stock, electrification and traction, signal system and telecommunications.

v. Spring, Air Spring, Brake parts & Iron shop (N22)

The spring, air spring, brake parts & iron shop is to repair and inspect the bogie parts.

vi. Air brake valve shop (N25)

The air brake valve shop is to dismantle, wash, repair, inspect, and reassemble the parts concerning with the air brake valves of bogie.

vii. Mechanical shop (N26)

The mechanical shop is to repair the parts mechanically.

viii. Parts Disassembly and Assembly facilities (N13)

aa. There are the parts disassembly and assembly facilities at the car body shop.

ab. The car body shop is to disassemble the parts from and assemble the parts to the car body. The car body is moved by the temporary bogies (N12-04). The car body height is adjusted to the working height by raising or lowering the height of the temporary bogies (N12-04).

ac. Equipment/Parts on the roof are removed and re-installed by the overhead traveling cranes.

ad. The car body shop has thirty spots for disassembling & assembling, and inspections & repairs to conduct works at the same time.

d. Car body repair facilities (N13)

i. There are the car body repair facilities at the car body shop.

ii. The car body shop is to inspect and repair the car body.

iii. The car body is moved by the temporary bogies (N12-04).

iv. The car body height is adjusted to the working height by raising or lowering the height of the temporary bogies (N12-04).

v. The car body shop has thirty spots for disassembling & assembling, and inspections & repairs to conduct works at the same time.

vi. Lifting of one car, group/set of cars or a complete 8-car trainset with bogies can be performed here with Car Body Lifting Jacks (N12.02).

e. Car body painting facilities (N15)

i. There are the car body painting facilities at the paint shop.

ii. The paint shop is to paint the car body after inspection and repairs.

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8.10.3 South Depot Layout

The layout of the depot for the Rolling Stock maintenance is based on the following assumptions for reference. The basic concepts of Depot Layout are followings.

8.10.3.1. Light Repair Shop (S01)

The light repair shop is located in a place where trains can move from/to the storage track easily.

8.10.3.2. Unscheduled Repair Shop (S02)

a. The unscheduled repair shop is located in a place where trains can move from the storage track easily.

b. The unscheduled repair shop is located for transport the parts from/to workshop.

c. Car Body Lifting Jacks (S02.11) have been provided in the shop to lift the train car with bogies attached.

8.10.3.3. Wheel Re-profiling Shop (S03)

a. The wheel re-profiling shop is located in a place where trains can move from the storage track easily.

b. The wheel re-profiling shop is located considering long time stabling across the road.

8.10.3.4. Car body Washer (S04)

The location is in a place where car bodies can be washed during moving between storage tracks and Light Repair Shop, and between storage tracks and a lead track.

8.10.3.5. Storage Track

a. The location is in a place where trains can move to storage tracks directly and smoothly from/to the access tracks not to affect the train operation, shunting works, maintenance works and training for NSRP-South staff.

b. The location is in a place where trains can move from storage tracks to the light repair shop (S01), the unscheduled repair shop (S02) and the wheel re-profiling shop (S03) not to use a lead track or a passage track as possible.

8.10.3.6. Lead track

The lead track is located for the train moving from/to the light repair shop (S01), the unscheduled repair shop (S02) and the wheel re-profiling shop (S03).

8.10.3.7. Passage track

a. The passage track is located for the train moving between the access tracks and other tracks that are the storage track, the light repair shop (S01), the unscheduled repair shop (S02), and, the wheel re-profiling shop (S03).

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b. The unscheduled repair shop is located for transport the parts from/to workshop.

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8.10.3.7. Passage track

a. The passage track is located for the train moving between the access tracks and other tracks that are the storage track, the light repair shop (S01), the unscheduled repair shop (S02), and, the wheel re-profiling shop (S03).

b. The passage track is located for the train moving between the east storage tracks and

**N12.02 Car Body Lifting Jack**

1. Quantity: Twenty-Five (25) sets of Lifting Jacks, to lift the entire 8-car trainset (10-car trainset for future) as well individual or set/group of cars shall be supplied on three tracks within Bogie Removal/Installation Shop (N12) and Carbody Shop (N13).

2. Functional Requirements

| | |
|---|---|
| Quantity of Lifting Jacks: | 4 Nos per Set |
| Lifting capacity per Jack | 10t Min. |
| Lifting capacity per set | 04 x 10t =40t Min. |
| Lowest position of cantilever (claw) | 400mm above T.O.R. |
| Highest position of cantilever (claw) | 2,500 mm above T.O.R. |
| Vertical stroke | 2,115 mm |
| Regulating range of the cantilever | 475mm in horizontal direction |
| Lifting/lowering speed | approx. 300mm/min |
| Operating voltage | 400V±10% / 60Hz±5%/ 3 phases |
| Control voltage | 230V±10%/ 60Hz±5%/ 24V DC |
| Protection of electrical equipment | IP55 |
| Isolation class | F |
| Synchronization tolerance | ±5mm |
| Noise level | Max 75 dB(A) in a distance of 1m |
| Floor flatness | Max ±5mm in a distance of 2m |

2.1. One car body lifting jack set shall consist of four (4) on-floor type mobile jacks of electric motor driven screw type having self-locking features when the power fails, and a control system for lifting of single car. Three (3) sets of four jacks shall be provided in N12 Bogie Removal/Installation Shop and twenty-two (22) sets of four jacks shall be provided in N13 Carbody Shop. Lifting configuration in Carbody Shop can be a single car, a unit of 4 cars and a complete trainset of 8 cars (5 cars / 10-car trainset for future).

2.2. The jacks shall be synchronized during the lifting process after confirming enough contact with jacking pads on the car within a tolerance of +/- 5 mm. Operating a set of Lifting Jacks, movable Master Control Console (MCC) shall be delivered. In N12 shop, one MCC and four jacks shall be provided for one car body lifting while in N13 shop, number of MCCs' to be designed for Engineer's approval and shall be provided on each track for lifting of single car / 4car / 8car trainset (5car /10car trainset for future). MCC shall be fitted with programmable touch screen-based HMI for selecting group of cars to be lifted.

2.3. Each Lifting Jack will be overload tested Dynamically with 115% of the SWL and Statically with 150% of the SWL.

2.4. The equipment will be executed in metric system.

2.5. All the basic components in the system will be interchangeable

3. Design:

3.1. Major particulars of car will be as follows; the Contractor shall confirm to the Rolling Stock Contractor:

i. Track: 1,435 mm gauge,

ii. Cary weight: less than 40 tons except bogies,

iii. Car width: 2,950 mm (1,435 mm gauge).

3.2. Arrangement of lifting positions shall be referred to the Workshop Layout drawings.

3.3. The jacking operation shall be carried out and controlled on the central control panel, and remote-control box shall be provided for single jack operation. For each set of lifting jacks, operating by columns (by group of four) can be chosen according to the type of rolling stock to be lifted. The software shall automatically reconfigure the system. Additional option for wireless operation and control of a group of lifting jacks over a secured and safe industry standard Wi-Fi network shall be offered for redundancy in addition to control cable-based system.

3.4. In-floor socket boxes including plugs shall be provided.

3.5. Safety measure shall be provided for the train opposite side where the staff cannot watch from the central control panel.

3.6. Flashing lights and audible warning device shall be provided for operation safety.

3.7. Emergency stop button (mushroom type) shall be provided on each control position.

3.8. Contact condition between a jack and the car body at starting and during lifting process shall be confirmed securely by the sensor technology.

3.9. Lifting jacks shall be stopped when exceeding the synchronization tolerance and correction of deviation and resuming synchronized operation shall be performed.

3.10. Operating and failure status shall be indicated on the central control panel.

3.11. PC/PLC for controlling jacks shall have back-up battery for power-source failure.

3.12. Power and control cables for jacks set shall be provided with multipin connectors and sufficient length covering each jack's position. Connecting cables for the main and control current shall be delivered. Cables shall be divided into individual lengths and to be provided with necessary plugs and couplings. Sockets shall be IP65. All cable containment works shall be in the scope of the contractor. Necessary interface with building contractor shall be done.

3.13. All integral wirings to the control panel and individual jack shall be factory-wired. Other wirings shall be completed on site during installation. All equipment shall be suitably earthed. All works related to wireless and cable control like LAN, secured Wi-Fi will be under contractor scope. Remote assistance via internet shall be possible.

3.14. Movement of jacks to the lifting position shall be available manually on the floor, assisted by hydraulically raised wheels. Wheels shall be retracted for lifting.

3.15. Each jack shall be equipped with lifting eye-plates and/or hungers for transport with crane or forklift truck within the Depot/Workshop.

4. Interface Requirement

4.1. Interface shall be taken with other related contractors such as for the Building Contractor regarding electric source, distribution box, cable connection, etc. especially the following issues, but not limited to:

i. Tolerance of floor levelness in jacking areas,

ii. Equipment weight,

iii. Floor loading (t/m2) in floor contact areas,

iv. Power and control cable pipe, pit/trench, route, location and dimension.

4.2. Interface shall be taken with Rolling Stock Contractor at the appropriate timing.

**N12.02 Car Body Lifting Jack**

1. Quantity: Twenty-Five (25) sets of Lifting Jacks, to lift the entire 8-car trainset (10-car trainset for future) as well individual or set/group of cars shall be supplied on three tracks within Bogie Removal/Installation Shop (N12) and Carbody Shop (N13).

2. Functional Requirements

| | |
|---|---|
| Quantity of Lifting Jacks: | 4 Nos per Set |
| Lifting capacity per Jack | 10t Min. |
| Lifting capacity per set | 04 x 10t =40t Min. |
| Lowest position of cantilever (claw) ~~above T.O.R.~~ | 400mm above T.O.R. |
| Highest position of cantilever (claw) ~~above T.O.R.~~ | 2,~~.~~500 mm above T.O.R. |
| Vertical stroke | 2,~~.~~115 mm |
| Regulating range of the cantilever | 475mm in horizontal direction |
| Lifting/lowering speed | approx. 300mm/min |
| Operating voltage | 400V±10% / 60Hz±5%/ 3 phases |
| Control voltage | 230V±10%/ 60Hz±5%/ 24V DC |
| Protection of electrical equipment | IP55 |
| Isolation class | F |
| Synchronization tolerance | ±5mm |
| Noise level | Max 75 dB(A) in a distance of 1m |
| Floor flatness | Max ±5mm in a distance of 2m |

2.1. One car body lifting jack set shall consist of four (4) on-floor type mobile jacks of electric motor driven screw type having self-locking features when the power fails, and a control system for lifting of single car. Three (3) sets of four jacks shall be provided in ~~the~~ N12 Bogie Removal/Installation Shop and twenty-two (22) sets of four jacks shall be provided in N13 Carbody Shop. Lifting configuration in Carbody Shop can be a single car, a unit of 4 cars and a complete trainset of 8 cars (5 cars / 10-car trainset for future).

2.2. The~~Four~~ jacks shall be synchronized during the lifting process after confirming enough contact with jacking pads on the car within a tolerance of +/- 5 mm. Operating a set of Lifting Jacks, movable Master Control Console (MCC) shall be delivered. In N12 shop, one MCC and four jacks shall be provided for one car body lifting while in N13 shop, number of MCCs' to be designed for Engineer's approval and shall be provided on each track for lifting of single car / 4car / 8car trainset (5car /10car trainset for future). MCC shall be fitted with programmable touch ~~-~~screen-based HMI for selecting group of cars to be lifted.

2.3. Each Lifting Jack will be overload tested Dynamically with 115% of the SWL and Statically with 150% of the SWL.

2.4. The equipment will be executed in metric system.

2.5. All the basic components in the system will be interchangeable

3. Design:

3.1. Major particulars of car will be as follows; the Contractor shall confirm to the Rolling Stock Contractor:

i. Track: 1,435 mm gauge,

ii. Cary weight: less than 40 tons except bogies,

iii. Car width: 2,950 mm (1,435 mm gauge).

3.2. Arrangement of lifting positions shall be referred to the Workshop Layout drawings.

3.3. The jacking operation shall be carried out and controlled on the central control panel, and remote-control box shall be provided for single jack operation. For each set of lifting jacks, operating by columns (by group of four) can be chosen according to the type of rolling stock to be lifted. The software shall automatically reconfigure the system. Additional option for wireless operation and control of a group of lifting jacks over a secured and safe industry standard Wi-Fi network shall be offered for redundancy in addition to control cable-based system.

3.4. In-floor socket boxes including plugs shall be provided.

3.5. Safety measure shall be provided for the train opposite side where the staff cannot watch from the central control panel.

3.6. Flashing lights and audible warning device shall be provided for operation safety.

3.7. Emergency stop button (mushroom type) shall be provided on each control position.

3.8. Contact condition between a jack and the car body at starting and during lifting process shall be confirmed securely by the sensor technology.

3.9. Lifting jacks shall be stopped when exceeding the synchronization tolerance and correction of deviation and resuming synchronized operation shall be performed.

3.10. Operating and failure status shall be indicated on the central control panel.

3.11. PC/PLC for controlling jacks shall have back-up battery for power-source failure.

3.12. Power and control cables for jacks set shall be provided with multipin connectors and sufficient length covering each jack's position. Connecting cables for the main and control current shall be delivered. Cables shall be divided into individual lengths and to be provided with necessary plugs and couplings. Sockets shall be IP65. All cable containment works shall be in the scope of the contractor. Necessary interface with building contractor shall be done.

3.13. All integral wirings to the control panel and individual jack shall be factory-wired. Other wirings shall be completed on site during installation. All equipment shall be suitably earthed. All works related to wireless and cable control like LAN, secured Wi-Fi will be under contractor scope. Remote assistance via internet shall be possible.

3.14. Movement of jacks to the lifting position shall be available manually on the floor, assisted by hydraulically raised wheels. Wheels shall be retracted for lifting.

3.15. Each jack shall be equipped with lifting eye-plates and/or hungers for transport with crane or forklift truck within the Depot/Workshop.

4. Interface Requirement

4.1. Interface shall be taken with other related contractors such as for the Building Contractor regarding electric source, distribution box, cable connection, etc. especially the following issues, but not limited to:

i. Tolerance of floor levelness in jacking areas,

ii. Equipment weight,

iii. Floor loading (t/m2) in floor contact areas,

iv. Power and control cable pipe, pit/trench, route, location and dimension.

4.2. Interface shall be taken with Rolling Stock Contractor at the appropriate timing.

**S02.11 CAR BODY LIFTING JACK**

1. Quantity: Two (2) sets plus One (1) Jack Spare

2. Functional Requirements

| | |
|---|---|
| Quantity of Lifting Jacks: | 4 Nos per Set |
| Lifting capacity per Jack | 10t Min. |
| Lifting capacity per set | 04 x 10t =40t Min. |
| Lowest position of cantilever (claw) | 400mm above T.O.R. |
| Highest position of cantilever (claw) | 2,500 mm above T.O.R. |
| Vertical stroke | 2,115 mm |
| Regulating range of the cantilever | 475mm in horizontal direction |
| Lifting/lowering speed | approx. 300mm/min |
| Operating voltage | 400V±10% / 60Hz±5%/ 3 phases |
| Control voltage | 230V±10%/ 60Hz±5%/ 24V DC |
| Protection of electrical equipment | IP55 |
| Isolation class | F |
| Synchronization tolerance | ±5mm |
| Noise level | Max 75 dB(A) in a distance of 1m |
| Floor flatness | Max ±5mm in a distance of 2m |

2.1. One car body lifting jack set shall consist of four (4) on-floor type mobile jacks of electric motor driven screw type having self-locking features when the power fails, and a control system for lifting of single car.

2.2. Each lifting jack will be overload tested Dynamically with 115% load of the SWL and Statically with 150% of the SWL.

2.3. Four jacks shall be synchronized during the lifting process after confirming sufficient contact with jacking pads on the car within a tolerance of +/- 5 mm.

3. Design

3.1. Major particulars of car will be as follows; the Contractor shall confirm to the Rolling Stock Contractor:

i. Track: 1,435 mm gauge,

ii. Cary weight: less than 40 tons except bogies,

iii. Car width: 2,950 mm (1,435 mm gauge).

3.2. Arrangement of lifting positions shall be referred to the workshop layout drawings.

3.3. The jacking operation shall be carried out and controlled on the central control panel, and remote-control box shall be provided for single jack operation. For each set of lifting jacks, operating by columns (by group of four) can be chosen according to the type of rolling stock to be lifted. The software shall automatically reconfigure the system. Additional option for wireless operation and control of a group of lifting jacks over a secured and safe industry standard Wi-Fi network shall be offered for redundancy in addition to control cable-based system.

3.4. Safety measure shall be provided for the train opposite side where the staff cannot watch from the central control panel.

3.5. Flashing lights and audible warning device shall be provided for operation safety.

3.6. Emergency stop button (mushroom type) shall be provided on each control position.

3.7. Contact condition between a jack and the car body at starting and during lifting process shall be confirmed securely by the sensor technology.

3.8. Lifting jacks shall be stopped when exceeding the synchronization tolerance and correction of deviation and resuming synchronized operation shall be performed.

3.9. Operating and failure status shall be indicated on the central control panel.

3.10. PC/PLC for controlling jacks shall have back-up battery for power-source failure.

3.11. Power and control cables for jacks set shall be provided with multipin connectors and sufficient length covering each jack's position. Connecting cables for the main and control current shall be delivered. Cables shall be divided into individual lengths and to be provided with necessary plugs and couplings. Sockets shall be IP65. All cable containment works shall be in the scope of contractor. Necessary interface with building contractor shall be done.

3.12. All integral wirings to the control panel and individual jack shall be factory-wired. Other wirings shall be completed on site during installation. All works related to wireless and cable control like LAN, secured Wi-Fi will be under contractor scope. Remote assistance via internet shall be possible.

3.13. All equipment shall be suitably earthed.

3.14. Movement of jacks to the lifting position shall be available manually on the floor, assisted by hydraulically raised wheels. Wheels shall be retracted for lifting.

3.15. Each jack shall be equipped with lifting eye-plates and/or hungers for transport with crane or forklift truck within the Depot/Workshop.

3.16. In-floor socket boxes including plugs shall be provided.

3.17. All the basic components in the system will be interchangeable. In case of emergency, components can be used in Mabalacat Depot and vice versa.

4. Interface Requirement

4.1. Interface shall be taken with other related contractors such as contractors for the Building Contractor regarding electric source, distribution box, cable connection, etc. especially the following issues, but not limited to:

i. Tolerance of floor levelness in jacking areas,

ii. Equipment weight,

iii. Floor loading (t/m2) in floor contact areas,

iv. Power and control cable pipe, pit/trench, route, location and dimension.

4.2. Interface shall be taken with Rolling Stock Contractor and building contractor at the appropriate timing.

5. Eligible Supplier

There is no preference.

## S02.11 CAR BODY LIFTING JACK

1. Quantity: Two (2) sets plus One (1) Jack Spare

2. Functional Requirements

| | |
|---|---|
| Quantity of Lifting Jacks: | 4 Nos per Set |
| Lifting capacity per Jack | 10t Min. |
| Lifting capacity per set | 04 x 10t =40t Min. |
| Lowest position of cantilever (claw) | 400mm above T.O.R. |
| Highest position of cantilever (claw) | 2,500 mm above T.O.R. |
| Vertical stroke | 2,115 mm |
| Regulating range of the cantilever | 475mm in horizontal direction |
| Lifting/lowering speed | approx. 300mm/min |
| Operating voltage | 400V±10% / 60Hz±5%/ 3 phases |
| Control voltage | 230V±10%/ 60Hz±5%/ 24V DC |
| Protection of electrical equipment | IP55 |
| Isolation class | F |
| Synchronization tolerance | ±5mm |
| Noise level | Max 75 dB(A) in a distance of 1m |
| Floor flatness | Max ±5mm in a distance of 2m |

2.1. One car body lifting jack set shall consist of four (4) on-floor type mobile jacks of electric motor driven screw type having self-locking features when the power fails, and a control system for lifting of single car.

2.2. Each lifting jack will be overload tested Dynamically with 115% load of the SWL and Statically with 150% of the SWL.~~shall have a capacity of 10 tons (40 tons/set) and lifting stroke min. 1,800 mm.~~

2.3. Four jacks shall be synchronized during the lifting process after confirming sufficient contact with jacking pads on the car within a tolerance of +/- 5 mm.

3. Design

3.1. Major particulars of car will be as follows; the Contractor shall confirm to the Rolling Stock Contractor:

i. Track: 1,435 mm gauge,

ii. Cary weight: less than 40 tons except bogies,

iii. Car width: 2,950 mm (1,435 mm gauge).

3.2. Arrangement of lifting positions shall be referred to the workshop layout drawings.

3.3. The jacking operation shall be carried out and controlled on the central control panel, and remote-control box shall be provided for single jack operation. For each set of lifting jacks, operating by columns (by group of four) can be chosen according to the type of rolling stock to be lifted. The software shall automatically reconfigure the system. Additional option for wireless operation and control of a group of lifting jacks over a secured and safe industry standard Wi-Fi network shall be offered for redundancy in addition to control cable-based system.

3.4. Safety measure shall be provided for the train opposite side where the staff cannot watch from the central control panel.

3.5. Flashing lights and audible warning device shall be provided for operation safety.

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3.12. All integral wirings to the control panel and individual jack shall be factory-wired. Other wirings shall be completed on site during installation. All works related to wireless and cable control like LAN, secured Wi-Fi will be under contractor scope. Remote assistance via internet shall be possible.

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3.14. Movement of jacks to the lifting position shall be available manually on the floor, assisted by hydraulically raised wheels. Wheels shall be retracted for lifting.

3.15. Each jack shall be equipped with lifting eye-plates and/or hungers for transport with crane or forklift truck within the Depot/Workshop.

3.16. In-floor socket boxes including plugs shall be provided.

3.17. All the basic components in the system will be interchangeable. In case of emergency, components can be used in Mabalacat Depot and vice versa.

4. Interface Requirement

4.1. Interface shall be taken with other related contractors such as contractors for the Building Contractor regarding electric source, distribution box, cable connection, etc. especially the following issues, but not limited to:

i. Tolerance of floor levelness in jacking areas,

ii. Equipment weight,

iii. Floor loading (t/m2) in floor contact areas,

iv. Power and control cable pipe, pit/trench, route, location and dimension.

4.2. Interface shall be taken with Rolling Stock Contractor and building contractor at the appropriate timing.

5. Eligible Supplier

There is no preference.

## 7.4 Scope of Equipment Supply

### 7.4.1 The contractor shall supply the following but not limited to:

7.4.1.1 System Components

a) Station accounting computer, including all of its constituent components
b) Normal Automatic Gate
c) Wide Automatic Gate
d) Ticket Vending Machine
e) Point of Sales, including all of its constituent components
f) Handheld Terminal
g) Uninterruptible Power Supply
h) Central Computer System, including all of its constituent components
i) Cash Handling System
j) Card Handling System
k) Contactless Card
l) Contactless Card Reader
m) QR Code Reader

7.4.1.2 Station AFC Facilities

a) Station accounting computers, including all of its constituent components
b) Normal Automatic Gates
c) Wide Automatic Gates
d) Ticket Vending Machines
e) Point of Sales, including all of its constituent components
f) Handheld Terminals
g) QR Code Reader
h) Special Tools for cash counting
i) Special Tools for card counting
j) Furniture within AFC Rooms, Customer Service Room
k) Uninterruptible Power Supplies in AFC UPS Rooms
l) Power Supply distribution facilities
m) Cables, cable containment and earthing
n) Local Area Network (LAN) and Interfaces to the Communication Backbone Network

7.4.1.3 OCC AFC Facilities

a) AFC Central Computer, including all of its constituent components
b) AFC Backup Central Computer, including all of its constituent components
c) Special Tool for card counting
d) Local Area Network (LAN) and Interfaces to the Communication Backbone Network
e) Cables, cable containment and earthing
f) Card personalization equipment
g) Furniture within AFC rooms
h) Uninterruptible Power Supply for AFC equipment

## 7.4 Scope of Equipment Supply

**7.4.1 The contractor shall supply the following but not limited to:**

7.4.1.1 System Components

a) Station accounting computer, including all of its constituent components
b) Normal Automatic Gate
c) Wide Automatic Gate
d) Ticket Vending Machine
e) Point of Sales, including all of its constituent components
f) Handheld Terminal
g) Uninterruptible Power Supply
h) Central Computer System, including all of its constituent components
i) Cash Handling System
j) Card Handling System
k) Contactless Card
l) Contactless Card Reader
m) QR Code Reader

7.4.1.2 Station AFC Facilities

a) Station accounting computers, including all of its constituent components
b) Normal Automatic Gates
c) Wide Automatic Gates
d) Ticket Vending Machines
e) Point of ~~S~~sales, including all of its constituent components
f) Handheld Terminals
g) QR Code Reader
h) Special Tools for cash counting
i) Special Tools for card counting
j) Furniture within AFC Rooms, Customer Service Room
k) Uninterruptible Power Supplies in AFC UPS Rooms
l) Power Supply distribution facilities
m) Cables, cable containment and earthing
n) Local Area Network (LAN) and Interfaces to the Communication Backbone Network

7.4.1.3 OCC AFC Facilities

a) AFC Central Computer, including all of its constituent components
b) AFC Backup Central Computer, including all of its constituent components
c) Special Tool for card counting
d) Local Area Network (LAN) and Interfaces to the Communication Backbone Network
e) Cables, cable containment and earthing
f) Card personalization equipment
g) Furniture within AFC rooms
h) Uninterruptible Power Supply for AFC equipment

### 7.9.3 Point of Sales

7.9.3.1 General

a) This section indicates requirements for Point of Sales (POS).

b) The POS shall be operated only in a CSR. It is not a portable device and it shall be permanently wired to its lockable cash drawer.

7.9.3.2 Basic Functions

a) POS shall be the window machine which is operated by a station staff and shall have the following functions but not limited to:

i. Issue, analyze, compute excess fares, revalidate, cancel, refund, repair, enquire card history and issue replacements for SJT

ii. Issue with stored value, compute excess fare, add value to, analyze, replace, deduct penalty fares, revalidate, cancel, refund, repair, enquire card history, print card history and issue replacements for SVC

iii. Collect deposit for SVC

iv. Renew SVC

v. Release automatic gates

7.9.3.3 Requirements

a) The POS shall consist of a Personal Computer complete with a touch-screen display, keyboard and mouse, CSM-EM, Passenger Information Display, receipt printer, credit/debit card reader, QR code reader, intercom and audio frequency induction loop system (AFILS). The touchscreen shall be durable and have a contrast ratio that is not materially degraded by the addition of the touchscreen technology.

b) POS shall have a passenger information display to convey to passengers all information that is relevant to the transaction in hand, including but not limited to price of the ticket, the remaining value inside the card, excess fare and so on.

c) The Human Machine Interface design of POS shall be submitted to the Engineer for review and approval.

d) Standalone intercom and AFILS shall be provided at the counters of each Customer Service Room of each station to facilitate customer asking for information or requesting for assistance. The facility shall be provided for the benefit of hearing impaired passengers.

e) The AFILS shall fulfil the following requirements:

i. Compliance to BS EN 60118-4 Field Strength in induction loop systems for hearing aid purposes – Magnetic field strength;

ii. The AFILS shall enable hearing impaired people who are equipped with suitable hearing aids switched to 'T' to hear more clearly;

iii. The AFILS shall consist of a loop amplifier and a loop of wire, complete with a microphone;

f) The POS shall be accessed by authorized O&M concessionaire, whose identity shall be recorded in relevant reports and event log. The operator shall be able to log in using two-stage authentication (staff card plus PIN) to start his shift.

g) The POS shall be capable of accepting cash and credit/debit cards for transaction payments.

### 7.9.3 Point of Sales

7.9.3.1 General

a) This section indicates requirements for Point of Sales (POS).

b) The POS shall be operated only in a CSR. It is not a portable device and it shall be permanently wired to its lockable cash drawer.

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a) POS shall be the window machine which is operated by a station staff and shall have the following functions but not limited to:

i. Issue, analyze, compute excess fares, revalidate, cancel, refund, repair, enquire card history and issue replacements for SJT

ii. Issue with stored value, compute excess fare, add value to, analyze, replace, deduct penalty fares, revalidate, cancel, refund, repair, enquire card history, print card history and issue replacements for SVC

iii. Collect deposit for SVC

iv. Renew SVC

v. Release automatic gates

7.9.3.3 Requirements

a) The POS shall consist of a Personal Computer complete with a touch-screen display, keyboard and mouse, CSM-EM, Passenger Information Display, receipt printer, credit/debit card reader~~,r and~~ QR code reader, intercom and audio frequency induction loop system (AFILS). The touchscreen shall be durable and have a contrast ratio that is not materially degraded by the addition of the touchscreen technology.

b) POS shall have a passenger information display to convey to passengers all information that is relevant to the transaction in hand, including but not limited to price of the ticket, the remaining value inside the card, excess fare and so on.

c) The Human Machine Interface design of POS shall be submitted to the Engineer for review and approval.

d) Standalone intercom and AFILS shall be provided at the counters of each Customer Service Room of each station to facilitate customer asking for information or requesting for assistance. The facility shall be provided for the benefit of hearing impaired passengers.

e) The AFILS shall fulfil the following requirements:

i. Compliance to BS EN 60118-4 Field Strength in induction loop systems for hearing aid purposes – Magnetic field strength;

ii. The AFILS shall enable hearing impaired people who are equipped with suitable hearing aids switched to 'T' to hear more clearly;

iii. The AFILS shall consist of a loop amplifier and a loop of wire, complete with a microphone;

~~e)~~

~~d)~~f) The POS shall be accessed by authorized O&M concessionaire, whose identity shall be recorded in relevant reports and event log. The operator shall be able to log in using two-stage authentication (staff card plus PIN) to start his shift.

~~e)~~g) The POS shall be capable of accepting cash and credit/debit cards for transaction payments.

| Item | Interface requirement |
|---|---|
| | Equipotential grounding<br>The equipotential grounding of station and OCC shall be carried out by the Civil and the Architecture section. The grounding wire shall be carried out to the grounding terminal of the Telecommunication equipment room, by the Architecture section. The ground resistance is measured in cooperation with the Power side and the Signal side. |
| | CCTV System:<br>Responsible area of CCTV system<br>Paying area and work area in the railway facility area<br>Paid concourse area<br>Platform area<br>Work area such as equipment room<br>Other if any<br><br>Responsible area of architecture (reference)<br>The details should be confirmed by the architecture.<br>Free area and commercial area in the railway facility area<br>Free concourse area<br>Commercial area<br>Other if any<br><br>Coordination during the DED - Location of CCTV Cameras. (As stated above on the Responsible Area of CCTV System.)<br>Identification of CCTV Cameras for their BMS including EAC. |
| | Broadcast area of the PA system<br>PA system broadcasting area of Telecommunications<br>Within the railway facility area<br>PA system broadcasting area of architecture (reference)<br>The details should be confirmed by the architecture.<br>Commercial facility area |
| | Fire alarm system<br>Receive fire occurrence information<br>When a fire occurs, the PID system and the PA system receive fire occurrence information from the fire alarm system. The PID and PA systems |

| Item | Interface requirement |
|---|---|
| | Telecommunication equipment room of OCC<br>Area of the communication equipment room<br>70 m² (Does not include an area of the air conditioning.)<br>Communication UPS room area<br>50 m² (Does not include an area of the air conditioning.)<br>Free access to communication equipment room: 50 cm under the floor<br>Air conditioning: 2 pairs including spare<br>Room temperature: 28℃ or less / Humidity: 80% or less (noncondensing)<br>Floor load: Equipment room 800 kg /m², UPS room 2000 kg /m² |
| | Equipotential grounding<br>The equipotential grounding of station and OCC shall be carried out by the Civil and the Architecture section. The grounding wire shall be carried out to the grounding terminal of the Telecommunication equipment room, by the Architecture section. The ground resistance is measured in cooperation with the Power side and the Signal side. |
| | CCTV System:<br>Responsible area of CCTV system<br><br>~~Responsible area of communication system~~<br>Paying area and work area in the railway facility area<br>Paid concourse area<br>Platform area<br>Work area such as equipment room<br>Other if any<br><br>Responsible area of architecture (reference)<br>The details should be confirmed by the architecture.<br>Free area and commercial area in the railway facility area<br>Free concourse area<br>Commercial area<br>Other if any<br><br>Coordination during the DED - Location of CCTV Cameras. (As stated above on the Responsible Area of CCTV System.)<br>Identification of CCTV Cameras for their BMS including EAC. |

| Item | Interface requirement |
|---|---|
| | inform the passengers that a fire has occurred. POI is an output port of the fire alarm system.<br>Clock system<br>Provides time information received from GPS to the Fire alarm system. POI is an output port of the master clock unit or the Sub-master clock unit. |
| | Building management system (BMS) including EAC.<br>Provides a communication line (MSN system line) of the BMS system to connect from each station to OCC. POI is a port of L3SW / L2SW installed in the Telecommunication equipment room. |
| | |

3.11.2.3 Onboard Communication Interface

This Clause describes the requirements for the Telecommunications System / Radio Contractor and the Rolling Stock Contractors.

Both Contractors shall ensure that all requirements of the Specification on interfaces are comprehensively fulfilled. Below is a brief outline of responsibility between the Contractors. The Contractor shall provide an Interface Management Plan.

**Table 3.11.2.3 Radio/Rolling Stock Interface**

| Item | Item Description | By Contractor |
|---|---|---|
| 1. | Public Address (PA) System to broadcast speech messages to train passengers from the driver's cab. | Rolling Stock |
| | Facility to broadcast over the train PA System from the Operations Control Center (OCC) with the associated message content relayed to the train via the Train Radio System | Radio |
| 2. | Passenger emergency intercom to provide audio communication between carriages and the driver's cab to enable passengers to talk to the driver should an emergency occur within the train carriage. | Rolling Stock |
| | In case the driver does not pick up the passenger emergency intercom, it automatically connects to the OCC, using the onboard radio. | Radio |

| Item | Interface requirement |
|---|---|
| | |
| | Broadcast area of the PA system<br>PA system broadcasting area of Telecommunications<br>Within the railway facility area<br>PA system broadcasting area of architecture (reference)<br>The details should be confirmed by the architecture.<br>Commercial facility area |
| | Fire alarm system<br>Receive fire occurrence information<br>When a fire occurs, the PID system and the PA system receive fire occurrence information from the fire alarm system. The PID and PA systems inform the passengers that a fire has occurred. POI is an output port of the fire alarm system.<br>Clock system<br>Provides time information received from GPS to the Fire alarm system. POI is an output port of the master clock unit or the Sub-master clock unit. |
| | Building management system (BMS) including EAC.<br>Provides a communication line (MSN system line) of the BMS system to connect from each station to OCC. POI is a port of L3SW / L2SW installed in the Telecommunication equipment room. |
| | ~~CCTV system installed by architecture~~<br>~~Provides a communication line (MSN system line) of the CCTV system to connect from each station to OCC. POI is a port of L3SW / L2SW installed in the Telecommunication equipment room.~~ |

3.11.2.3 Onboard Communication Interface

This Clause describes the requirements for the Telecommunications System / Radio Contractor and the Rolling Stock Contractors.

Both Contractors shall ensure that all requirements of the Specification on interfaces are comprehensively fulfilled. Below is a brief outline of responsibility between the Contractors. The Contractor shall provide an Interface Management Plan.

**Table 3.11.2.3 Radio/Rolling Stock Interface**

In 95% of all covered areas, the recorded video stream shall provide sufficient resolution for an appropriate application to recognize a left object and detect a person.

c) Recognition

In 15% of all covered areas, the recorded video stream provides sufficient resolution for an appropriate application to recognize an unknown person.

d) Identification

In 5% of all covered areas, the recorded video stream provides sufficient resolution for an appropriate application to identify an unknown person.

9) General Coverage

The CCTV system shall cover 95% of all public areas and 60% of all non-public areas in stations, Depots, and associated buildings.

Specific areas to be covered shall include:

- Train doors and platform edge (to be displayed at the headwall monitor in the OCC and SCR);
- Escape routes and cash transfer routes;
- Escalator landings;
- Emergency exits;
- Passenger help points and fire-fighting equipment;
- Elevators;
- Ticket vending machines;
- Ticket sales;
- Cash handling room;
- AFC gates;
- Substations and sectioning post stations;
- Entrance/exit of the OCC buildings and the Depots;
- Roads, Perimeter Fence and stabling area in the Depots;
- Access routes (within contract limits) to the station;
- All battery posts
- All-access and egress points along the railway alignment including access ramps and emergency staircases.
- Ancillary buildings
- TSS entrances and outdoor equipment; and
- Any other location which requires CCTV monitoring subject to the Engineer's Approval.

The CCTV cameras viewing the platform edge shall give an unobstructed view of train doors and passengers in that vicinity. The Contractor shall propose the optimum number of cameras to achieve the requirements as indicated, subject to the Engineer's Approval.

10) Design coordination

- Ticket vending machines;
- Ticket sales;
- Cash handling room;
- AFC gates;
- Substations and sectioning post stations;
- Entrance/exit of the OCC buildings and the Depots;
- Roads, Perimeter Fence and stabling area in the Depots;
- Access routes (within contract limits) to the station;
- All battery posts
- All-access and egress points along the railway alignment including access ramps and emergency staircases.
- Ancillary buildings
- TSS entrances and outdoor equipment; and
- Any other location which requires CCTV monitoring subject to the Engineer's Approval.

The CCTV cameras viewing the platform edge shall give an unobstructed view of train doors and passengers in that vicinity. The Contractor shall propose the optimum number of cameras to achieve the requirements as indicated, subject to the Engineer's Approval.

10) Design coordination

The design of the CCTV system shall be coordinated with the architectural layouts to ensure that blind spots are minimized and to ensure that cameras do not obscure the view of signage or vice versa. For cash handling and cash storage rooms, the Contractor shall ensure that the CCTV viewing angle captures at least 2 vantage points and without blind spots.

11) Video quality

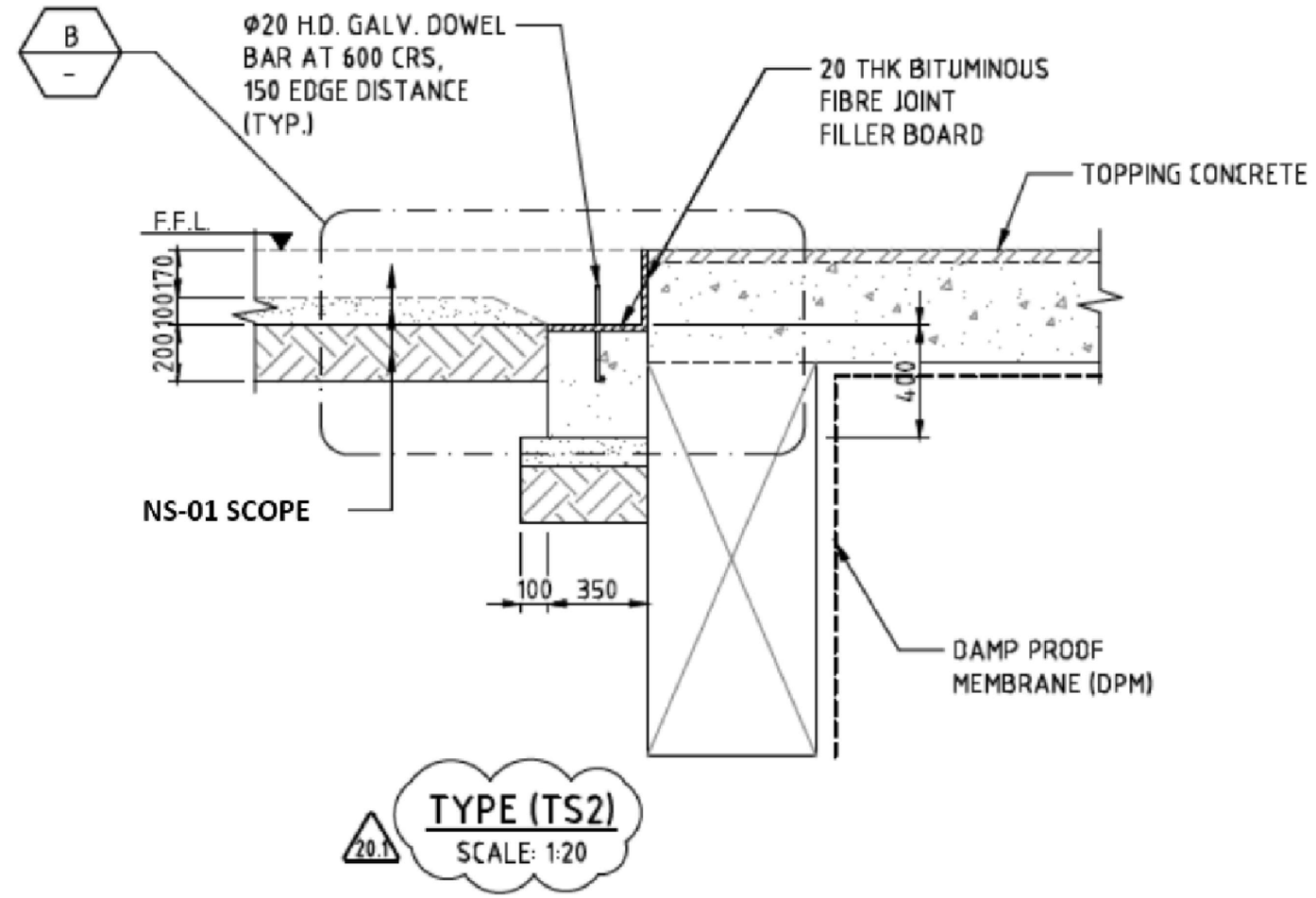
The produced videos shall be of evidential grade quality (for police investigations and prosecution cases) and free from:

- Discoloring of any direction and show the original color of the object;
- Barrel-cushion distortion and show the real geography;
- Contrast and brightness impact through external lighting; and
- Pixilation (moving objects shall not cause).

12) Video Processing

a) Video export

The System shall not apply any compression to the picture when it is exported from the system and the exported picture shall not undergo any format conversion that affects the content or picture quality. Also, a video authentication method shall be available to export selected video sequences with the guarantee of integrity that the given video has not been




# TRANSITION SLAB 2

| VERSIONS | DATE | DESCRIPTION |
|---|---|---|
| 00 | 20 SEP 2021 | ISSUED FOR REFERENCE |
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| | | |
| | | |
| | | |

DEPARTMENT OF TRANSPORTATION (DOTr)

PHILIPPINE NATIONAL RAILWAYS

CONSULTANT

JICA DESIGN TEAM (JDT)

ORIENTAL CONSULTANTS GLOBAL CO.,LTD.

JAPAN INTERNATIONAL CONSULTANTS FOR TRANSPORTATION CO.,LTD.

KATAHIRA & ENGINEER INTERNATIONAL

TONICHI ENGINEERING CONSULTANTS, INC.

PACIFIC CONSULTANTS CO.,LTD.

Tokyo Metro Co.,Ltd.

| TITLE | JDT | SMEC |
|---|---|---|
| DESIGNER | – | – |
| CHECK | – | – |
| TEAM LEADER | – | – |
| P. MANAGER | – | – |

MALOLOS – CLARK RAILWAY PROJECT (MCRP)
NORTH SOUTH RAILWAY PROJECT–SOUTH (NSRP–SOUTH)

Package CP NS–01 : Bidding Documents

DETAIL OF TRANSITION SLAB 2

| | |
|---|---|
| DATE | SEPTEMBER 2021 |
| SCALE | NONE |
| SHEET No. | 1 OF 1 |
| DRG No. | NSCR–GCR–NS01–SWEM–DWG–TK–000001 |
| DRG S. | NONE |
| REV | 00 |

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|---|---|---|---|---|
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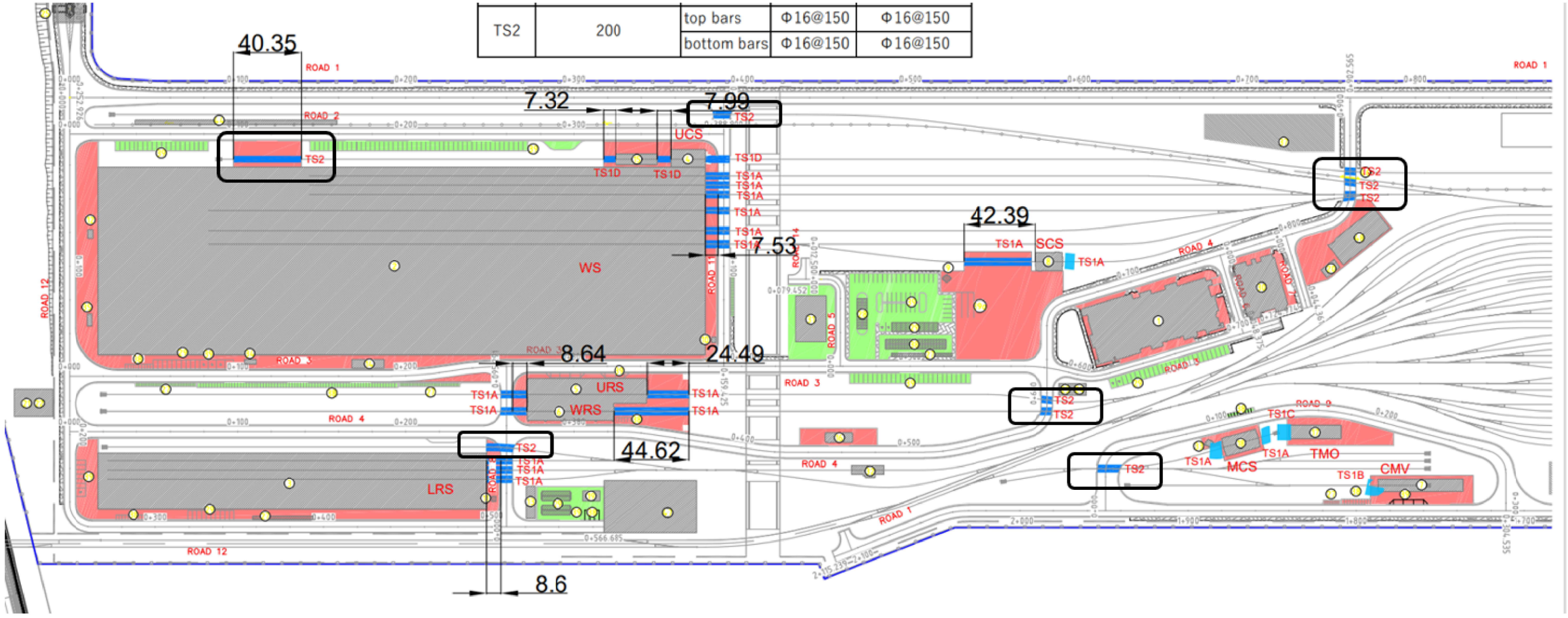
| | | bottom bars | Φ16@150 | Φ16@150 |




# MABALACAT DEPOT

| VERSIONS | DATE | DESCRIPTION |
|---|---|---|
| 00 | 20 SEP 2021 | ISSUED FOR REFERENCE |
| | | |
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DEPARTMENT OF TRANSPORTATION (DOTr)

PHILIPPINE NATIONAL RAILWAYS

CONSULTANT

JICA DESIGN TEAM (JDT)

ORIENTAL CONSULTANTS GLOBAL CO.,LTD.

JAPAN INTERNATIONAL CONSULTANTS FOR TRANSPORTATION CO.,LTD.

KATAHIRA & ENGINEER INTERNATIONAL

TONICHI ENGINEERING CONSULTANTS, INC.

PACIFIC CONSULTANTS CO.,LTD.

Tokyo Metro Co.,Ltd.

| TITLE | JDT | SMEC |
|---|---|---|
| DESIGNER | – | – |
| CHECK | – | – |
| TEAM LEADER | – | – |
| P. MANAGER | – | – |

MALOLOS – CLARK RAILWAY PROJECT (MCRP)
NORTH SOUTH RAILWAY PROJECT–SOUTH (NSRP–SOUTH)

Package CP NS–01 : Bidding Documents

LOCATION OF TRANSITION SLAB 2
IN MABALACAT DEPOT

| | |
|---|---|
| DATE | SEPTEMBER 2021 |
| SCALE | NONE |
| SHEET No. | 1 OF 1 |
| DRG No. | NSCR–GCR–NS01–SWEM–DWG–TK–000002 |
| DRG S. | NONE |
| REV | 00 |