General Bid Bulletin No. 9
18 June 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"** — Clarifications 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. Page No. Clause No. / Title Reference Text	Clarification Request	Proposed Revised Text (if any)	Response
1	Vol. I. Sec. II., BDS-10, ITB 24.1, "XXXX The deadline for Bid submission is: Date: 17 June 2021 Time: 10:00 AM"	With consideration of the guidelines of the Inter-Agency Task Force on Emerging Infectious Disease and the Department of Health, uncertainties are posed by the issuance of the Enhanced Community Quarantine. In addition to this, two (2) months shall not be sufficient considering the following activities that will be done in succession: • Seeking out and finalizing a partnership • Processing of travel requirements for foreign entities • Studying and preparing the documents In this light, we humbly request for an extension of the deadline for Bid submission be moved to 17 September 2021		Please refer to GBB No.7.
2	GBB No. 3 Annex B - Attachment 1, PC-5, 8.1, N/A	The commencement of the project is tentatively Jan 2022 as indicated in the Bid document; however we would like to get an indicative timeline for the installation of 3300+ PSD/ PSG, station-wise including an indicative completion date.		Please refer to the respective Access Date shown in the Attachment 2 in Section VIII Particular Conditions, e.g. Section 1 AD 2, Section 2 AD 4,Section 3 AD 4, and Section 4 AD 4 for access to the platform area for PSD installation. The bidder could refer to

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				these Access Date and Key Date for the planning of the PSD installation. The Contractor shall interface and coordinate with the CIvil Contractors for the details in access to the site.
3	Vol. III Section VI., ESMP-37, SR-35, N/A	UPS – Typically the UPS backup power supply for PSD/ PSG will be provided from the general back up power for the entire station. Do we need an additional UPS for PSD alone, or ca connect to UPS		Please refer to Annex A Item 13 of GBB5
4	Vol. II Section VI, SOW-1, N/A, N/A	The bid document highlights that civil/ structural work should be interfaced between PSD contractor and civil contractor. Kindly confirm all structural support and civil works/ requirements based on the load calculation, etc will be provided by civil contractor.		This is interfaced with civil contractor.
5	Vol. II Section VI, ERT-1024, 10.3, N/A	Our PSD/ PSG products comply with fire egress requirements however the bid calls for Fire proof but without much details and norms to be followed. We need more information to evaluate this requirement		The contractor shall propose relevant standards for proven products at design stage for the approval of the Engineer.
6	Vol. IV Sec. VII, GC-1, N/A, N/A	Is the contract subject to negotiation after award?		The contract are not subject to negotiation after award. Please refer to Section III

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				Evaluation and Qualification Criteria, last paragraph of item 5 (Step 4).
7	Vol I. Section IV., BF-48, Schedule 1 – Price Schedules; Item No. 6, The Contract is to be carried out on a lump-sum price basis, where payment to the Contractor will be made according to achieved milestones unless otherwise specified in the Contract. The Contract Price is not subject to re-measurement and neither is it to be adjusted by reason of the actual quantities of work executed being more or less than the estimated quantities used by the Bidder in the calculation of the Bid Price	Kindly confirm if Schedule(s) of cost indexation will be included in the Contract.		Please refer to the Section II Bid Datasheet ITB 20.3, Section VII General Conditions GC 13, Section IV Bidding Forms Schedule 2: Table of Adjustment Data for the detail.
8	Vol. IV. Section VIII., PC-5, 8.7, Five hundredths of a percent (0.05%) of the Accepted Contract Amount per day for the completion of the whole of the Works and for delay in	There may be a typo in this paragraph.		Clause revised. Please refer to Annex B.

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	achieving each Key Date for the respective elements of the Works.			
9	Part 3 Section VIII. Particular Conditions, PC – 5 & PC – 34, Performance Security, "The amount of the Performance Security will be reduced in accordance with the provision of PC Sub-Clause 4.2	In page [PC – 5] it is stated the "Performance Security will be reduced in accordance with the provision of PC Sub-Clause 4.2". However, in the PC Sub-Clause 4.2 page [PC – 34] it is not mentioned how the Performance Security will be reduced. Please advise.		Clause revised. Please refer to Annex B.
10	Part 1 Section IV. Bidding Forms, BF – 260 & BF - 261, Schedule 3: List of Japanese Origin, Goods and Services & Form SCJ: Summary for the Total Cost of Goods and Services Procured from Japan,	The Bidder would like to reconfirm how the VAT is to be considered for the computation of Japanese Contents %. We understand that applicable computation method is as follows: (a) Total Amount Japanese Content without VAT (b) Total Bid Amount with Provisional Sum but without VAT Total % of Japanese Contents = (a)/(b) Please confirm if Bidder's understanding is correct.		The Bidder's understanding is incorrect. Reference to the Section VII General Conditions GC 14.1 and Section VIII Particular Conditions Appendix 1 Eligible Source Country(ies) of Japanese ODA Loans, the denominator shall be the Bid Price.

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11	Part 1 Section IV. Bidding Forms, BF – 260 & BF - 261, Schedule 3: List of Japanese Origin, Goods and Services & Form SCJ: Summary for the Total Cost of Goods and Services Procured from Japan,	The treatment of VAT in STEP ratio calculation for CP NS-02 is different from that for CP NS-01. Please confirm the same treatment is to be applied for CP NS-01.		Please refer to the Part 1 Bidding Procedures for CP NS-01.
12	Volume 2 Part 2, ERG – 135/150/165, A3 Overhead Contact Systems, A3.1 (2) Supporting structures for power, telecom and signalling cable for CP NS-01 temporary and CP NS-01 permanent services	The supporting structures identified are not OCS structures, please confirm details for OCS structures, including provision of bases and fixings. We assume bases complete with fixing down/anchor bolts for OLE poles are provided by the Civils as part of the Viaduct structure. Thank you to confirm our understanding is correct.		All OCS structures are designed, supplied and installed under this contract. Please read OCS section of the ERT and refer to ERD. All masts are planted and not bolted based.
13	Volume II of IV - PART 2 Employer's Requirements, ERT - 685, 8.3 Design Criteria, Applicable Standards and Codes, 8.3.5.2. All the Depot/Workshop Equipment shall be capable to work at ambient temperature 50℃ without any side effect.	The maximum average temperature in Manila is around 33°C. We propose to supply equipment that complies with the local weather conditions instead of this maximum temperature of 50°C which will lead to more expensive products. Please confirm that this proposal is acceptable by amending this requirement.		Bid conditions shall prevail.

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14	Volume II of IV - PART 2 Employer's Requirements, ERT-877, N21.03 Oil seal fit & grease supply equipment,	Please provide a drawing or figure of the requested equipment.		This is a design and build contract. The contractor shall submit the equipment specifications and design for approval of the Engineer for achieving the functional requirement of the equipment as stated in the clause 2 and 3 of the ERT for N21.03. The equipment shall be equipped to function for railway industry use.
15	Volume II of IV - PART 2 Employer's Requirements Volume III of IV PART 2 – EMPLOYER'S REQUIREMENTS DRAWINGS, ERT-721 ERT-738 ERT-810 MCRP - DWG - DEP - DEF - 0006 - Workshop Machine Layout (1/2), Part A of Appendix 8.1: North Depot N01.17 Sewage Discharge Pipe N17.03 Bogie Turntable,	There are some discrepancies between the Appendix 8.1 and the Depot Layout drawings. For instance: - Sewage Discharge pipe quantities - Bogie Turntable quantities - Missing the Car Body Lifting Jack in the drawings Please indicate which prevails: the Appendix 8.1 or the Drawings?		Appendix 8.1 will prevail. Depot layout drawings, stated in ERT Para 8.14, are for general reference only. The contractor shall do the necessary interface with the building contractor for latest shop drawings at appropriate stage of the Project.

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16	Volume II of IV - PART 2 Employer's Requirements Volume III of IV PART 2 – EMPLOYER'S REQUIREMENTS DRAWINGS, ERT-983 NSRP - DWG - DEP - DEF - 0004 - Unscheduled Repair Shop, Part A of Appendix 8.1: North Depot S02.11. Car Body Lifting Jack,	There are some discrepancies between the Appendix 8.1 and the Depot Layout drawings. For instance: Car Body Lifting jacks are not represented. Please confirm whether this equipment should be supplied or not.		Depot layout drawings, stated in ERT Para 8.14, are for general reference only. Lifting jacks need to be supplied by the bidder as mentioned at S02.11 in the Appendix 8.1. The contractor shall do the necessary interface with the building contractor for latest shop drawings at appropriate stage of the Project.
17	Volume II of IV - PART 2 Employer's Requirements, ERT-741 ERT-763 ERT-766 ERT-791 ERT-792 ERT-793 ERT-797, N02.02 Bogie Replacing Equipment 3.i & 3ii N12.02 Car Body Lifting Jack 3.1 ii N12.04 Temporary Bogie 3.3 vi N15.02 Car Body Washing Booth 2.6	In each of the stated items there are three different train carbody reference weights: 40 tons, 45 tons and 50 tons. Please confirm which weight shall be considered as the reference for a Rolling Stock carbody.		Bid conditions shall prevail.

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	iii N15.03 Car Body Painting Booth 2.6 iii N15.04 Car Body Drying Booth (Include Fuel Tank) 2.6 iii N15.07 Traverser 2.3 iv,			
18	Volume II of IV - PART 2 Employer's Requirements, ERT - 941, N41.02 Shunting Locomotive (Engine Type),	The Contractor shall supply one locomotive to rescue a 270 tons Rolling Stock in a 3.5% downgrade, which is not possible. For that, two (2) locomotives are required. Please confirm that our understanding is correct and thus that 2 locomotives must be delivered.		Please refer to GBB 5 Annex B Item 2 and 3 for details.
19	Volume II of IV - PART 2 Employer's Requirements, ERT - 776, N13.05 Boarding Step,	Item 1. Quantity indicates 24 sets, whereas item 2.2 indicates a total of 48 pcs. Please confirm the quantity that shall be supplied for this equipment.		As per the ERT for N13.05, 24 sets of boarding steps shall be supplied. As mentioned in functional requirement 2.2, two kinds of the boarding steps shall be provided: i. 1,100 mm height: Twenty-four (24) pcs, ii. 2,000 mm height: Twenty-four (24) pcs. Therefore 24 sets of boarding ladders having 48 pieces are to be supplied.
20	Volume II of IV - PART 2 Employer's Requirements, ERT - 943, N41.03	Item 2.3i indicates that the Supply stands with control board. We understand it makes		This is a design and build contract. Detail design of the fuel supply equipment shall be submitted for Engineer's approval at

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	Fuel Supply Equipment (Include Fuel Tank),	reference to the distributer display. Please confirm that our understanding is correct		appropriate stage of the project. The equipment shall be equipped to function for railway industry use.
21	Volume II of IV - PART 2 Employer's Requirements, ERT - 943, N41.03 Fuel Supply Equipment (Include Fuel Tank),	Item 2.5iv indicates the need of Recirculation piping. Please provide technical information on this component.		This is a design and build contract. Detail design of the fuel supply equipment shall be submitted for Engineer's approval at appropriate stage of the project to achieve the functional requirement stated in the bid document. Necessary interface with all interfacing contractors shall be done. The equipment shall be equipped to function for railway industry use.
22	Volume II of IV - PART 2 Employer's Requirements, ERT - 943, N41.03 Fuel Supply Equipment (Include Fuel Tank),	Item 2.6iii indicates the need for water drainage apparatus. Please provide technical information on this component.		This is a design and build contract. Detail design of the fuel supply equipment shall be submitted for Engineer's approval at appropriate stage of the project to achieve the functional requirement stated in the bid document. Necessary interface with all interfacing contractors shall be done. The equipment shall be equipped to function for railway industry use.
23	Volume II of IV - PART 2 Employer's Requirements, ERT - 943, N41.03	Please provide drawings of the Fuel Supply Equipment facility with cross section.		This is a design and build contract. Detail design of the fuel supply equipment shall be submitted for Engineer's approval at

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	Fuel Supply Equipment (Include Fuel Tank),			appropriate stage of the project to achieve the functional requirement stated in the bid document. Necessary interface with all interfacing contractors shall be done. The equipment shall be equipped to function for railway industry use.
24	Part 2 – Employer's Requirements Section V1. Employer's Requirement, ERT-84, 2.4.1, The contractor shall install ATO on all trains. The Contractor shall interface with the Rolling stock contractors and propose a schedule for ATO implementation for all trains for the approval of the Engineer	Bidder understands that ATO needs to be installed only on NS02, NS03, MMSP (CP107) Rolling stocks as part of CP-NS01 contract. Please confirm our understanding.		The Bidder's understanding is correct
25	Volume III of IV PART 2 – EMPLOYER'S REQUIREMENTS DRAWINGS, 52/321, MCRP-DWG-GEN-TK-0171, TYPICAL TRACK ARRANGEMENT FOR LEVEL CROSSINGS IN DEPOT	In MCRP-DWG-GEN-TK-0171 drawing it is mentioned to refer MCRP-DWG-DEP-GE-0051 for location of level crossing. But MCRP-DWG-DEP-GE-0051 drawing is not available/missing. Please provide this drawing or clear indication of level crossings in both Mabalacat & Banalic depots.		Please refer to Annex B for the Civil Depot layout drawing of Mabalacat and Banlic depot.
26	Section V1. Employer's Requirements Technical	Please provide Philippine Electrical Code (2017 Edition).		The Bidder may procure the Code. Please refer to ERG 17, 4.5.5 3)

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	Requirements – Signaling, ERT-168, 2,28, All cables shall conform to the Philippine Electrical Code (2017 Edition) where applicable			
27	Vol 2, ERT-482 ERT-522, 5.6.9 , Outlet Box for Maintenance: (3) The outlet box shall be able to supply 1kVA. However, maximum electric power supply simultaneously from one circuit of outlets shall not exceed 1kVA.	Bidder understands that, rated voltage of outlet box is 230V. Please confirm our understanding.		The Bidders understanding is correct.
28	Vol 2, ERT-363 ERT-413, 4.1.2, ii. TSSs, SP and BPs	Bidder understands that, N01 Contractors (Civil) shall provide the buildings at TSS/SP/BP Locations as per NS01 Contractor's equipment size requirement. NS01 will do the necessary interface during execution stage. Please confirm our understanding.		The Bidder's understanding is correct. Please propose equipment that is suitable to the buildings' dimension.
29	Vol 2, ERT-382 ERT-418, 4.4.5 4.1.3, BP (Battery Post) 5) Re-generating power absorbing equipment	Since, the resistor Banks are provided at TPS, Bidder understands that, there is no onboard resistor in Rolling stock. Please confirm our understanding.		The Bidder's understanding is correct.
30	Vol 2, ERT-418, 4.1.3, 5) Re-generating power absorbing equipment	In the absence of simulation inputs, please provide resistor bank capacity.		This is a design and build project. The design, study and corresponding data analysis will be under the contractor's

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				scope to be submitted for approval of the Engineer.
31	Vol 2, ERT-365, 4.1.3.1 /System studies, (xiii) EMC and EMI study about traction power supply system for true truck	Please clarify the meaning of "True truck"		Clause revised. Please refer to Annex B.
32	Part 2 – Employer's Requirements Section V1. Employer's Requirements Technical Requirements – Power Supply, ERT-363, 4.1.2 4.6.3 Interface Control Sheet , iv. electric companies shall provide independent voltage transformers (VT) and current transformers (CT) in an exclusive use package in each substation for metering electrical energy on each incoming feeder. To meet with the electric companies' requirements of energy metering, the Contractor shall coordinate with electric companies the details of the metering devices at the design stage	1. Bidder understands that complete scope outside the boundary of SS will be performed by Electric companies and no cost will be borne by the Contractor. Contractor's scope starts from VCT onwards inside SS Boundary. VCT will be supplied and installed by Electric Companies. Please confirm our understanding. 2. The referred two clauses are contradictory regarding scope of energy meter (MOF). Bidder understands that Energy meter (MOF) will be supplied and installed by electric companies. Please confirm.		1. Except for "no cost will be borne by the Contractor", the Bidder's understanding is correct. Please refer to clause 4.1.1 2) of ERT 361 and clause 4.1.2 1) v of the ERT 363 concerning other work details including payment of fees. 2. Clause revised. Please refer to Annex B. Supply and Installation of the metering device will be the scope of the utility provider. Clause 4.6.3 of ERT 449 has been revised. Please refer to clause 4.1.1 2) of ERT 361 and clause 4.1.2 1) v of the ERT 363 concerning other work details including payment of fees.

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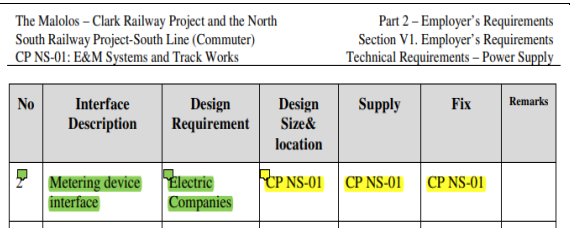
	of installation. The energy meter (MOF) will be provided by the electric companies. The Contractor shall provide the space for these devices for housing the VCT. The Contractor shall coordinate with electric companies on the necessary installed spaces and locations and miscellaneous.	 The Malolos – Clark Railway Project and the North South Railway Project-South Line (Commuter) CP NS-01: E&M Systems and Track Works Part 2 – Employer's Requirements Section V1. Employer's Requirements Technical Requirements – Power Supply No | Interface Description | Design Requirement | Design Size& location | Supply | Fix | Remarks 7 | Metering device interface | Electric Companies | CP NS-01 | CP NS-01 | CP NS-01 |		
33	Part 2 – Employer's Requirements Section V1. Employer's Requirements Technical Requirements – Power Supply, ERT-361, , iii. Payment of Guarantee Cost and Connection Cost, which is required by electric companies upon entering into a contract to receive an electrical supply.	Please keep the Payment of Guarantee Cost and Connection Cost out of bidder's scope or provide the payment amount towards guarantee and connection cost to be considered by all the bidders to bring them at par.		The Bidder's request is rejected. This will be under the scope of the contractor as specified in Clause 4.1.1 2) iii.
34	Part 2 – Employer's Requirements Section V1. Employer's Requirements Technical Requirements – Power Supply, ERT-363, 4.1.1, 69kV feeder cables from the electric companies' substation to	Bidder understands that complete scope outside the boundary of SS will be performed by Electric companies and no cost will be borne by the Contractor. Contractor's scope starts from VCT onwards inside SS Boundary. VCT will		Except for "no cost will be borne by the Contractor", the Bidder's understanding is correct. Please refer to clause 4.1.1 2) of ERT 361 and clause 4.1.2 1) v of the ERT 363 concerning other work details including payment of fees.

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	TSS of the Project will be provided and installed by electric companies. The Contractor shall coordinate with electric companies and other Interfacing Parties on the interface between the TSS and electric companies' substation. All the necessary works, equipment, materials, and fees for connection of the 69kV incoming feeders shall be borne by the Contractor. The Contractor shall liaise with electric companies regarding the provision of all connection details of the 69kV incoming cables.	be supplied and installed by Electric Companies. Please confirm our understanding.		
35	Part 2 – Employer's Requirements Section V1. Employer's Requirements Technical Requirements - Training, ERT 1009, 9.2.1.3, Major Equipment of the Simulator The related parts and equipment shall be identical to that in the actual train cabs. The detailed equipment	The bidder understands that the telecom equipment's mentioned under Table 9-1 will be supplied by RS contractor. Please confirm.		The Bidder's understanding is incorrect. Scope of supply between RS and NS-01 contractor shall be as per the Table 9.1.

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	required shall include but not be limited to that shown in Table 9.1 below.			
36	Part 2 – Employer's Requirements Section V1. Employer's Requirements Technical Requirements - Telecommunications, ERT 254, 4.1, General The BTS shall provide Communication support for carrying voice, data, and video signals and guarantee the associated quality of service requested by each sub-system. To cover this broad range of services and interfaces, the BTS shall offer different solutions, most technically appropriate, based on the respective standards and fully conforming to the ITU-T or similar recommendations: 1) Fiber Optic Communication (FOC); and	The bidder requests to make the "MPLS-TP" requirement as an optional also request to allow IP-MPLS back bone as it is more advanced technology.		Bid Conditions shall prevail.

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	2) Gigabit Ethernet (GE) backbone (Supporting MPLS-TP).			
37	Part 2 – Employer's Requirements Section V1. Employer's Requirements Technical Requirements - Telecommunications, GENERAL QUERY: Office wifi and Internet	Bidder requests to provide clarity on following requirements 1. Bandwidth requirement for Wi-Fi network. 2. Internet speed to be considered. 3. Number of Wi-Fi users to be considered.		The WiFi should comply with IEEE 802.11 ac or better. Please refer to ERT-317.
38	Part 2 – Employer's Requirements Section V1. Employer's Requirements Technical Requirements - Telecommunications, ERT-321, 2.2.1, The CCTV Systems shall be compliant with the relevant NFPA standards particularly with NFPA 130 for evacuation coverage and communications	Bidder understands that there is a requirement of CCTV Coverage for emergency evacuation routes. There is no requirement of NFPA130 temperature compliance for Proposed Cameras as Cameras with 90degree Celsius operating temperature are not available. Please confirm our understanding is correct.		Clause revised. Please refer to Annex B.
39	Part 2 – Employer's Requirements Section V1. Employer's Requirements Technical Requirements - Telecommunications, GENERAL	Bidder understands that redundant GSMR central core equipment's are N1 section contractor's scope and NS01 bidder (N2 & SC section) will consider GSMR BTS sites only to integrate with N1 section GSMR core. Please confirm our understanding is correct.		The Bidder's understanding is correct. Initially the 3 sections GSMR System should be separate. Each will be operational on its own until NS01 will integrate and consolidate these 3 separate systems together to form 1 complete GSMR Radio

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	query on GSMR integration with N1 section core.			Systems. NS01 and CP04 contractors should interface with each other during the design phase on the locations of BTS especially on the project boundaries.
40	Part 2 – Employer's Requirements Section V1. Employer's Requirements Technical Requirements - Telecommunications, GENERAL query on GSMR OCC Core equipment.	Bidder needs clarification on the GSMR central core equipment's at OCC. If NS01 bidder needs to provide separate core equipment's at OCC one of the following conditions will be considered: 1. Bidder will consider redundant central core equipment's for N2 section OCC only and same will be used to integrate with SC section BTS sites. "OR" 2. Bidder will consider main central core equipment's at N2 section OCC and redundant central core equipment's at SC section OCC. Please confirm which of the two proposals we shall consider.		The Bidder's understanding is incorrect. Each separate sections, N2 and SC, like N1, each should have a main and a back up GSMR equipment in their respective OCC until they will be integrated into one system in IOCC in Clark. Please refer to Section 12 -IOCC and DCC.
41	Part 2 – Employer's Requirements Section V1. Employer's Requirements Technical Requirements -	Please provide the technical details of CP106 PAS system's such as Make and model, Technical specification to understand the integration principle so that NS-01 and MMSP		This is part of MMSP CP106 interface.

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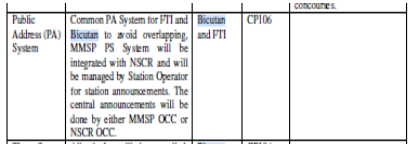
	Telecommunications, ERT-250, Table 3.11.4  concourses. Public Address (PA) System | Common PA System for FTI and Bicutan to avoid overlapping, MMSP PS System will be integrated with NSCR and will be managed by Station Operator for station announcements. The central announcements will be done by either MMSP OCC or NSCR OCC. | Bicutan and FTI | CP106	broadcast will not overlap each other at FTI and Bicutan Station.		
42	Part 2 – Employer's Requirements Section V1. Employer's Requirements Technical Requirements - Telecommunications, , , General – Telecom Equipment Furniture Requirements	Bidder requests to provide the clarity regarding scope of supply for COM System Furniture requirement at following locations as same is not mentioned in bid document- i. Station Telecom Equipment Room ii. OCC- Security Room/Telecom Equipment Room, CSS and NMS Room iii. Depot Telecom Equipment Room and Control Room		This is a design and build contract. The contractor shall design and propose the layout of the telecom equipment and furniture.
43	Section V1. Employer's Requirements Technical Requirements – Signaling, ERT-154, 2.21.2, General Humidity Requirements	As per government guidelines, the average relative humidity will be between 71% and 85%. Bidder understands that all equipment should adhere to Philippines Local Humidity ranges. Please confirm		The equipment shall be able to withstand environmental conditions specified in ERT 154, clause 2.21
44	Part 3 – Conditions of Contract and Contract Forms	Kindly organize AD1.1.3 to be at Month N°23, in order for the Bidders to be able to reach KD2.6		The Bidder's request is rejected. The total length shown in the access date description

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	Section VIII. Particular Conditions, PC-20, AD1.1.3, Provision of access to Trackway basic structure complete for viaducts, bridges, U-shaped structure, box culvert, elevated stations, at-grade stations and underground station of Mainline and approach line to the North Depot. All temporary opening above/below trackway closed, temporary drainage system provided, walkway & access provided, surface access routes provided, all duct and cable route complete etc. for allowing CP NS-01 Contractor to commence and continue E&M Systems and Track Works Access date of approximately 10,500 meters within any viaduct section of CP N-01 is at Month N°24	at Month N°31 (Substantial Completion of Track Works and E&M Systems works to commence Integrated Testing and Commissioning and Test Running at Mainline using Rolling Stock procured under NSCR for full operation)		are the cumulative length for that particular Civil contract package. For example, the Contractor shall have the access to the site at AD 1.1.1 with the length specified in the description, subsequently, during the AD 1.1.2, the Contractor shall receive approximate 7000 meters in total (inclusive the length shown in the AD 1.1.1). The length shown in the AD 1.1.3 description is the cumulative length which include the length shown in the AD 1.1.2.
45	Part 3 – Conditions of Contract and Contract Forms Section VIII. Particular Conditions &	Kindly organize AD1.1.3 to be at Month N°23, in order for the Bidders to be able to reach KD2.6 at Month N°31 (Substantial Completion of Track		The Bidder's request is rejected. The total length shown in the access date description

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	GBB No. 2 – Item 20, PC-20 Page 12 of 86, AD1.1.4, Provision of access to Trackway basic structure complete for viaducts, bridges, U-shaped structure, box culvert, elevated stations, at-grade stations and underground station of Mainline and approach line to the North Depot. All temporary opening above/below trackway closed, temporary drainage system provided, walkway & access provided, surface access routes provided, all duct and cable route complete etc. for allowing CP NS-01 Contractor to commence and continue E&M Systems and Track Works Access date of the remaining viaduct section of CP N-01 is at Month N°27	Works and E&M Systems works to commence Integrated Testing and Commissioning and Test Running at Mainline using Rolling Stock procured under NSCR for full operation) Kindly organize AD1.1.4 to be at Month N°22 , in order for the Bidders to be able to reach KD2.6 at Month N°31 (Substantial Completion of Track Works and E&M Systems works to commence Integrated Testing and Commissioning and Test Running at Mainline using Rolling Stock procured under NSCR for full operation). 4 months to complete the following five activities for Track Works and E&M Systems is totally impossible even with (i) additional teams, (ii) work fronts, (iii) increased productivity and (iv) optimized work sequence 1. Pre-Installation Inspection 2. Installation 3. Post-Installation Tests and Inspection 4. Partial Acceptance Tests (PAT) 5. System Acceptance Tests (SAT)		are the cumulative length for that particular Civil contract package.

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46	Part 3 – Conditions of Contract and Contract Forms Section VIII. Particular Conditions, PC-20, AD1.2.4, Provision of access to Trackway basic structure complete for viaducts, bridges, U-shaped structure, box culvert, elevated stations, at-grade stations and underground station of Mainline and approach line to the North Depot. All temporary opening above/below trackway closed, temporary drainage system provided, walkway & access provided, surface access routes provided, all duct and cable route complete etc. for allowing CP NS-01 Contractor to commence and continue E&M Systems and Track Works Access date of the remaining viaduct section of CP N-02 is at Month N°23	Kindly organize AD1.2.4 to be at Month N°21 , in order for the Bidders to be able to reach KD2.6 at Month N°31 (Substantial Completion of Track Works and E&M Systems works to commence Integrated Testing and Commissioning and Test Running at Mainline using Rolling Stock procured under NSCR for full operation)		The Bidder's request is rejected. The total length shown in the access date description are the cumulative length for that particular Civil contract package. E.g. The remaining length shown in the AD 1.2.4 of Section 2 is approximately 5.27km. The Contractor shall coordinate with Civil Contractor for the detail chainage and location of the site.
47	Part 3 – Conditions of Contract and Contract Forms	Kindly organize AD1.3.3 to be at Month N°23, in order for the Bidders to be able to reach KD2.6		The Bidder's request is rejected. The total length shown in the access date description

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	Section VIII. Particular Conditions, PC-20, AD 1.3.3, Provision of access to Trackway basic structure complete for viaducts, bridges, U-shaped structure, box culvert, elevated stations, at-grade stations and underground station of Mainline and approach line to the North Depot. All temporary opening above/below trackway closed, temporary drainage system provided, walkway & access provided, surface access routes provided, all duct and cable route complete etc. for allowing CP NS-01 Contractor to commence and continue E&M Systems and Track Works Access date of approximately 9,500 meters within any viaduct section of CP N-03 is at Month N°24	at Month N°31 (Substantial Completion of Track Works and E&M Systems works to commence Integrated Testing and Commissioning and Test Running at Mainline using Rolling Stock procured under NSCR for full operation)		are the cumulative length for that particular Civil contract package. For example, the Contractor shall have the access to the site at AD 1.3.1(a) with the length specified in the description, subsequently, the Contractor shall received approximate 3000 meters in total (inclusive the length shown in the AD 1.3.1 (a)) during the AD 1.3.1(b). The length shown in the AD 1.3.2 description is the cumulative length which include the length shown in the AD 1.3.1(b).
48	Part 3 – Conditions of Contract and Contract Forms Section VIII. Particular Conditions,	Kindly organize AD1.3.4 to be at Month N°23, in order for the Bidders to be able to reach KD2.6 at Month N°31 (Substantial Completion of Track		The Bidder's request is rejected. The total length shown in the access date description are the cumulative length for that particular

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	PC-20, AD 1.3.4, Provision of access to Trackway basic structure complete for viaducts, bridges, U-shaped structure, box culvert, elevated stations, at-grade stations and underground station of Mainline and approach line to the North Depot. All temporary opening above/below trackway closed, temporary drainage system provided, walkway & access provided, surface access routes provided, all duct and cable route complete etc. for allowing CP NS-01 Contractor to commence and continue E&M Systems and Track Works Access date of the remaining viaduct section of CP N-03 is at Month N°27	Works and E&M Systems works to commence Integrated Testing and Commissioning and Test Running at Mainline using Rolling Stock procured under NSCR for full operation) 4 months to complete the following five activities for Track Works and E&M Systems is totally impossible even with (i) additional teams, (ii) work fronts, (iii) increased productivity and (iv) optimized work sequence 6. Pre-Installation Inspection 7. Installation 8. Post-Installation Tests and Inspection 9. Partial Acceptance Tests (PAT) 10. System Acceptance Tests (SAT)		Civil contract package. E.g. The remaining length shown in the AD 1.3.4 of Section 2 is approximately 2.89km. The Contractor shall coordinate with Civil Contractor for the detail chainage and location of the site.
49	PART 1 – BIDDING PROCEDURES, BDS-10, ITB 27.1, Bid Submission Date	Amidst of COVID-19 Pandemic we are unable to travel to Philippines to conduct Site Survey (which is essential for this Project). Hoping the things will become normal by end of June 2021 and then we can plan for site visit in the month		Please refer to GBB7

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		of July 2021. In view of this, we request you to kindly extend the Bid Submission date by at least 60 Days. This shall allow us to continue our work on this Bid and will be able to submit the same successfully.		
50	PART 2 – Employer's Requirement, ERT-361, 4.1.1 (1), 69kV switchgears, transformers, rectifier equipment and 6.6kV substation cubicles shall be outdoor type. All the equipment of BP, SP, DC switchgears and control panels are indoor type. All the equipment installed in indoor shall be of permeation preventive structure of the water of the drops from ceiling, walls and others.	Only limited supplies are available for outdoor equipment especially for GIS Switchgears and Rectifiers. Hence, we would request you to kindly amend the requirement of Outdoor GIS switchgears and Rectifiers Equipment to Indoor and accordingly amend the TSS layout to house the same.		Requirements for the stated equipment shall prevail.
51	PART 2 – Employer's Requirement, ERT-361 & ERT - 411, 4.1.1 (2), Electric Companies MERALCO, PELCO III, SFELAPCO, AEC and CEDC (hereunder electric companies) power connection work where described in this ERT, the work shall include all arrangements and costs	The cost towards any connection and negotiations from any of the Electric Companies (MERALCO, PELCO III, SEELAPCO, AEC and CEDC) will be difficult to assess at the time of Bid. Hence, we would request you to either descope the following scope of works from Contractor's Scope of Works or kindly provide us the contact details of the employees in these organization		The Bidder's request is rejected. The contractor should liaise with the utility company as part of the work requirement.

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	associated with new electric companies' power supply to each traction Substation (SS) to be installed under the contract. The work as described below shall be carried out by the Contractor. i. Construction of power receiving equipment including receiving Cable from 69kV VCT of electric companies within premises of each SS. ii. Procurement and installation of power cable from electric companies VCT box in each SS. iii. Payment of Guarantee Cost and Connection Cost, which is required by electric companies upon entering into a contract to receive an electrical supply. iv. Any negotiations with electric companies regarding above shall be carried out by the Contractor. v. All details of materials and construction work by the Contractor	who can quote us the estimate of sale or provide provision for reimbursement of this cost against actuals. iii. Payment of Guarantee Cost and Connection Cost, which is required by electric companies upon entering into a contract to receive an electrical supply. iv. Any negotiations with electric companies regarding above shall be carried out by the Contractor.		

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	shall follow to electric companies' standards.			
52	PART 2 – Employer's Requirement, ERT-361, 4.1.1, This Specification covers the requirements for the design, manufacturing, factory test, packing, delivery at the Site, installation, training and setting, testing, commissioning, and interfacing works for completing the Power Supply system for the Malolos-Clark Railway Project (Malolos-Clark) The work shall include the following: 1) Main Line with thirteen (13) Traction Substations (TSS), four (4) Battery Posts (BP), one (1) Sectioning Post (SP) and at North Depot, one (1) Depot Traction station (Depot SS), one (1) Depot Sectioning Post (Depot SP) are planned to construct, and the locations and site conditions are described as follows.	Based on our understanding, you have identified Battery Posts at Traction Sub-Stations (TSS) and Additional Locations (4 Nos), while the Energy Storage will be considered at the TSS. This size and rating of Battery Post at TSS will be based on Traction Simulation Studies. However, please inform us the role and function of these 4 Nos. of Battery Posts which are proposed along the wayside?		The function of the battery post was stated in clause 4.1.3 7) ERT 367.

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53	PART 2 – Employer's Requirement, ERT-367, 4.1.3 (7), BP (Battery Post)	We would propose Super Capacitor based Energy Storage Solution to be specified in place of Batteries. As the cost of ownership of batteries are high due to limited lifetime (5-10 years based on charge-discharge cycle and high maintenance. Further, if battery storage is to be provided as per the tender requirement, please specify which type of batteries are to be supplied : Ni-Cd / Li-on / VRLA		This is a design and build project. The contractor should submit the study and design proposal for approval of the Engineer.
54	PART 2 – Employer's Requirement, ERT-361, 4.1.1, This Specification covers the requirements for the design, manufacturing, factory test, packing, delivery at the Site, installation, training and setting, testing, commissioning, and interfacing works for completing the Power Supply system for the Malolos-Clark Railway Project (Malolos-Clark) The work shall include the following: 1) Main Line with thirteen (13) Traction Substations (TSS), four (4) Battery Posts (BP), one (1) Sectioning Post	Since the Battery Posts based on Traction Simulation already provided/considered at TSS, if the battery post at wayside are needed, please let us know the rating and size of these Battery Posts.		The study, analysis, sizing and location will be under the scope of contractor as specified in clause 4.1.3 1) i. (ERT 364) and in clause 4.1.3.7 (ix) of the ERT 367

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	(SP) and at North Depot, one (1) Depot Traction station (Depot SS), one (1) Depot Sectioning Post (Depot SP) are planned to construct, and the locations and site conditions are described as follows.			
55	PART 2 – Employer's Requirement, ERT-380, 4.2.2 (5), Harmonics	Please share with us the Grid Code for power quality at the point of common coupling for Utilities (MERALCO, PELCO III, SEELAPCO, AEC and CEDC) as the same is not available in public domain. The same is needed considering there may be harmonics generated for which adequate power quality equipment may be needed to supply at TSS location.		The stated harmonics distortion value was given in clause 4.1.3 11) ii ERT 369. The contractor should substantiate/liaise with the utility company concerning harmonics issue.
56	PART 2 – Employer's Requirement, ERT-361 & ERT - 411, 4.1.1 (2), Electric Companies MERALCO, PELCO III, SFELAPCO, AEC and CEDC (hereunder electric companies) power connection work where described in this ERT, the work shall include all arrangements and costs associated with new electric	Please confirm the point of common coupling between the utility (MERALCO, PELCO III, SEELAPCO, AEC and CEDC) will be within the same boundaries of TSS and no right of way or other Government / Third party approvals will be needed to be taken by Contractor/Bidder. If possible, please confirm us the maximum distance from TSS also.		Right of way issues and point of common coupling between the utility companies is an interface works to be carried-out by the contractor with the concerned discipline.

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	companies' power supply to each traction Substation (SS) to be installed under the contract. The work as described below shall be carried out by the Contractor. i. Construction of power receiving equipment including receiving Cable from 69kV VCT of electric companies within premises of each SS. ii. Procurement and installation of power cable from electric companies VCT box in each SS. iii. Payment of Guarantee Cost and Connection Cost, which is required by electric companies upon entering into a contract to receive an electrical supply. iv. Any negotiations with electric companies regarding above shall be carried out by the Contractor.			

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	v. All details of materials and construction work by the Contractor shall follow to electric companies' standards.			
57	PART 2 – Employer's Requirement, ERT-418, 4.1.3, Re-generating power absorbing equipment	The wayside Resistors are generally installed at TSS to dissipate the energy which is released during the braking of the Trains. The resistors dissipate the energy in the form of heat to the environment and hence do not have regenerative functionality. In case of energy regeneration, the block diagram consists of converter unit, control & connection unit and auto-transformer unit. Hence, we would like you to clarify if energy recuperation in the form of regeneration is to be offered or energy dissipation through resistors is to be offered?		This is a design and build project. The contractor needs to further develop the conceptual design and submit for approval by the Engineer.
58	Volume II Section V1, ERT-1023, 10.1.6 Half-height PSD system (6), The Contractor shall supply and install the LED lighting inside the top cover of the HH PSD at both trackside and platform side.	Contractor would like to confirm the definition of the top cover of the HH PSD. Contractor's proposal could be the LED lighting on the column of the HH PSD which visible from both trackside and platform side.		Bid conditions shall prevail.
59	Volume II Section V1, ERT-1035, 10.6.1 General Requirements (9), For	Contractor would like to confirm the reason why owner request that PSD shall be set not		Bid conditions shall prevail.

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	all other platforms where trains pass through at maximum 120kph, the HH PSD/Full Height PSD shall be set not closer than 100mm from the PSD gauge (as shown in MCRP-DWG-GEN-TK-0020).	closer than 100mm from the PSD gauge. Because Metro Manila Phase 1 requirement is different.		
60	Volume II Section V1, ERT-689 ERT-691, 8.8.1.4 8.8.3, The Specifications of the Commuter Train fleets vary. "Assumption: The Specifications of the Commuter Train fleets vary."	Please clarify this statement as it seems to imply that the specifications of the commuter trains are varied		As per ERT clause 8.8.1.3 term, "Commuter Train will be used commonly for Commuter services on MCRP, NSCR and NSRP-South." There are two contract packages for the procurement of "Commuter Trains". NSCR, Commuter Trains are dealt under CP-03. MCRP and NSRP-South Commuter Trains are being procured under CP NS-02. As per clause 8.8.3, major specifications given are for reference only and thus may vary from the specifications given in Table 8.7 for the Commuter Train. Since Commuter Trains are being procured under different "design and build" contract packages, it has been mentioned in ERT 689 and 691 that specifications for commuter trains fleet vary. NS-01 contractor shall do the necessary interface with the rolling stock

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				contractors at appropriate stage of the project to get final design specifications.
61	Volume II Section V1, BDS-9, ITB 22.2,	Please confirm soft copies of proposal can be submitted using USB flash drive instead of the required CD ROM, considering capacity and use.		The Bidder's request is rejected.
62	5a_CP NS-01 BD Part 2 Vol.3 E_M 165 0f 321 5) POWER SUPPLY SYSTEM DRG No. Sub stations – Single line diagram	1.18/0.4kV,230V 50kVA operation transformer shown in every SLD. But details for the same are not shown in either technical write up or SS layout drawings. Please clarify.		For the technical write up please refer to ERT clause 4.4.3 (3) -"6.6kV/400-230V operation transformers", using this clause but replacing 6.6kV with 1.18kV. The drawing showing the 50 kVA rating is only a conceptual design and should only be used for reference. Final rating shall be determined by the contractor during the design phase. With regards to operation transformers that are not shown SS layout drawings, the contractor shall determine the suitable and agreeable location with interfacing parties during the design phase.
63	5a_CP NS-01 BD Part 2 Vol.3 E_M 222 0f 321 Package NS-01:Bidding	Number of outgoing feeders shown in Substation connection (SS No.17) drawing are		The number of feeds is to be determined by the Contractor taking into consideration the

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	documents DRG No. NSRP-DWG-B/C-0017 Sheet No. 17 of 18: Substation connection (SS No.17)	not matching with traction power feeding system drawing (NSRP-DWG-PSS-0000). Please clarify.		operation of the depot and to be finalized during design stage.
64	Part 2 – Employer's Requirements Section V1. Employer's Requirements PART 2 – EMPLOYER'S REQUIREMENTS DRAWINGS 4. Power Supply I. MCRP Sheet 5 of 40 Rated breaking current 100kA for HSCB & DS (Applicable to all substations)	Specification for DC Switchgear mentions rated breaking current of 100kA for both HSCB and Disconnector which is a very high specification. Please provide basis of the requirement.		This is a conceptual design and for reference only. The contractor should develop and submit the design for approval by the Engineer.
65	Part 2 – Employer's Requirements Section V1. Employer's Requirements PART 2 – EMPLOYER'S REQUIREMEN TS DRAWINGS 4.Power Supply. "MCRPSheet 5 of 40" Rectifier required is a Type D with overload specs of 130% to 150% for 2H. 54P rated current is 5000A.	Rectifier required is a Type D with overload specs of 130% to 150% for 2H. 150% of the rated currentis 6000A. However, the required specifications for 54P is only 5000A. Please confirm if needs revision.		The system should be able to work under overload condition for a given period. The required specifications for 54P is 5000A as specified in the ERT 378 clause 4.4.1 (3) 4) b. The contractor should substantiate the specified requirements, otherwise submit an improve design for approval of the Engineer.

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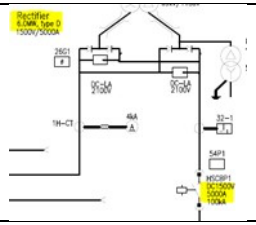
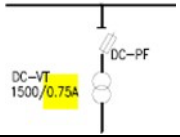
				
66	PART 2 – EMPLOYER'S REQUIREMEN TS DRAWINGS 4. Power Supply I. MCRP Sheet 5 of 40 DC-VT rating: 1500/0.75A for the busbar DCVT 	Please inform what is the 0.75A rating.		DC-VT is a transformer for the measurement instrument. The contractor shall develop/propose for the suitable ratings for the measuring instrument.
67	Part 2 – Employer's Requirements Section V1. Employer's Requirements PART 2 – EMPLOYER'S REQUIREMEN TS DRAWINGS 4. Power SupplyI. MCRP Sheet 17 of 40 Section post DC Switchgear set requires several HSCB for the busbar between section feeders	What is the purpose of this HSCB? Can we eliminate this HSCBs? Please confirm.		This is a conceptual design and for reference only. The contractor should develop and submit the design for approval by the Engineer.

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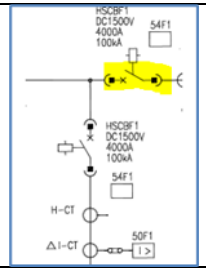
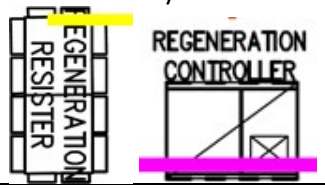
				
68	Volume II Section VI "PART 2 – EMPLOYER'S REQUIREME NTS DRAWINGS 4. Power Supply I. MCRP Sheet 18-30 of 40 Regeneration Controller and Regeneration Resister shown in substation layout. 	Reference substation layout shows regenerative resistor as regenerative absorption device whereas the substation single line diagrams shows battery posts as regenerative absorption device. We understand the requirement is a battery post (not resistor). Please confirm.		The Bidders understanding is correct. This is a conceptual design which should be further developed by the selected contractor.
69	Volume II Section VI "PART 2 – EMPLOYER'S REQUIREME NTS DRAWINGS 4. Power Supply I. MCRP Sheet 5 of	Specification for DC Switchgear mentions rated breaking current of 100kA for both HSCB and Disconnector which is a very high specification. Please clarify basis of the requirement.		This is a conceptual design and for reference only. The contractor should develop and submit the design for approval by the Engineer.

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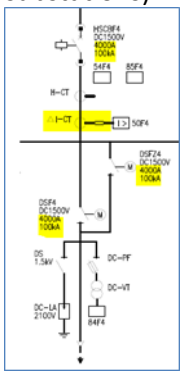
	40" Rated breaking current 100kA for HSCB & DS (Applicable to all substations) 			
70	Volume II Section VI "PART 2 – EMPLOYER'S REQUIREME NTS DRAWINGS 4. Power Supply I. MCRP Sheet 5 of 40" Rectifier required is a Type D with overload specs of 130% to 150% for 2H. 54P rated current is 5000A.	Rectifier required is a Type D with overload specs of 130% to 150% for 2H. 150% of the rated current is 6000A. However, the required specifications for 54P is only 5000A. Please confirm if needs revision.		The system should be able to work under overload condition for a given period. The required specifications for 54P is 5000A as specified in the ERT 378 clause 4.4.1 (3) 4) b. The contractor should substantiate the specified requirements, otherwise submit an improve design for approval of the Engineer.

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	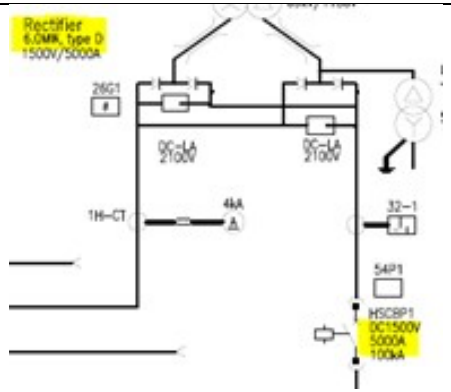			
71	Volume II Section VI "PART 2 – EMPLOYER'S REQUIREME NTS DRAWINGS 4. Power Supply I. MCRP Sheet 5 of 40" DC-VT rating: 1500/0.75A for the busbar DCVT.	Please clarify what is the 0.75A rating.		DC-VT is a transformer for the measurement instrument. The contractor shall develop/propose for the suitable ratings for the measuring instrument.

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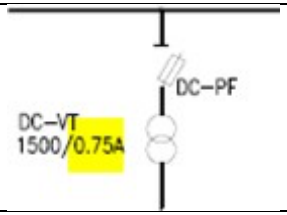
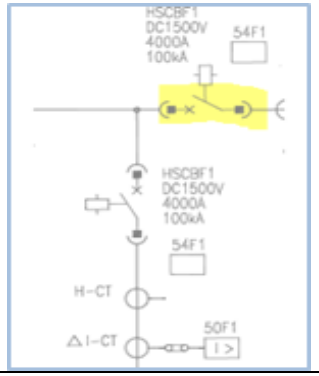
Item No.	Volume Section No. Page No. Clause No. / Title Reference Text	Clarification Request	Proposed Revised Text (if any)	Response
				
72	Volume II Section VI "PART 2 – EMPLOYER'S REQUIREME NTS DRAWINGS 4. Power Supply I. MCRP Sheet 17 of 40" Section post DC Switchgear set requires several HSCB for the busbar between section feeders. 	What is the purpose of this HSCB? Can we eliminate this HSCBs? Please confirm.		This is a conceptual design and for reference only. The contractor should develop and submit the design for approval by the Engineer.

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Item No.	Volume Section No. Page No. Clause No. / Title Reference Text	Clarification Request	Proposed Revised Text (if any)	Response
73	Volume II Section VI "PART 2 – EMPLOYER'S REQUIREME NTS DRAWINGS 4. Power Supply I. MCRP Sheet 3 of 40 Sheet 6 of 40" Substation Connection drawing shows 50kVA - 1.18kV/ 400-230V operation transformers connected to the rectifier transformer secondary side.	Please provide specification for this transformer as it is not mentioned in the technical specifications.		For the technical write up please refer to ERT clause 4.4.3 (3) -"6.6kV/400-230V operation transformers", using this clause but replacing 6.6kV with 1.18kV. The drawing showing the 50 kVA rating is only a conceptual design and should only be used for reference. Final rating shall be determined by the contractor during the design phase. With regards to operation transformers that are not shown SS layout drawings, the contractor shall determine the suitable and agreeable location with interfacing parties during the design phase.
74	Volume 2 Section VI, ERT-375, 4.4.1 (2) 4), 4) The 69kV switchgear shall be designed for the following minimum ratings and not exceed 2.5 p.u. overvoltage for any switching or breaking duty:	According to single line diagram of reference drawing, fault current ratings are drawn mixed in 40kA for circuit breaker and 25kA for disconnector in same line. Since 40kA and above rating is out of standard product range in the market, please confirm		This is a conceptual design and for reference only. The contractor should develop and submit the design for approval by the Engineer.

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Item No.	Volume Section No. Page No. Clause No. / Title Reference Text	Clarification Request	Proposed Revised Text (if any)	Response
	a. Rated voltage: 69kV b. Number of phases: 3 c. Rated frequency: 60Hz d. Rated short circuit breaking and making capacity: to meet the 69kV/6.6kV system fault level not less than 50kA	25kA rating can be applied to switchgear and circuit breaker, as well as disconnector.		
75	Volume 2 Section VI, ERT-368, ERT-379 , 4.1.3 10) ii., 4.4.2 (2) 8), AC Bus duct between Rectifier Transformer and Rectifier DC 1500V outdoor type metal enclosed air insulated switchgear with high-speed circuit breaker and disconnecting switches Rectifier transformers shall be of oil insulated or gas insulated self-cooling type with an enclosed bus ducting or cable connection to the rectifier cubicle.	AC Bus duct statement is specified in section 4.1.3 10) ii, while either bus duct or cable connection is specified in section 4.4.2 (2) 8), these two statements are contradicting, hence in this regard can we propose Cable Connection based on our design feasibility, Please Clarify.		The Bidder is free to propose any method/option as specified in revised ERT.
76	Volume 2 Section VI, ERT-417, 4.1.3 (9) 2), AC	For The North South Railway Project-South line (Commuter)		The Bidder is free to propose any method/option as specified in revised ERT.

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Item No.	Volume Section No. Page No. Clause No. / Title Reference Text	Clarification Request	Proposed Revised Text (if any)	Response
	Bus duct between Rectifier Transformer and Rectifier DC 1500V outdoor type metal enclosed air insulated switchgear with high-speed circuit breaker and disconnecting switches, and	(NSRP-South) project the bus duct is used between rectifier transformer and rectifier is specified, can we propose Cable Connection similar to The Malolos-Clark Railway Project (MCRP) project, Please Clarify.		
77	Volume 2 Section VI, ERT-380,ERT-429, 4.4.2 (4) 1),4.4.2 (4) 1), The DC traction supply voltage shall be permitted to rise to a maximum of 2100V DC during the regenerative breaking of the trains. In addition, the DC traction system shall sustain transient voltage surges of up to 10kV for up to 1 millisecond between the positive and negative poles.The DC traction supply voltage shall be permitted to rise to a maximum of 1850 VDC. In addition, the DC traction system shall sustain transient voltage surges of up to 10 kV for up to 1 millisecond between the positive and negative poles.	This voltage is not specified IEC standard. Surge voltage is protected by surge arrester installed in DC switchgear and rectifier DC terminal.10kV-1msec transient voltage is not applicable on rectifier equipment. Please clarify		The equipment provided by the Contractor should be able to protect the transient surge of the DC switchgear and rectifier equipment. Subject to design and technical feasibility.

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Item No.	Volume Section No. Page No. Clause No. / Title Reference Text	Clarification Request	Proposed Revised Text (if any)	Response
78	Vol 2, ERT 376, 4.4.1 4), d. Rated short circuit breaking and making capacity: to meet the 69kV/6.6kV system fault level not less than 50kA.	69kV fault level mentioned as 50kA in ERT clause 4.4.1 but SLD having different fault levels as 40kA & 25kA. Please delete this contradictory clause of ERT.		This is a conceptual design and for reference only. The contractor should develop and submit the design for approval by the Engineer.
79	Vol 2, ERT 425, 4.4.1 (2)(4), d. Rated short circuit breaking and making capacity: to meet the 34.5kV and 115kV system fault level not less than 40kA.	34.5kV and 115kV fault level mentioned as 40kA in ERT clause 4.4.1 but as per SLD 34.5kV fault level 25kA is required. For 115kV, different fault levels mentioned in SLD as 40kA & 25kA. Please delete this contradictory clause of ERT.		This is a conceptual design and for reference only. The contractor should develop and submit the design for approval by the Engineer.
80	Vol 3, 3 of 40, MCRP-DWG-PSS-1001, Traction power feeding system	Please confirm the understanding of the Bidder: "It is observed that, regeneration resistors and regeneration controller panels have been shown in the substation layout drawings of MCRP main line. However only battery posts are required in all MCRP mainline stations. Regeneration resistors are not required in MCRP main line stations as per SLD's". Please revise the TSS layout drawings of MCRP main line stations by deleting regeneration resistors and regeneration controllers.		The regeneration controller and regeneration resistor is not an integral part of the battery post. This is a conceptual design which should be further developed by the contractor.

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Item No.	Volume Section No. Page No. Clause No. / Title Reference Text	Clarification Request	Proposed Revised Text (if any)	Response
81	Vol II of IV, ERT 415, 4.1.3 (1) System studies , 12) The Contractor shall perform all necessary Power System Study simulations in corporate with ETCS Model Simulation for DC traction power supply system with consideration of 3 minutes headway.	Please provide the headway between the commuter train and the express train in MCRP (N2) and NSRP (SC) sections.		Please use the 3 minute headway for the mix commuter and express train.
82	Section I. Instructions to Bidders Part 1 – Bidding Procedures Section II. Bid Data Sheet BDS-10, ITB 24.1	The deadline for Bid submission is set on 17 June 2021. Based on its initial and ongoing assessment of the sheer volume of the Bid preparation works including analyzing large amount of interface requirements to be done as well unfortunate limitations due to COVID-19 in terms of travel to and from the Philippines and related difficulties in coordination with the Bidder's local partner and obtaining vendors' quotations, the Bidder would like to ask for 4 (four) months extension of the Bid due date in order to prepare the technically compliant and competitive bid.		Please refer to GBB No.7

Annex B

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ITEM NO.	REFERENCE/CLAUSE/ SECTION	REVISIONS / AMENDMENTS
Volume II Part 2 – Employer's Requirements		
1	ERT 598. OCS Clause 6.4.29	Additional clause added "The conductor rail shall be equipped with isolators to de-energize the system before retraction. The isolators shall be interlocked with the control panel by means of mechanical interlocking keys."
2	ERG 96, Clause 22.7	Additional sentence added "The compliance matrix shall cover all relevant clauses and requirements addressed in the submission."
3	ERT 47, Trackwork Clause 1.22	Clause revised to "The Contractor shall design, supply and install a stray current collection systems and monitoring systems along the complete MCRP and NSRP South to minimize stray current corrosion."
4	ERT-365, Clause 4.1.3 (1) (xiii)	Deleted: "for true truck"
5	ERT-399 & 400, Clause 4.6.3	Interface Control Sheet Item No.1. Incoming 69kV Line, Design Requirement Added: "/Electric Companies" Item No.2 Metering Device Interface, Design Size & Location Added: "/Electric Companies" Metering Device Interface, Supply & Fix Deleted: "CP NS-01" Added: "Electric Companies"

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ITEM NO.	REFERENCE/CLAUSE/ SECTION	REVISIONS / AMENDMENTS
		Item No.3. Specification of Receiving Equipment, Design Requirement Added: “/Electric Companies”
6	ERT-449, Clause 4.6.3	Interface Control Sheet Item No.1. Incoming 115kV Line, Design Requirement Added: “/MERALCO” Item No.2. Metering Device Interface, Design Size & Location Added: “/MERALCO” Metering Device Interface, Supply & Fix Deleted: “CP NS-01” Added: “MERALCO” Item No.3. Specification of Receiving Equipment, Design Requirement Added: “/MERALCO”
7	ERT-319- Section 2.2.1 System Configuration	Deleted Statement: “The CCTV Systems shall be compliant with the relevant NFPA standards particularly with NFPA 130 for evacuation coverage and communications.”

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ITEM NO.	REFERENCE/CLAUSE/ SECTION	REVISIONS / AMENDMENTS
8	ERT-327- Section 16 Video Recording and Retrieving.	Updated statement: “The Contractor shall provide sufficient storage medium to archive a minimum of 30 days of stored video recordings for a Video Resolution of 2048x1536, H.264, mPEG-4.”
9	ERT-266- Section 2.3 - Scope of Services	Updated statement:” The Contractor shall apply and liaise with all concerned authorities such as the National Telecommunications Commission (NTC) for obtaining the Radio Frequency Operating License (on behalf of the Employer), equipment approvals, and any other authorities to obtain any necessary licenses, clearances, or permits for the supply, installation, commissioning and the operation of the Radio System. The Radio Frequency Operating License shall be in the name of the Employer (The Department of Transportation).”
10	ERT-368, Clause 4.1.3 (10) (ii)	Added: “or cable connection” AC Bus duct or cable connection between Rectifier Transformer and Rectifier DC 1500V outdoor type metal enclosed air insulated switchgear with high-speed circuit breaker and disconnecting switches
11	ERT-417, Clause 4.1.3 (9) (2)	Added: “or cable connection” AC Bus duct or cable connection between Rectifier Transformer and Rectifier DC 1500V outdoor type metal enclosed air insulated switchgear with high-speed circuit breaker and disconnecting switches
12	ERT-428, Clause 4.4.2 (2) (7)	Added: “with an enclosed bus ducting or cable connection to the rectifier cubicle”
13	ERT-382, Clause 4.4.3(4) ERT-431, Clause 4.4.3(4)	Added new clause: 4.4.3(4) (4) 1.18kV/400-230V-110V operation transformers

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ITEM NO.	REFERENCE/CLAUSE/ SECTION	REVISIONS / AMENDMENTS
		The 1.18kV/0.4kV operation transformers for supplying power to control equipment shall be mold or oil-immersed type, off-load tap-changing, indoor type and eco-friendly type with the following minimum ratings and requirements: 1) The 1.18kV/0.4kV transformer shall be installed in the traction substations. 2) The rated power shall be determined by the Contractor as part of its design of works. 3) The 1.18kV/0.4kV operation transformers shall comply with the following minimum ratings and requirements: a. Rated voltage - High voltage winding: 1.18kV - Low voltage winding: 400/230V-110V b. Number of phases: 3 (3phase-3wire method) c. Rated frequency: 60Hz d. Type of cooling: moulded, natural or forced air-cooling. e. Off load tap changing equipment: Tap changing of ± 5% with 2.5% each step to comply with Philippine Grid Code of the Philippines. f. Connection designation: Dyn11

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ITEM NO.	REFERENCE/CLAUSE/ SECTION	REVISIONS / AMENDMENTS
		4) The rated insulation level shall comply with the following minimum ratings and requirement. a. Lightning impulse withstand voltage: Both high and low voltage winding shall comply with relevant standards and regulations. b. Power frequency withstand voltage for 1 minute: Both high and low voltage winding shall comply with relevant standards and regulations.
Volume III Part 2 – Employer's Requirements d) Employer's Drawings		
14	Mabalacat and Banlic Civil Depot Drawings	Added Depot drawings for reference MCRP-DWG-DEP-AR-3201 (30) NSRP-DWG-DEP-AR-3203 (21)
15	Part 2, Volume III, Section VI d) Employer's Requirements Drawings, 3) Signaling System	Updated drawings attached as below: Page 123 MCRP-DWG-DEP-SIG-0001 REV 01 Page 125 NSRP-DWG-DEP-SIG-0001 , 1of 2, REV 01 Page 126 NSRP-DWG-DEP-SIG-0002 , 2of 2, REV 01
16	5a_CP NS-01 BD Part 2 Vol.3 E_M Version 11.0 FINAL Rev. A	Substation Layout Drawings "Regeneration Resister" changed to "Battery Panel"

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ITEM NO.	REFERENCE/CLAUSE/ SECTION	REVISIONS / AMENDMENTS
	Page 179 to 191	"Regeneration Controller" changed to "Controller Chopper"
Volume IV Part 3 – Conditions of Contract and Contract Forms		
17	Section VIII Particular Conditions Part A - Contract Data Sub-Clause 4.2 Page PC-4, PC-5	Deleted the second paragraph. Refer to the Attachment.
18	Section VIII Particular Conditions Part A - Contract Data Sub-Clause 8.7 Delay Damages for the Works Page PC-4, PC-5	**Replaced with the following:** Five hundredths of a percent (0.05%) of the Accepted Contract Amount per day for delay in the completion of the whole of the Works and for delay in achieving each Key Date for the respective elements of the Works. Refer to Table: Summary of Sections below.
19	Section VIII Particular Conditions Part A - Contract Data Table: Summary of Sections Page PC-8	Third column for the Table: Summary of Sections was amended. Please refer to the Attachment 1 for the detail amendment.

Annex B – Attachment 1

LED Display	Outdoor type	Nos	3	2	1	2	—	—
	Indoor type	Nos	15	2	3	2	—	—
	On surface type	Nos	12	0	0	0	—	—
revolving light warning		Nos	6	1	2	1	—	—
Buzzer for alarm		Nos	6	1	2	1	—	—
Deflection 250 mm from a center of track		L.S.	—	—	—	1	—	—
Return cross-bonding		L.S.	—	1	1	1	—	—

Note 1: Return cross-bonding shall be installed in case of track with no signal circuit and with overhead catenary line.

Note 2: The design and installation of OCS in the workshop area at depot shall consider the safe working vertical and horizontal clearance required and the operational and maintenance activities to maintain a safe and reliable OCS system.

6.4.29 Moveable Conductor Rail in Work Shops

The contractor shall install movable conductor rail systems in the unscheduled repair shops at both Mabalacat and Banlic depots to permit safe and unhindered roof access for the maintenance of pantographs, air-conditioners and other equipment.

The conductor rail shall be positioned at the track center line of the tracks and be retracted from the center line through the rotation of the suspension arms. In the retracted position the conductor rail shall be automatically earthed.

The conductor rail system shall comprise of all fixings to buildings structures, conductor rail, motorized and slave arms, control panel, a facility within the control panel to hold and release interlocking keys that will be used to restrict the operation of the isolators feeding the tracks and operation of other equipment, and all necessary LV and control cables.

The conductor rail shall be equipped with isolators to de-energize the system before retraction. The isolators shall be interlocked with the control panel by means of mechanical interlocking keys.

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The conductor rail shall be equipped with isolators to de-energize the system before retraction. The isolators shall be interlocked with the control panel by means of mechanical interlocking keys.

6.4.30 Overhead Ground Wire

The route will have a high incidence of lightning as depicted by isokeraunic thunder year map as described previously, so that overhead ground wire should be installed along each track in the main line.

Note: the overhead ground wire is designed to minimize impacts of lightning and other surges to feeders and the OCS, and the surrounding equipment.

a) Standard size: st.55 sq. mm equal to or more than the value determined by the effect of calculation under wind loads with the average speed of 54 m/s;

b) Material Grade: class 2 or 3 Zinc-coated steel wire strands prescribed by JIS G3537 : 2011;

c) Wire surface: super A or A class under hot dip galvanized coatings prescribed by Zinc-coated steel wire strands by JIS G3537 : 2011;

d) Standard tensile force 2.94 kN; and

e) The protective angle effect of overhead ground wire to a protected equipment from lightning can be at 45 degrees for the OCS and feeders based on Japanese railway standard.

22. REQUIREMENTS MANAGEMENT

22.1. The Contractor shall implement progressive assurance approach to manage & govern the project requirements in an integrated way with a complete traceability throughout the project lifecycle as per EN 50126.

22.2. The Contractor shall prepare and submit to the Engineer a Requirement Management Plan within thirty (30) days of the date of the commence date. The Requirement Management Plan shall define the processes employed by the Contractor to ensure that all appropriate requirements are managed to ensure the proposed design solution meets the design requirements and demonstrated through verification and validation evidence.

22.3. The Contractor shall implement "ComplyPro" as the Requirement Management software for tracking and management of requirements compliance in the project. All the costs associated with the software usage and maintenance shall be under the contractor's own cost.

22.4. The contractor shall appoint a suitably qualified and competent persons to carry out requirements management.

22.5. The Contractor shall develop a database of all requirements associated with a number of definition documents defined such as but not limited to, the ERG and ERT. The Contractor will then provide evidence that the identified requirements have been managed appropriately. The database shall:

(1) Ensure that the criteria for the purpose of verification and validation of the Requirements has been recorded with appropriate attributes assigned;
(2) Clearly identify requirements that have a direct impact on Safety and RAM performance.
(3) Hazard log management and Control measure management (Safety requirements);
(4) Interface register and Management;
(5) Ensure that compliance of the complete set of the Requirement can be demonstrated with evidence formally recorded;
(6) Ensure that the Requirements are consistent and traceable back to their sources, and any gap/mismatch in the Requirements are clearly identified;
(7) Establish formal deliverable which will support stage design reviews and the overall engineering management processes;
(8) Track and record Requirement changes and facilitate impact analysis on Requirement changes; and
(9) Track and record assumptions, if there are any, evaluating the stability of, and the impact on, the Project if any of the assumptions prove to be true of false, defining the actions necessary to make progress and monitor the assumptions, and scheduling when assumptions are to be validated and reviewed throughout the Project`s life duration.

22.6. The Contractor shall issue a monthly status report showing the status of the Requirement Management and information such as the number of open and closed requirements.

22.7. Each design submission shall be accompanied by a design statement and compliance matrix which describes the scope and content of each submission, its underlying assumptions, and non-conformances. The compliance matrix shall cover all relevant clauses and requirements addressed in the submission.

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The position of each joint shall be central between rail supports to within 50 mm and, in the case of joints being required in both rails at any particular location, they shall be square to within 50 mm of each other.

5) Pre-Production Testing

Test Specimens: Two (2) specimen joints shall be tested to either a European or AREMA 2000 Standard, and shall include a tensile load test, a joint compression test and stroke rolling load test; parameters to be set by the manufacturer and given a Notice of No Objection by the Engineer.

6) Production Testing

The Contractor shall test the resistance of every bonded insulated rail joint prior to installation and in situ by applying 50 VDC across the joint. The resistance shall not be less than 10 MΩ or whatever higher benchmark value in the standard that the joints are made and tested.

7) Robustness

At the end of the Contract, the installed bonded joints shall be visually inspected. There shall be no evidence of separation between adhesive and steel or movement between the fishplates and the rail. Joints that exhibit any visible movement between the fishplates and the rail ends or at the gap between the rail ends shall be replaced at the contractor's expense.

1.21 Staff Walkway in Depot

1) The Contractor shall lay the walkway for staff in the necessary locations in the depot.

2) Precast concrete board may be used for the walkway. The surface of precast board shall have anti slip condition. That precast board shall be laid on the surface of ballast layer as steady condition.

3) The width of the walkway along the stabling track shall be 400 mm. The width of the walkway across the stabling track as level crossing shall be 600 mm.

1.22 Stray Current Corrosion Control

1) The Contractor shall design, supply and install a stray current collection systems and monitoring systems along the complete MCRP and NSRP South to minimize stray current corrosion.

2) The design of the track bed shall provide a positive roll-off in the order of 1 to 2% and ensure that the drainage is adequate to prevent standing water in the vicinity of the rails, which is the possibility of invalidating the insulation between the rails and the track bed.

3) General requirements for earthing and bonding the structures are to be determined in liaison with the Civil Works Contractors.

4) Cross-bonding of the running rails, stray current return cabling, etc. will be carried out by the Contractor.

5) The contractor shall be responsible for providing all earthing connections from track level to earth rods located at ground level as detailed on the drawings.

d) The Contractor shall demonstrate that the adhesive to be used for fabrication of the bonded insulated joints has a proven life of not less than fifteen (15) years.

4) Installation

The position of each joint shall be central between rail supports to within 50 mm and, in the case of joints being required in both rails at any particular location, they shall be square to within 50 mm of each other.

5) Pre-Production Testing

Test Specimens: Two (2) specimen joints shall be tested to either a European or AREMA 2000 Standard, and shall include a tensile load test, a joint compression test and stroke rolling load test; parameters to be set by the manufacturer and given a Notice of No Objection by the Engineer.

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1.22 Stray Current Corrosion Control

1) The Contractor shall design, supply and install a stray current collection systems and monitoring systems along the complete MCRP and NSRP South to ~~incorporate into his design precautions to~~ minimize stray current corrosion.

2) The design of the track bed shall provide a positive roll-off in the order of 1 to 2% and ensure that the drainage is adequate to prevent standing water in the vicinity of the rails, which is the possibility of invalidating the insulation between the rails and the track bed.

3) General requirements for earthing and bonding the structures are to be determined in liaison with the Civil Works Contractors.

4) Cross-bonding of the running rails, stray current return cabling, etc. will be

vii. AC and DC Harmonics study;

viii. Protection relay setting and system protection coordination study;

ix. Cable study, main circuit, LV and control cables voltage drop, capacity and etc.;

x. Power supply design study, including the whole system;

xi. Grounding and lightning protection study;

xii. Stray current corrosion control study will be performed by OCS contractor and coordination with the party shall be done by the Contractor.

xiii. EMC and EMI study about traction power supply system for true truck

xiv. Electrolytic corrosion mitigation measure study;

xv. The Contractor shall perform all necessary Power System Study simulations in corporate with ETCS Model Simulation for DC traction power supply system with consideration of 3 minutes headway.

These results shall be including for power supply demand calculation.

2) Power Supply System General Requirements

i. Power supply to MCRP shall be from the electric companies 69kV to TSSs and distributed to the DC traction system and AC 6.6kV power distribution.

ii. DC traction equipment shall supply 1500V DC to the OCS system.

iii. BP traction equipment shall supply 1500V DC to the OCS system.

iv. The Contractor shall develop its own strategy for earthing, bonding, lightning protection and corrosion control in accordance with applicable Standards IEC, IEEE, Philippine Electrical Code or equivalent equal.

v. All E&M systems equipment shall be bonded to the system earth bus bar in accordance with applicable Standards IEC, IEEE, Philippine Electrical Code or equivalent equal.

vi. All indoor and outdoor power supply equipment shall meet IP requirements, standards and regulations or equivalent equal appropriate for the location and conditions.

vii. Lightning arrestor shall be provided at Power receiving point of all the TSS, SP and BP.

3) System Integrity

i. The 6.6kV AC power distribution system shall be designed to ensure continuity of supply and the specified MCRP system performance under single outage conditions. The AC power distribution system shall be provided with a protection system to ensure that in the event of a faulty element is isolated; no other equipment is disconnected by the operation of such a protection device.

ii. The power supply system design shall ensure that cables and equipment shall be separated and protected to ensure that:

a) A single failure of an element of the power supply system shall not:

- affect the operation or not result in failure of any other power supply system element;
- result in the total loss of power distribution to any part of the MCRP Line.

vii. AC and DC Harmonics study;

viii. Protection relay setting and system protection coordination study;

ix. Cable study, main circuit, LV and control cables voltage drop, capacity and etc.;

x. Power supply design study, including the whole system;

xi. Grounding and lightning protection study;

xii. Stray current corrosion control study will be performed by OCS contractor and coordination with the party shall be done by the Contractor.

xiii. EMC and EMI study about traction power supply system ~~for true truck~~

xiv. Electrolytic corrosion mitigation measure study;

xv. The Contractor shall perform all necessary Power System Study simulations in corporate with ETCS Model Simulation for DC traction power supply system with consideration of 3 minutes headway.

These results shall be including for power supply demand calculation.

2) Power Supply System General Requirements

i. Power supply to MCRP shall be from the electric companies 69kV to TSSs and distributed to the DC traction system and AC 6.6kV power distribution.

ii. DC traction equipment shall supply 1500V DC to the OCS system.

iii. BP traction equipment shall supply 1500V DC to the OCS system.

iv. The Contractor shall develop its own strategy for earthing, bonding, lightning protection and corrosion control in accordance with applicable Standards IEC, IEEE, Philippine Electrical Code or equivalent equal.

v. All E&M systems equipment shall be bonded to the system earth bus bar in accordance with applicable Standards IEC, IEEE, Philippine Electrical Code or equivalent equal.

vi. All indoor and outdoor power supply equipment shall meet IP requirements, standards and regulations or equivalent equal appropriate for the location and conditions.

vii. Lightning arrestor shall be provided at Power receiving point of all the TSS, SP and BP.

3) System Integrity

i. The 6.6kV AC power distribution system shall be designed to ensure continuity of supply and the specified MCRP system performance under single outage conditions. The AC power distribution system shall be provided with a protection system to ensure that in the event of a faulty element is isolated; no other equipment is disconnected by the operation of such a protection device.

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a) A single failure of an element of the power supply system shall not:

- affect the operation or not result in failure of any other power supply system element;
- result in the total loss of power distribution to any part of the MCRP Line.

Laying of Cables

(1) Cable risers shall be protected with cable trays/ steel conduit pipes.

(2) Bending radius of low voltage cables shall be not less than 8 times for single core type and 6 times for multi core type the outside diameter of the cable respectively.

(3) Cable trays shall be fixed to the wall or the ceilings, fixing intervals shall be less than 1.5 m.

(4) Cables laying with cable trays on the vertical direction shall be bound tightly at the 1.5 m intervals.

(5) No tension is permitted for splicing of the cables.

(6) Openings for cables drawn into cubicles shall be protected properly so that no pest or moisture can enter.

(7) Occupancy of cables in the trough shall be not more than 60 %

(8) The Contractor shall coordinate with Interfacing Contractors (CP N-01--CP N-05) regarding the provision of cable routes and installation, including methods of mounting the cable containment systems to the civil infrastructure.

4.6 Interfacing Requirements

4.6.1 General

The Contractor shall liaise and coordinate with Interfacing Parties to ensure the effective and compatible coordination of all aspects of design, installation, testing and commissioning of work.

4.6.2 Contractor's Responsibility

(1) The Contractor shall ensure that all the interface items as listed in Clause 6.3 of this specification shall be included in the interface management plan.

(2) Other items not mentioned in the interface items but are relevant to the design, installation, testing and commissioning of permanent works, shall also be included in the interface management plan.

4.6.3 Interface Control Sheet

The Contractor shall review the design and coordinate with relevant Contractors and electric utility companies as detailed below:

No	Interface Description	Design Requirement	Design Size& location	Supply	Fix	Remarks
	<ELECTRIC COMPANIES>					
1	Incomming 69kV line	CP NS-01	Electric Companies	Electric Companies	Electric Companies	

No	Interface Description	Design Requirement	Design Size& location	Supply	Fix	Remarks
2	Metering device interface	Electric Companies	CP NS-01	CP NS-01	CP NS-01	
3	Specification of receiving equipment	CP NS-01	CP NS-01	CP NS-01	CP NS-01	
	<Telecommunications Equipment>					
1	SCADA I/F	CP NS-01	CP NS-01	CP NS-01	CP NS-01	
2	CATV I/F	CP NS-01	CP NS-01 (TLC)	CP NS-01	CP NS-01	
3	Telephone I/F	CP NS-01	CP NS-01	CP NS-01 (TLC)	CP NS-01 (TLC)	
	<OCS >					
1	Leading out of feeder line and return circuit	CP NS-01 (OCS)	CP NS-01	CP NS-01 (OCS)	CP NS-01	
	<Distrubution >					
1	Leading out of distribution line	CP NS-01 (PDS)	CP NS-01	CP NS-01 (PDS)	CP NS-01	
	<Distrubution station equipment>					
1	Distribution transformer capacity	CP NS-01	CP NS-01 (PDS)	CP NS-01 (PDS)	CP NS-01	
	<Rolling Stock, Train operation,OCS >					

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Electric Companies

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No	Interface Description	Design Requirement	Design Size& location	Supply	Fix	Remarks
2	Metering device interface	Electric Companies	CP NS-01 /Electric Companies	~~CP NS-01~~ Electric Companies	~~CP NS-01~~ Electric Companies	
3	Specification of receiving equipment	CP NS-01 / Electric Companies	CP NS-01	CP NS-01	CP NS-01	
	<Telecommunications Equipment>					
1	SCADA I/F	CP NS-01	CP NS-01	CP NS-01	CP NS-01	
2	CATV I/F	CP NS-01	CP NS-01 (TLC)	CP NS-01	CP NS-01	
3	Telephone I/F	CP NS-01	CP NS-01	CP NS-01 (TLC)	CP NS-01 (TLC)	
	<OCS >					
1	Leading out of feeder line and return circuit	CP NS-01 (OCS)	CP NS-01	CP NS-01 (OCS)	CP NS-01	
	<Distrubution >					
1	Leading out of distribution line	CP NS-01 (PDS)	CP NS-01	CP NS-01 (PDS)	CP NS-01	
	<Distrubution station equipment>					
1	Distribution transformer capacity	CP NS-01	CP NS-01 (PDS)	CP NS-01 (PDS)	CP NS-01	
	<Rolling Stock, Train operation,OCS >					

No	Interface Description	Design Requirement	Design Size & location	Supply	Fix	Remarks
	<MERALCO>					
1	Incomming 115kV line	CP NS-01	MERALCO	MERALCO	MERALCO	
2	Metering device interface	MERALCO	CP NS-01	CP NS-01	CP NS-01	
3	Specification of receiving equipment	CP NS-01	CP NS-01	CP NS-01	CP NS-01	
	< Telecommunications equipment>					
1	SCADA I/F	CP NS-01	CP NS-01 (TLC)	CP NS-01 (TLC)	CP NS-01 (TLC)	
2	CATV I/F	CP NS-01	CP NS-01 (TLC)	CP NS-01 (TLC)	CP NS-01 (TLC)	
3	Telephone I/F	CP NS-01	CP NS-01 (TLC)	CP NS-01 (TLC)	CP NS-01 (TLC)	
	<OCS >					
1	Leading out of feeder line and return circuit	CP NS-01 (OCS)	CP NS-01 (PSS,OCS)	CP NS-01 (OCS)	CP NS-01 (OCS)	
	<Distrubution >					
1	Leading out of distribution line	CP NS-01 (PDS)	CP NS-01 (PSS,PDS)	CP NS-01 (PDS)	CP NS-01 (PDS)	
	<Distrubution station equipment>					
1	Distribution transformer capacity	CP NS-01	CP NS-01 (PDS)	CP NS-01 (PDS)	CP NS-01	

No	Interface Description	Design Requirement	Design Size & location	Supply	Fix	Remarks
	<MERALCO>					
1	Incomming 115kV line	CP NS-01 /MERALCO	MERALCO	MERALCO	MERALCO	
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3	Specification of receiving equipment	CP NS-01 /MERALCO	CP NS-01	CP NS-01	CP NS-01	
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1	SCADA I/F	CP NS-01	CP NS-01 (TLC)	CP NS-01 (TLC)	CP NS-01 (TLC)	
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1. INTRODUCTION

1.1 General

This Chapter specifies the technical characteristics of the Closed-Circuit Television (CCTV) System of the Telecommunications System.

1.2 Overview of the Closed-Circuit Television (CCTV) System

The system provides monitoring and surveillance inside and outside the railway building and related facilities. Camera images can be viewed in each station from the Station Master Control room and the OCC. Depending on their location, cameras can be of fixed or Pan/tilt/zoom type, indoor type, or outdoor type.

The Video recorder shall have a sufficient capacity of at least, one (1) month with high-quality images.

On each platform, a monitor will be installed, for the train driver to view the boarding and alighting of passengers.

On-board Rolling Stock CCTV systems are not included in this system.

2. SCOPE OF WORKS

2.1 General

The specific requirements on the scope of the works for the Closed-Circuit Television (CCTV) System shall be as specified below.

2.2 Scope of supply for the Closed-Circuit Television (CCTV) System.

2.2.1 System configuration

The CCTV system shall comprise all items of control equipment, software, equipment power supplies, control units, interfaces, equipment cabinets and enclosures, video recorders, monitors, cameras, all cabling to and between respective items, and all cabling to the interface terminations with other systems, accessories, and fittings. These items shall be provided by the Contractor.

The Contractor shall design the station CCTV surveillance system to provide 100% coverage of the following specific areas at all stations. However, the stairs and escalators outside of the station shall provide CCTV coverage to the largest extent possible by installing fixed cameras were necessary for security purposes.

The location of the CCTV monitors and control panel shall be as follows:

- A CCTV control HMI system shall be provided in the SCR and OCC;
- HMI for the SCR shall consist of a work station with a minimum of one (1) number of LCD monitors of a minimum of 22" and a keyboard with joystick controllers and mouse-keyboard controller
- A CCTV monitor with a minimal size of 40 inches shall be installed on the wall of the SCR. The Contractor shall demonstrate the appropriate size of the screen by simulation and calculation.
- HMI for the appropriate controller in the OCC shall consist of work stations with a minimum of two LCD monitors of a minimum of 22" and a keyboard with joystick controllers and mouse-keyboard controllers. A minimum of 2 workstations shall be provided for general monitoring. One additional workstation shall be provided at the Power SCADA desk.

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~~The CCTV Systems shall be compliant with the relevant NFPA standards particularly with NFPA 130 for evacuation coverage and communications.~~

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- HMI for the appropriate controller in the OCC shall consist of work stations with a minimum of two LCD monitors of a minimum of 22" and a keyboard with joystick controllers and mouse-keyboard controllers. A minimum of 2

• Unmanned Technical Rooms or with sensitive equipment which a sprinkler system cannot be used such as AFC, Signalling, Telecoms Equipment, Repair and Workshop rooms, and Oil Storage which is highly flammable.

c.) Along the Viaduct

• Remote, unmanned, operation critical and high value auxiliary buildings such as Traction Substation (TSS), Battery Post (BP), Sectioning Post (SP), ISER.

16) Video Recording and Retrieving

The Network Video Recording System (NVRS) shall provide cost-effective local recording, storage, and retrieval facilities at the stations.

Moreover, regarding the local recording system, the main CER shall also have a redundant NVRS for recording any video signals monitored in the OCC.

All recordings shall have the associated camera's unique identifier, time, and date information stamped and superimposed onto the video image. Facilities to recover any recordings using time and/or location requests shall be implemented.

The video recorder shall be capable of operation for 24 hours per day, 365 days per year.

The Contractor shall provide sufficient storage medium to archive a minimum of 30 days of stored video recordings for a Video Resolution of 2048x1536, H.264, mPEG-4. The operator shall be able to retrieve, monitor, and playback images from this system without affecting any of the recording functions.

The NVRS shall use Redundant Server Based Network Video Recorders with NAS/RAID storage boxes and DVD burners.

The Contractor shall provide a user-friendly facility for inserting / modifying / detecting at least 10 characters at each input signal to the station switching matrix.

17) Fault and Alarm Management

All alarm statuses of the CCTV system equipment including cameras, video recorders, switches, etc. as necessary shall be monitored by CMSS in the main CER and shall automatically generate an audio/visual alarm on the CMSS/CSS Workstation on the occurrence of an event.

18) Network Video Recorder Server

The NVR Server shall as a minimum fulfill the following specifications:

- Redundant power supply;
- Sufficient processor capacity, suitable to allow future software updates and upgrades;
- Sufficient memory capacity;
- Dual network connection with load balancing and failover support;
- CD-drive and USB connection; and
- Self-monitoring for hard disk status, voltage, fans, and temperature.

19) Network Attached Storage/ RAID HDD Storage:

Separate NAS/RAID HDD shall be provided with each supplied NVR.

The RAID HDD Storage shall as a minimum fulfill the following specifications:

- Redundant power supply;
- Sufficient processor capacity suitable to allow future software updates and upgrades;

The video recorder shall be capable of operation for 24 hours per day, 365 days per year.

The Contractor shall provide sufficient storage medium to archive a minimum of ~~7~~ 30 days of stored video recordings ~~for all the cameras~~ for a Video Resolution of 2048x1536, H.264, mPEG-4 ~~in high resolution and a minimum of 30 days of storage in low resolution.~~ The operator shall be able to retrieve, monitor, and playback images from this system without affecting any of the recording functions.

The NVRS shall use Redundant Server Based Network Video Recorders with NAS/RAID storage boxes and DVD burners.

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- Sufficient memory capacity;
- Dual network connection with load balancing and fail-over support;
- CD-drive and USB connection;
- Support simultaneous playback and recording in full-duplex operation;
- Hot-swappable hard disks;
- Allow for a different type of RAID configurations; and
- Sufficient hard disk bays to allow for future extension of the line.

20) CCTV Management System Software (CMSS)

distribution over designated the designated frequency band for the NSCR application;

i) Antenna and support structure for base stations throughout the system and at the Depots etc.

j) Lightning protection equipment;

k) Distribution frames;

l) Equipment cabinets, racks, and cubicles together with mounting brackets and installation material;

m) Power supplies, cable, connectors, accessories, cabling, and earthing necessary for all equipment for the works;

n) All software required for operation and maintenance of the radio system;

o) Radio network management system;

p) A3/A4 Laser Color printer, connected to the radio management system;

q) Special maintenance tools, measurement tools, and laptops for onsite diagnosis and maintenance; and

r) SIM-card for onboard data radio. The onboard data radios, required for the signaling system, are excluded from the supply of the radio system. Those radios will be included in the scope of the signaling system.

s) Cradle with charger for driver handheld GSM-R unit, to be installed in each cabin of the train.

2.3 Scope of Services

The Contractor shall apply and liaise with all concerned authorities such as the National Telecommunications Commission (NTC) for obtaining the Radio Frequency Operating License (on behalf of the Employer), equipment approvals, and any other authorities to obtain any necessary licenses,clearances, or permits for the supply, installation, commissioning and the operation of the Radio System. The Radio Frequency Operating License shall be in the name of the Employer (The Department of Transportation).

The Contractor shall coordinate with PTE operators and equipment owners in case of interference problems through a Spectrum Coordination Committee.

Further to the general requirements shall include:

1) The Contractor shall coordinate with Civil Works Project Contractors to provide comments or recommendation on the station and Depot buildings, finishes, architectural layouts, installation requirements for antenna supports, availability of duct support facilities for antennas, masts, and other cables;

2) The Contractor shall also coordinate and supervise the installation of the Train-borne Radio equipment with the Rolling Stock manufacturers, to guarantee the interfaces and the end to end solution;

3) The Contractor shall coordinate with the contractors of the adjacent projects and implement all required interfacing equipment to ensure a seamless hand-over without losing any active radio connection;

4) Furthermore, the Contractor will be required to coordinate and interface to any sub-system Contractors;

g) Train cab radios complete with a radio transceiver, Human-Machine Interface (HMI) interfacing unit, and power supply equipment, including train-borne antennas;

h) All types of cable, splitters, and accessories to support wide-band signal distribution over designated the designated frequency band for the NSCR application;

i) Antenna and support structure for base stations throughout the system and at the Depots etc.

j) Lightning protection equipment;

k) Distribution frames;

l) Equipment cabinets, racks, and cubicles together with mounting brackets and installation material;

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3) The Contractor shall coordinate with the contractors of the adjacent projects and implement all required interfacing equipment to ensure a seamless hand-

stated in Clause 4.1.1 is for reference purposed only.

x. Most suitable power storage system in terms of high energy density, high power density and economic efficiency shall be selected from using the comparison table in detail design.

8) Supervisory Control and Data Acquisition (SCADA)

i. The power supply system and the distribution system shall normally be controlled remotely from the SCADA system and monitored at the SCADA system in the OCC.

ii. Telephone sets shall be installed at each TSS, BP and SP and provided by the Communication Contractor. The Contractor shall coordinate with the Communication Contractor about the type of telephone set, location, numbers of line and so forth.

9) 6.6kV distribution system for power supply system

i. Looped 6.6kV parallel power distribution system (ordinary use side and standby use side) shall be designed and provided. One system shall be connected to a north bound substation and another is connected a south bound substation.

ii. The reciprocal support circuit shall be connected between the above two substations of each system. In case ordinary use distribution line from a substation stops, electric power can supply through other side line.

iii. One circuit for each direction in looped system distribution line is prepared for Electric rooms.

iv. Distribution transformer 69kV/6.6kV are prepared in the substations and listed in Chapter 5, and in depot exclusive use two Distribution transformers are designed.

10) TSS equipment

i. 69kV Switch gears:

69kV outdoor type, metal enclosed gas insulated or air insulated switchgear (eco-friendly type)

ii. Rectifier equipment

69kV/1180V gas insulated self-cooling or oil insulated transformer self-cooling Rectifier transformer (eco-friendly type).~~;~~

Rectifier, 1500V 6000kW, 12 pulses pure water heat pipe cooling type,

AC Bus duct between Rectifier Transformer and Rectifier DC 1500V outdoor type metal enclosed air insulated switchgear with high-speed circuit breaker and disconnecting switches

iii. Distribution Transformer

The 69kV/6.6kV distribution transformers shall be gas insulated or oil insulated self-cooling.

iv. DC 1500V Indoor type air insulated switchgear with disconnecting switches.

DC 1500V Switch gears

DC 1500V Indoor type air insulated switchgear for Rectifier positive protection.

DC 1500V Indoor type air insulated switchgear for Rectifier Negative

stated in Clause 4.1.1 is for reference purposed only.

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i. The power supply system and the distribution system shall normally be controlled remotely from the SCADA system and monitored at the SCADA system in the OCC.

ii. Telephone sets shall be installed at each TSS, BP and SP and provided by the Communication Contractor. The Contractor shall coordinate with the Communication Contractor about the type of telephone set, location, numbers of line and so forth.

9) 6.6kV distribution system for power supply system

i. Looped 6.6kV parallel power distribution system (ordinary use side and standby use side) shall be designed and provided. One system shall be connected to a north bound substation and another is connected a south bound substation.

ii. The reciprocal support circuit shall be connected between the above two substations of each system. In case ordinary use distribution line from a substation stops, electric power can supply through other side line.

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DC 1500V Switch gears

DC 1500V Indoor type air insulated switchgear for Rectifier positive protection.

DC 1500V Indoor type air insulated switchgear for Rectifier Negative

7) Linked breaking system utilizes optical fiber cables shall be prepared for DC traction feeder circuit protection between mainline TSS.

(7) Supervisory Control and Data Acquisition (SCADA)

The power supply system and the distribution system shall normally be controlled remotely from the SCADA system and monitored at the SCADA system in the OCC.

Telephone sets shall be installed at each TSSs and SP provided by the Communication Contractor. The Contractor shall coordinate with the Communication Contractor about the type of telephone set, location, numbers of line and so forth.

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1) Looped 6.6kV parallel power distribution system (ordinary use side and standby use side) shall be designed and provided. One system shall be connected to a north bound substation and another is connected a south bound substation.

2) The reciprocal support circuit shall be connected between the above two TSS of each system. In case ordinary use distribution line from a TSS stops, electric power can supply through other side line.

3) One circuit for each direction in looped system distribution line is prepared for Electric rooms.

4) Distribution transformer 115kV/6.6kV are prepared in the substations and listed in Chapter 5, and in depot exclusive use two Distribution transformers are designed.

(9) TSS equipment

1) 115kV Switchgear

115kV Outdoor type, metal enclosed gas insulated or air insulated switchgear;

2) Rectifier equipment

115kV/1180V Gas insulated or oil insulated self-cooling type Rectify transformer;

1500V 6000kW, 12 pulses pure water heat pipe cooling type,

AC Bus duct between Rectifier Transformer and Rectifier DC 1500V outdoor type metal enclosed air insulated switchgear with high-speed circuit breaker and disconnecting switches, and

3) Distribution Transformer

The 115kV/6.6kV distribution transformers gas insulated or oil insulated self-cooling, out-door type and eco-friendly type.

4) DC 1500V Indoor type air insulated switchgear.

DC 1500V Switch gears Indoor type air insulated switchgear with disconnecting switches.

DC 1500V Indoor type air insulated switchgear for Rectifier positive protection.

DC 1500Vdisconnecting switches for Rectifier Negative separation.

DC 1500V Indoor type air insulated switchgear for Re-Generating Resistor.

7) Linked breaking system utilizes optical fiber cables shall be prepared for DC traction feeder circuit protection between mainline TSS.

(7) Supervisory Control and Data Acquisition (SCADA)

The power supply system and the distribution system shall normally be controlled remotely from the SCADA system and monitored at the SCADA system in the OCC.

Telephone sets shall be installed at each TSSs and SP provided by the Communication Contractor. The Contractor shall coordinate with the Communication Contractor about the type of telephone set, location, numbers of line and so forth.

(8) 6.6kV distribution system for power supply system

1) Looped 6.6kV parallel power distribution system (ordinary use side and standby use side) shall be designed and provided. One system shall be connected to a north bound substation and another is connected a south bound substation.
2) The reciprocal support circuit shall be connected between the above two TSS of each system. In case ordinary use distribution line from a TSS stops, electric power can supply through other side line.
3) One circuit for each direction in looped system distribution line is prepared for Electric rooms.
4) Distribution transformer 115kV/6.6kV are prepared in the substations and listed in Chapter 5, and in depot exclusive use two Distribution transformers are designed.

(9) TSS equipment

1) 115kV Switchgear

115kV Outdoor type, metal enclosed gas insulated or air insulated switchgear;

2) Rectifier equipment

115kV/1180V Gas insulated or oil insulated self-cooling type Rectify transformer;

1500V 6000kW, 12 pulses pure water heat pipe cooling type,

AC Bus duct or cable connection between Rectifier Transformer and Rectifier DC

1500V outdoor type metal enclosed air insulated switchgear with high-speed circuit breaker and disconnecting switches, and

3) Distribution Transformer

The 115kV/6.6kV distribution transformers gas insulated or oil insulated self-cooling, out-door type and eco-friendly type.

4) DC 1500V Indoor type air insulated switchgear.

DC 1500V Switch gears Indoor type air insulated switchgear with disconnecting switches.

DC 1500V Indoor type air insulated switchgear for Rectifier positive protection.

DC 1500Vdisconnecting switches for Rectifier Negative separation.

DC 1500V Indoor type air insulated switchgear for Re-Generating Resistor.

load (approximately 1%) to 100% full load and shall be as linear as technically feasible up to the 300% full load current. The inherent voltage regulation at 300% full load shall ensure that the voltage at the rectifier load terminals shall not be less than 1150V DC.

3) The output DC voltage for each rectifier transformer and rectifier set combination, at light transition load, shall not exceed 1-590V DC.

4) The DC traction supply system shall be designed to provide a voltage that is self-limiting to 1-650V DC at no load.

5) Each rectifier transformer and rectifier set combination shall be designed in accordance with Engineer's requirements and to satisfy the requirements of this Performance Specification and following:

   a. 100% Continuous

   b. 130% to 150% overload – 120 minutes

   c. 300% overload – 1 minute.

6) The Contractor shall consider how to carry in and install at each substation and plan rectifier transformer that can be divided if necessary.

(2) Rectifier Transformers

1) 115kV/1.18kV Rectifier transformers shall comply with relevant standards and regulations. Rectifier transformers shall be rated to supply the full DC traction system load within the continuous rating, with any one rectifier transformer out of service.

2) The overload ratings of rectifier transformers shall be utilized to accommodate any abnormal loading in the event of train bunching or due to any abnormal DC traction feeding arrangements.

3) Rectifier transformers shall be designed in accordance with relevant standards and regulations and shall incorporate an earthed metal screen between high voltage and low voltage windings, if necessary.

4) Off-load tapping links shall be provided on the high voltage winding to provide rated output at +5.0% to -5.0% of nominal supply voltage, in increments of 2.5%.

5) Two secondary windings shall be provided, one connected in star and the other one connected in delta, to provide double six phases supply to the rectifier.

6) Rectifier transformers shall be fitted with a temperature alarm device, and temperature tripping and pressure alarm and gas pressure tripping to be monitored by the SCADA.

7) Rectifier transformers shall be of gas insulated or oil insulated self-cooling type to have anti-flame-able characteristics and to prevent ingress of moisture.

8) The insulation shall conform as a minimum to temperature 'Class B' as defined with relevant standards and regulations.

(3) Rectifier Sets

1) Rectifier sets shall provide nominal 1500V DC traction supply to the Overhead Contact line System.

2) Rectifier sets shall accommodate the load cycle requirements as defined with relevant standards and regulations for "Extra Heavy Traction Duty Class D" as a minimum,

load (approximately 1%) to 100% full load and shall be as linear as technically feasible up to the 300% full load current. The inherent voltage regulation at 300% full load shall ensure that the voltage at the rectifier load terminals shall not be less than 1150V DC.

3) The output DC voltage for each rectifier transformer and rectifier set combination, at light transition load, shall not exceed 1-590V DC.

4) The DC traction supply system shall be designed to provide a voltage that is self-limiting to 1-650V DC at no load.

5) Each rectifier transformer and rectifier set combination shall be designed in accordance with Engineer's requirements and to satisfy the requirements of this Performance Specification and following:

   a. 100% Continuous

   b. 130% to 150% overload – 120 minutes

   c. 300% overload – 1 minute.

6) The Contractor shall consider how to carry in and install at each substation and plan rectifier transformer that can be divided if necessary.

(2) Rectifier Transformers

1) 115kV/1.18kV Rectifier transformers shall comply with relevant standards and regulations. Rectifier transformers shall be rated to supply the full DC traction system load within the continuous rating, with any one rectifier transformer out of service.

2) The overload ratings of rectifier transformers shall be utilized to accommodate any abnormal loading in the event of train bunching or due to any abnormal DC traction feeding arrangements.

3) Rectifier transformers shall be designed in accordance with relevant standards and regulations and shall incorporate an earthed metal screen between high voltage and low voltage windings, if necessary.

4) Off-load tapping links shall be provided on the high voltage winding to provide rated output at +5.0% to -5.0% of nominal supply voltage, in increments of 2.5%.

5) Two secondary windings shall be provided, one connected in star and the other one connected in delta, to provide double six phases supply to the rectifier.

6) Rectifier transformers shall be fitted with a temperature alarm device, and temperature tripping and pressure alarm and gas pressure tripping to be monitored by the SCADA.

7) Rectifier transformers shall be of gas insulated or oil insulated self-cooling type to have anti-flame-able characteristics and to prevent ingress of moisture with an enclosed bus ducting or cable connection to the rectifier cubicle.

8) The insulation shall conform as a minimum to temperature 'Class B' as defined with relevant standards and regulations.

(3) Rectifier Sets

1) Rectifier sets shall provide nominal 1500V DC traction supply to the Overhead Contact line System.

2) Rectifier sets shall accommodate the load cycle requirements as defined with relevant standards and regulations for "Extra Heavy Traction Duty Class D" as a minimum,

c. Rated frequency: 60Hz

d. Type of cooling: Moulded, natural or forced air

e. Off load tap changing equipment:

Tap changing of ± 5% with 2.5% each. The transformer shall provide full capacity at all tapping positions.

f. The base of the transformer shall be designed to spread the weight of the transformer over as large an area as possible within its space envelope.

3) The rated insulation level shall comply with the following minimum requirement:

a. Lightning impulse withstand voltage:

Both high and low voltage winding shall comply with relevant standards and regulations.

b. Power frequency withstand voltage for 1 minute:

Both high and low voltage winding shall comply with relevant standards and regulations.

c. Neutral grounding method: Directly earthing for high voltage winding and low voltage winding according to neutral earthing mode of the distribution system

d. Noise level:

Permissible noise level shall comply with the Philippine environmental standard.

e. Air-filled cable box for high and low voltage termination shall be provided.

f. Fault detection: gas pressure and gas temperature

(3) 6.6kV/400-230V operation transformers

The 6.6/0.4kV operation transformers for supplying power to control equipment shall be mold or oil-immersed type, off-load tap-changing, indoor type and eco-friendly type with the following minimum ratings and requirements:

1) One 6.6/0.4kV transformer shall be installed in the traction substations.

2) The rated power shall be determined by the Contractor as part of its design of works.

3) The 6.6/0.4kV operation transformers shall comply with the following minimum ratings and requirements:

a. Rated voltage

- High voltage winding: 6.6kV

- Low voltage winding: 400/230V

b. Number of phases: 3 (3phase-3wire method)

c. Rated frequency: 60Hz

d. Type of cooling: moulded, natural or forced air-cooling.

e. Off load tap changing equipment: Tap changing of ± 5% with 5.0% each step to comply with Philippine Grid Code of the Philippines.

f. Connection designation: Dyn11

4) The rated insulation level shall comply with the following minimum ratings and requirement.

a. Lightning impulse withstand voltage:

Both high and low voltage winding shall comply with relevant standards and regulations.

b. Power frequency withstand voltage for 1 minute:

Both high and low voltage winding shall comply with relevant standards and regulations.

4.4.4 Control Source for Substations

(1) Battery Units

1) For the receiving substation, and traction substations, the Contractor shall provide DC 110V battery system for safety tripping, service current functions and power to the SCADA remote terminal units.

2) The battery system shall be rated to supply the standing loads for a minimum of 3 hours in the event of a charger supply failure, and at the end of that period shall be capable of operating each item of equipment for two cycles, i.e., one cycle is open and close.

3) During such duty output voltage shall be within the tolerances defined for operation in the relevant equipment specifications.

4) The 110V batteries shall be of the NiCad type, maintenance free type and shall not emit hazardous gases.

(2) Battery Chargers

1) Battery chargers shall be provided with self-regulation and shall be capable of restoring a minimum of 80% of battery capacity within 4 hours of full discharge.

2) Sufficient indications shall be provided on the battery charger to provide status information of the battery charger system, as a minimum this shall include battery voltage, trickle charge and booster charge currents, battery charge functioning and battery charge failure. In addition, status information shall be provided to the SCADA system.

3) Battery chargers shall incorporate measuring instruments such as ammeters and voltmeters as a minimum.

4) In receiving substations and traction substations, AC auxiliary power for the battery charger shall be fed from the secondary circuit of operation transformer.

4.4.5 BP (Battery Post)

(1) The BP system consists of following;

1) Control Panel

- Charge and discharge control
- System monitoring

4) The rated insulation level shall comply with the following minimum ratings and requirement.

a. Lightning impulse withstand voltage:

Both high and low voltage winding shall comply with relevant standards and regulations.

b. Power frequency withstand voltage for 1 minute:

Both high and low voltage winding shall comply with relevant standards and regulations.

(4) 1.18kV/400-230V operation transformers

The 1.18kV/0.4kV operation transformers for supplying power to control equipment shall be mold or oil-immersed type, off-load tap-changing, indoor type and eco-friendly type with the following minimum ratings and requirements:

1) The 1.18kV/0.4kV transformer shall be installed in the traction substations.

2) The rated power shall be determined by the Contractor as part of its design of works.

3) The 1.18kV/0.4kV operation transformers shall comply with the following minimum ratings and requirements:

a. Rated voltage

- High voltage winding: 1.18kV

- Low voltage winding: 400/230V

b. Number of phases: 3 (3phase-3wire method)

c. Rated frequency: 60Hz

d. Type of cooling: moulded, natural or forced air-cooling.

e. Off load tap changing equipment: Tap changing of ± 5% with 2.5% each step to comply with Philippine Grid Code of the Philippines.

f. Connection designation: Dyn11

4) The rated insulation level shall comply with the following minimum ratings and requirement.

a. Lightning impulse withstand voltage:

Both high and low voltage winding shall comply with relevant standards and regulations.

b. Power frequency withstand voltage for 1 minute:

Both high and low voltage winding shall comply with relevant standards and regulations.

4.4.4 Control Source for Substations

(1) Battery Units

2) The Contractor shall determine actual rated power based on Chapter 5 Power Distribution System.

a. Nominal voltage

High voltage winding: 115kV

Low voltage winding: 6.6kV

b. Number of phases: 3

c. Rated frequency: 60Hz

d. Type of cooling: ONAN/ONAF or GIAN/GFAN

e. Off load tap changing equipment:

Tap changing of ±10% with 2.5% each. The transformer shall provide full capacity at all tapping positions.

f. The base of the transformer shall be designed to spread the weight of the transformer over as large an area as possible within its space envelope.

3) The rated insulation level shall comply with the following minimum requirement:

a. Lightning impulse withstand voltage:

Both high and low voltage winding shall comply with relevant standards and regulations.

b. Power frequency withstand voltage for 1 minute:

Both high and low voltage winding shall comply with relevant standards and regulations.

c. Neutral grounding method: Directly earthing for high voltage winding and low voltage winding according to neutral earthing mode of the distribution system

d. Air-filled cable box for high and low voltage termination shall be provided.

e. Fault detection: gas pressure and gas temperature.

(3) 6.6kV/400-230V operation transformers

The 6.6kV/0.4kV operation transformers for supplying power to control equipment shall be mold or oil-immersed type, off-load tap-changing, indoor type and eco-friendly type with the following minimum ratings and requirements:

1) One 6.6kV/0.4kV transformer shall be installed in the TSS.

2) The rated power shall be determined by the Contractor as part of its design of works.

3) The 6.6kV/0.4kV operation transformers shall comply with the following minimum ratings and requirements:

a. Rated voltage

- High voltage winding: 6.6kV

- Low voltage winding: 400/230V

b. Number of phases: 3 (3phase-3wire method)

c. Rated frequency: 60Hz

d. Type of cooling: moulded, natural or forced air-cooling.

e. Off load tap changing equipment: Tap changing of ±10% with 5.0% each step to comply with Philippine Grid Code of the Philippines

f. Connection designation: Dyn11

4) The rated insulation level shall comply with the following minimum ratings and requirement:

a. Lightning impulse withstand voltage:

Both high and low voltage winding shall comply with relevant standards and regulations.

b. Power frequency withstand voltage for 1 minute:

Both high and low voltage winding shall comply with relevant standards and regulations.

4.4.4 Control Source for Traction Substations

(1) Battery Units

1) For the receiving TSS, the Contractor shall provide DC 110V battery system for safety tripping, service current functions and power to the SCADA remote terminal units.

2) The battery system shall be rated to supply the standing loads for a minimum of 3 hours in the event of a charger supply failure, and at the end of that period shall be capable of operating each item of equipment for two cycles, i.e., one cycle is open and close.

3) During such duty output voltage shall be within the tolerances defined for operation in the relevant equipment specifications.

4) The 110V batteries shall be of the NiCad type, maintenance free type and shall not emit hazardous gases.

(2) Battery Chargers

1) Battery chargers shall be provided with self-regulation and shall be capable of restoring a minimum of 80% of battery capacity within 4 hours of full discharge.

2) Sufficient indications shall be provided on the battery charger to provide status information of the battery charger system, as a minimum this shall include battery voltage, trickle charge and booster charge currents, battery charge functioning and battery charge failure. In addition, status information shall be provided to the SCADA system.

3) Battery chargers shall incorporate measuring instruments such as ammeters and voltmeters as a minimum.

4) In receiving TSS, AC auxiliary power for the battery charger shall be fed from the secondary circuit of operation transformer.

4.4.5 Power SCADA (SCADA for Power Supply System)

(1) General

c. Rated frequency: 60Hz

d. Type of cooling: moulded, natural or forced air-cooling.

e. Off load tap changing equipment: Tap changing of ±10% with 5.0% each step to comply with Philippine Grid Code of the Philippines

f. Connection designation: Dyn11

4) The rated insulation level shall comply with the following minimum ratings and requirement:

a. Lightning impulse withstand voltage:

Both high and low voltage winding shall comply with relevant standards and regulations.

b. Power frequency withstand voltage for 1 minute:

Both high and low voltage winding shall comply with relevant standards and regulations.

(4) 1.18kV/400-230V-110V operation transformers

The 1.18kV/0.4kV operation transformers for supplying power to control equipment shall be mold or oil-immersed type, off-load tap-changing, indoor type and eco-friendly type with the following minimum ratings and requirements:

1) The 1.18kV/0.4kV transformer shall be installed in the traction substations.

2) The rated power shall be determined by the Contractor as part of its design of works.

3) The 1.18kV/0.4kV operation transformers shall comply with the following minimum ratings and requirements:

a. Rated voltage

- High voltage winding: 1.18kV

- Low voltage winding: 400/230V-110V

b. Number of phases: 3 (3phase-3wire method)

c. Rated frequency: 60Hz

d. Type of cooling: moulded, natural or forced air-cooling.

e. Off load tap changing equipment: Tap changing of ± 5% with 2.5% each step to comply with Philippine Grid Code of the Philippines.

f. Connection designation: Dyn11

4) The rated insulation level shall comply with the following minimum ratings and requirement.

a. Lightning impulse withstand voltage:

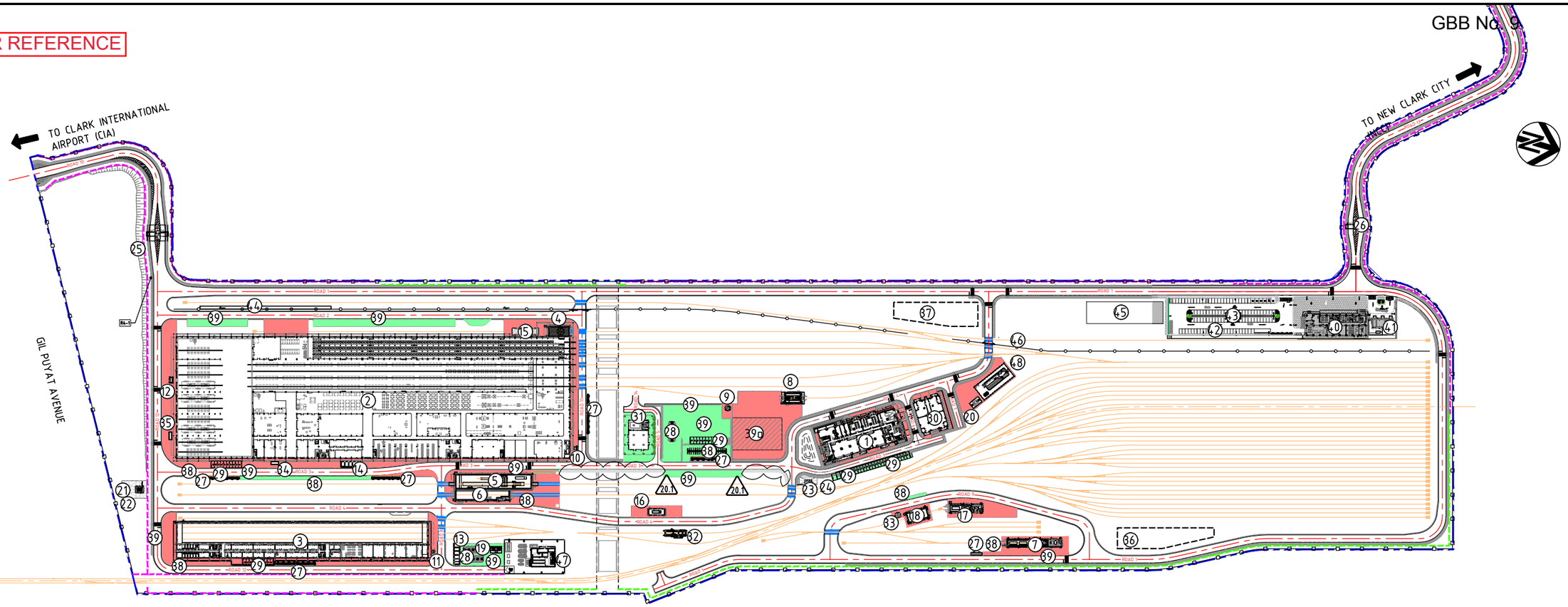
Both high and low voltage winding shall comply with relevant standards and regulations.

b. Power frequency withstand voltage for 1 minute:

Both high and low voltage winding shall comply with relevant standards and regulations.

WVR-711

FOR REFERENCE



SITE DEVELOPMENT PLAN

SCALE 1:2000

LEGEND:

(1)	OCC BUILDING	(19)	DISTRIBUTION BOARD SPACE 1	(38)	DEPOT MOTORBIKE PARKING (UNCOVERED)
(2)	WORKSHOP	(20)	DISTRIBUTION BOARD SPACE 2	(39)	DEPOT CAR PARKING (UNCOVERED)
(3)	LIGHT REPAIR SHOP	(21)(22)	SUPPLY AND FIRE WATER TANK AND PUMP HOUSE	(39a)	BUS PARKING (UNCOVERED)
(4)	UNDERFLOOR CLEANING SHOP	(23)(24)	WATER TANK AND PUMP HOUSE	(40)	TRAINING CENTER
(5)	UNSCHEDULED REPAIR SHOP	(25)	SECURITY HOUSE 1	(41)	TRAINING CENTER ELECTRICAL BLDG.
(6)	WHEEL RE-PROFILING SHOP	(26)	SECURITY HOUSE 2	(42)	TRAINING CENTER MOTORBIKE PARKING (UNCOVERED)
(7)	CATENARY MAINTENANCE VEHICLE SHOP	(27)	DEPOT BICYCLE SHED	(43)	TRAINING CENTER CARPARKING (UNCOVERED)
(8)	SHUNTING CAR SHOP	(28)	DEPOT MOTORBIKE SHED	(44)	MOCK-UP PLATFORM -2
(9)	FUEL PUMP HOUSE 1	(29)	DEPOT CAR PARKING SHED	(45)	MOCK-UP TRACK
(10)	OIL STORAGE FOR WORKSHOP	(30)	CENTRAL EQUIPMENT BUILDING (OCC ANNEX)	(46)	LEVEL CROSSING FOR TRAINING CENTER
(11)	OIL STORAGE FOR LIGHT REPAIR SHOP	(31)	CANTEEN	(47)	N. DEPOT SUB STATION
(12)	HAZARDOUS STORE	(32)	CAR WASHING TRACK	(48)	N. DEPOT SECTIONING POST
(13)	GARAGE SHED FOR LIGHT REPAIR SHOP	(33)	FUEL PUMP AND TANK FOR MAINTENANCE CAR SHOP		
(14)	GARBAGE SHED FOR WORKSHOP	(34)	FUEL PUMP AND TANK FOR BOILER IN WORKSHOP		
(15)	WATERPROOF TEST SHOP	(35)	FUEL TANK FOR CAR BODY DRYING BOOTH IN WORKSHOP		
(16)	TRUCK GARAGE BUILDING	(36)	DETENTION BASIN 1		
(17)	TRACK MAINTENANCE OFFICE	(37)	DETENTION BASIN 2		
(18)	MAINTENANCE CAR SHOP				

PROJECT ROW	PERIMETER DRAIN
HORIZONTAL CONTROL LINE	NIA CANAL REALIGNMENT
0+100 CHAINAGE	RETAINING WALL
ROAD 1 ROAD NAME	RAIL CROSSINGS (FLAT, CROSSFALL AND LONGITUDINAL FALL ARE 0% GRADE (SLAB DESIGN NOT INCLUDED IN CIVIL WORKS SCOPE)
CURB & GUTTER / EDGE OF DROP CURB / EDGE OF ROAD	L-TYPE RETAINING WALL
FOOTPATH	SHARED USE PATH
RAIL ALIGNMENT	SOUTH DEPOT UNDERPASS
BUILDING OUTLINE	
PERIMETER FENCE	
PAVEMENT	PARKING PAVEMENT

ISSUED FOR CONSTRUCTION

Yoshio Maeda
GCR Project Manager (N2)
17 August 2020

NOTES

1. FOR GENERAL NOTES AND LEGEND, REFER TO DRAWINGS MCRP-DWG-DEP-AR-3011 TO 3012.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
3. ALL SHUTTER DOORS WILL HAVE VEHICULAR ACCESS FROM ROAD.
4. '39a' ALSO SERVES AS THE ROLLING STOCK SHUNTING AREA FOR THE DEPOT.

20.1

SCALE 1:2000 20 0 20 40 60 80 100

VERSIONS	DATE	DESCRIPTION
30	14 AUG 2020	ISSUE FOR DETAILED DESIGN

DEPARTMENT OF TRANSPORTATION (DOTr)

PHILIPPINE NATIONAL RAILWAYS

CONSULTANT

JICA DESIGN TEAM (JDT)

ORIENTAL CONSULTANTS GLOBAL CO., LTD.
KATAHIRA & ENGINEERS INTERNATIONAL
PACIFIC CONSULTANTS CO., LTD.
JAPAN INTERNATIONAL CONSULTANTS FOR TRANSPORTATION CO., LTD.
TONICHI ENGINEERING CONSULTANTS INC.
TOKYO METRO CO., LTD

TITLE	JDT	SMEC
DESIGNER	K. SAKAMOTO	A. GISALA
CHECK	H. KISHI	A. ALLI
TEAM LEADER	K. KUSANAGI	W. FRENCKEN
P. MANAGER	Y. MAEDA	R. YUZON JR.

MALOLOS-CLARK RAILWAY PROJECT (MCRP)

PACKAGE CP N-05 : DETAILED DESIGN

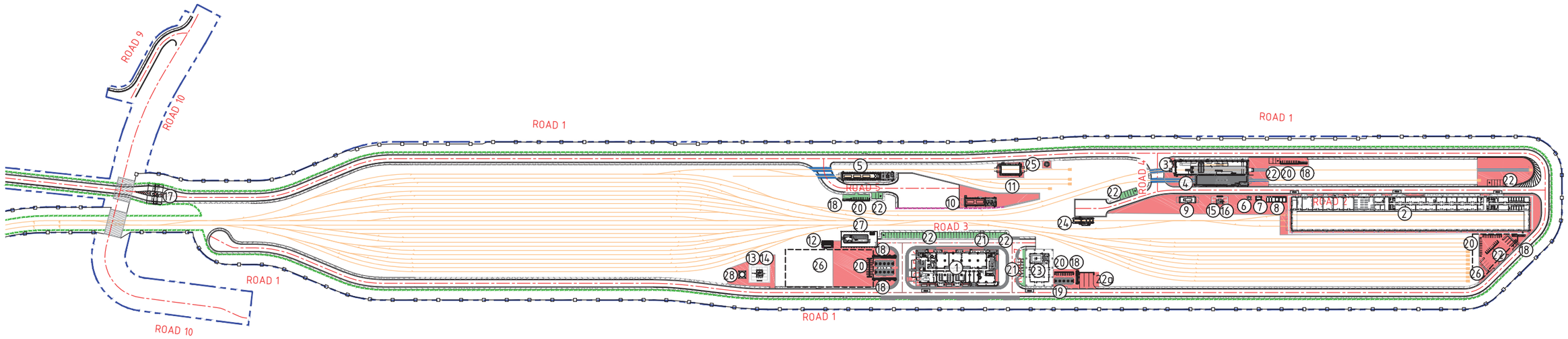
MCRP-NORTH DEPOT
ARCHITECTURAL-SITE DEVELOPMENT PLAN

DATE	AUGUST 2020
SCALE	AS SHOWN IN A1
SHEET No.	
DRG No.	MCRP-DWG-DEP-AR-3201
DRG S.	REV 30

Last modified by CS6260347 / 11 Aug 2020
Filename: V:_Vault\Projects\705119A\MCRP\CAD\DWG\22_DEP_Depot\05_DEP_Depot\05_DEP-AR\MCRP-DWG-DEP-AR-3201

FOR REFERENCE

GBB No. 9



SITE DEVELOPMENT PLAN

SCALE 1:2000

LEGEND:

- PROJECT ROW
- HORIZONTAL CONTROL LINE
- 0+100 CHAINAGE
- ROAD 1 ROAD NAME
- CURB & GUTTER
- EDGE OF DROP CURB
- EDGE OF ROAD
- FOOTPATH
- RAIL ALIGNMENT
- BUILDING OUTLINE
- PERIMETER FENCE
- PAVEMENT
- PERIMETER DRAIN
- NIA CANAL REALIGNMENT
- RETAINING WALL
- RAIL CROSSINGS (FLAT, CROSSFALL AND LONGITUDINAL FALL ARE 0% GRADE (SLAB DESIGN NOT INCLUDED IN CIVIL WORKS SCOPE)
- L-TYPE RETAINING WALL
- SHARED USE PATH
- SOUTH DEPOT UNDERPASS
- PARKING PAVEMENT

1. OCC BUILDING
2. LIGHT REPAIR SHOP
3. UNSCHEDULED REPAIR SHOP
4. WHEEL RE-PROFILING SHOP
5. CATENARY MAINTENANCE VEHICLE SHOP
6. OIL STORAGE FOR LIGHT REPAIR SHOP
7. HAZARDOUS STORE
8. GARBAGE SHED FOR LIGHT REPAIR SHOP
9. TRUCK GARAGE BUILDING
10. TRACK MAINTENANCE OFFICE
11. MAINTENANCE CAR SHOP
12. DISTRIBUTION BOARD SPACE
13, 14. SUPPLY AND FIRE WATER TANK AND PUMP HOUSE (WATER PUMP HOUSE 1)
15, 16. WATER TANK AND PUMP HOUSE (WATER PUMP HOUSE 2)
17. SECURITY HOUSE 1
18. DEPOT BICYCLE SHED
19. DEPOT MOTORBIKE SHED
20. DEPOT MOTORBIKE PARKING (UNCOVERED)
21. DEPOT CAR PARKING SHED
22. DEPOT CAR PARKING (UNCOVERED)
22a. DEPOT BUS PARKING (UNCOVERED)
23. CANTEEN
24. CAR WASHING TRACK
25. FUEL PUMP AND TANK FOR MAINTENANCE CAR SHOP
26. DETENTION BASIN
27. DEPOT SECTIONING POST
28. DEEP WELL

NOTES

1. FOR GENERAL NOTES AND LEGEND, REFER TO DRAWINGS NSRP-DWG-DEP-AR-3011 TO 3012.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
3. THIS SITE DEVELOPMENT PLAN IS STILL FOR FURTHER STUDY.

SCALE 1:2000 20 0 20 40 60 80 100

VERSIONS	DATE	DESCRIPTION
21	21 SEP 2020	ISSUE FOR BIDDING

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 & ENGINEERS INTERNATIONAL
TONICHI ENGINEERING CONSULTANTS INC.
PACIFIC CONSULTANTS CO., LTD.
TOKYO METRO CO., LTD

TITLE	JDT	SMEC
DESIGNER	K. SAKAMOTO	P. REYNALDO, JR.
CHECK	H. KISHI	A. ALLI
TEAM LEADER	N. MATSUMOTO	W. FRENCKEN
P. MANAGER	N. KAWAI	R. YUZON JR.

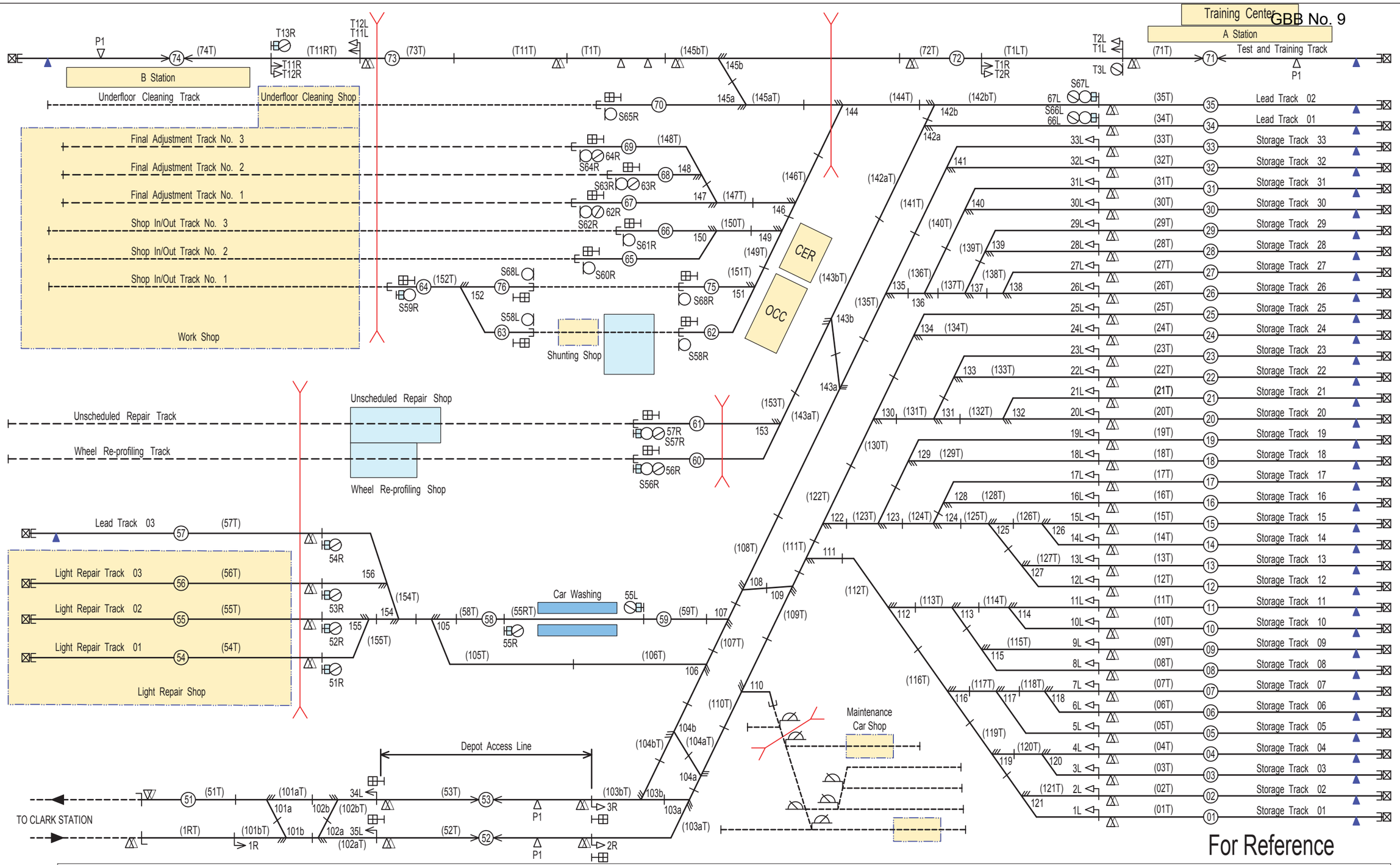
NORTH SOUTH RAILWAY PROJECT - SOUTH LINE (COMMUTER)

PACKAGE CP S-07 : DETAILED DESIGN

NSRP-SOUTH DEPOT
ARCHITECTURAL - SITE DEVELOPMENT PLAN
SHEET 3

DATE: SEPTEMBER 2020
SCALE: AS SHOWN IN A1
SHEET No.:
DRG No.: NSRP-DWG-DEP-AR-3203
DRG S.:
REV: 21

GBB No. 9



For Reference

LEGEND

- ATO/ATP ROUTE
- ATP SHUNTING ROUTE
- WAYSIDE SIGNAL FOR SHUNTING SIGNAL
- SHUNTING INDICATOR
- ROUTE INDICATOR
- ELECTRIC POINT MACHINE
- POINT WITH LEVER
- STAFF CROSSING
- BALISE FOR ORP
- BALLISE FOR REPORTS POSITION (2 PIECES INSTALLED)
- ①~ⓝ END POINT OF ROUTE
- BUFFER STOP
- CAR STOP INDICATOR
- END OF TRACK CIRCUIT
- TRACK CIRCUIT
- TRACK CIRCUIT IS NOT PROVIDED FOR TRAIN DETECTION (WITH CATENARY)
- TRACK CIRCUIT IS NOT PROVIDED FOR TRAIN DETECTION
- BALISE FOR ADVANCED TRAIN AUTOMATIC STOP CONTROL

VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE
01	09 JUN 2021	ISSUED FOR REFERENCE

DEPARTMENT OF TRANSPORTATION (DOTr)

PHILIPPINE NATIONAL RAILWAYS

CONSULTANT

JICA DESIGN TEAM (JDT)

ORIENTAL CONSULTANTS GLOBAL CO.,LTD.

KATAHIRA & ENGINEERS INTERNATIONAL

PACIFIC CONSULTANTS CO.,LTD.

JAPAN INTERNATIONAL CONSULTANTS FOR TRANSPORTATION CO.,LTD.

TONICHI ENGINEERING CONSULTANTS, INC.

Tokyo Metro Co.,Ltd.

TITLE	JDT	SMEC
DESIGNER	K. KERA	-
CHECK	T. MATSUMOTO	-
TEAM LEADER	T. ISHIZUKA	-
P. MANAGER	N. KAWAI	-

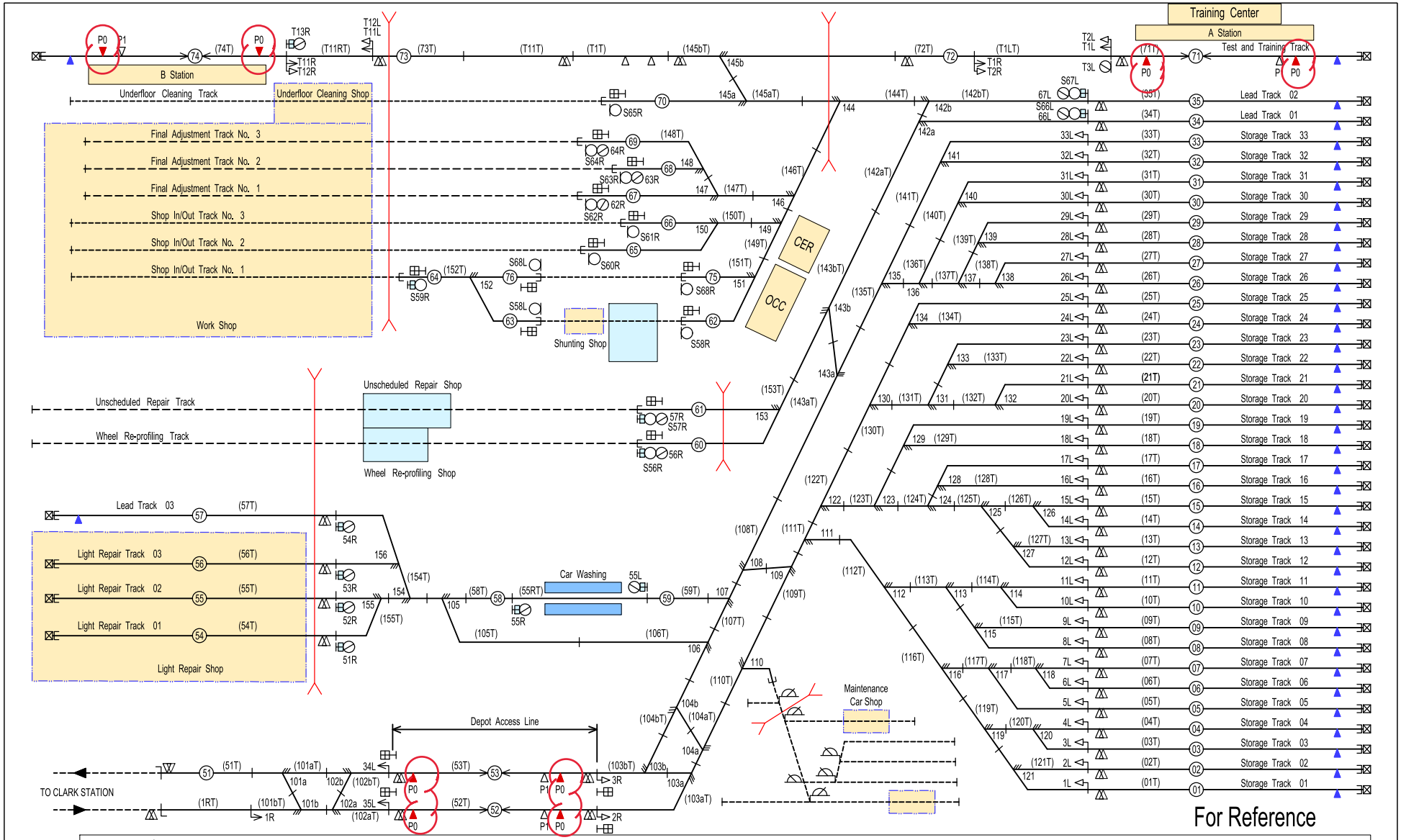
MALOLOS - CLARK RAILWAY PROJECT (MCRP)
NORTH SOUTH RAILWAY PROJECT-SOUTH (NSRP-SOUTH)

Package CP NS-01 : Bidding Documents

SIGNALLING LAYOUT IN DEPOT

DATE	21 MAY 2019
SCALE	NONE
SHEET No.	1 OF 1
DRG No.	MCRP-DWG-DEP-SIG-0001
DRG S.	-
REV	01

GBB No. 9



VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE

DEPARTMENT OF TRANSPORTATION (DOTr)

PHILIPPINE NATIONAL RAILWAYS

CONSULTANT

JICA DESIGN TEAM (JDT)

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JAPAN INTERNATIONAL CONSULTANTS FOR TRANSPORTATION CO.,LTD.

TONICHI ENGINEERING CONSULTANTS, INC.

Tokyo Metro Co.,Ltd.

TITLE	JDT	SMEC
DESIGNER	K. KERA	-
CHECK	T. MATSUMOTO	-
TEAM LEADER	T. ISHIZUKA	-
P. MANAGER	N. KAWAI	-

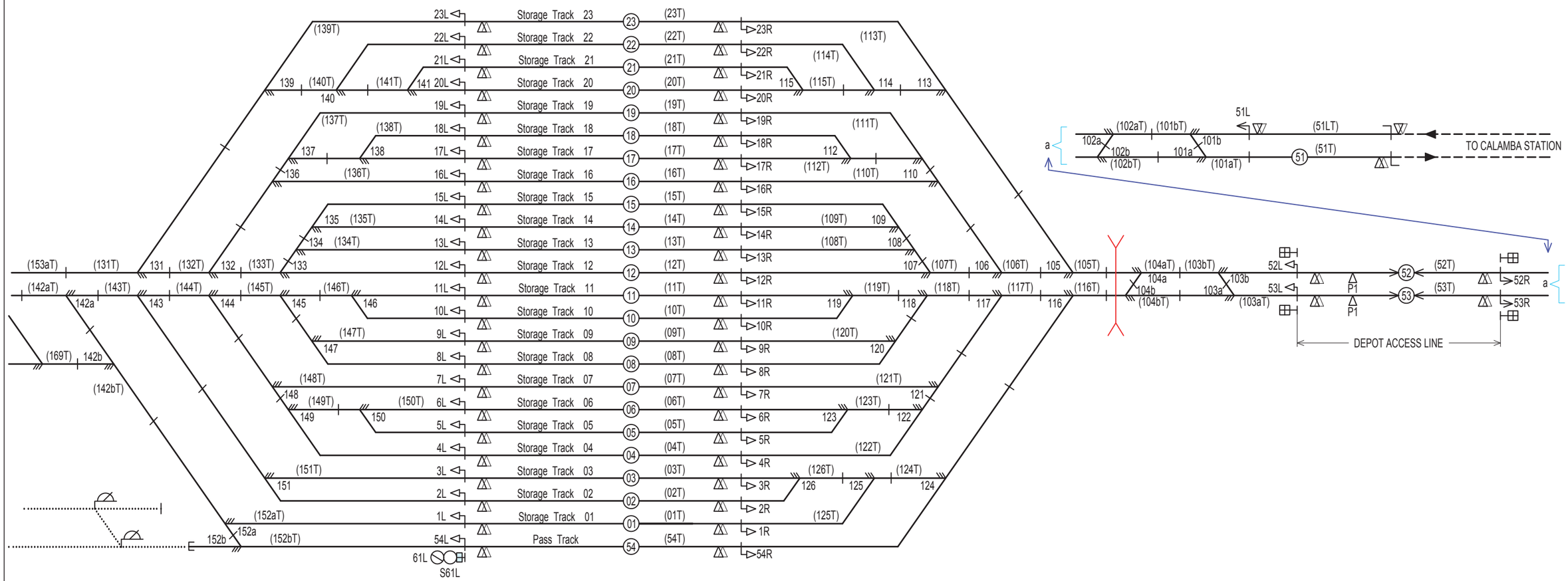
MALOLOS - CLARK RAILWAY PROJECT (MCRP)
NORTH SOUTH RAILWAY PROJECT-SOUTH (NSRP-SOUTH)

Package CP NS-01 : Bidding Documents

SIGNALLING LAYOUT IN DEPOT

DATE	21 MAY 2019
SCALE	NONE
SHEET No.	1 OF 1
DRG No.	MCRP-DWG-DEP-SIG-0001
DRG S.	-
REV	00

GPB No. 9
For Reference



LEGEND

ATO/ATP ROUTER	WAYSIDE SIGNAL FOR SHUNTING INDICATOR	POINT MACHINE WITH LEVER	BALISE FOR TRAIN POSITION CORRECTION	END OF TRACK CIRCUIT	STAFF CROSSING
ATP SHUNTING ROUTER	ROUTE INDICATOR		①~ⓝ START AND END POINT OF ROUTE	TRACK CIRCUIT	Balise for Reports Position (2 pieces installed)
WAYSIDE SIGNAL FOR SHUNTING SIGNAL	ELECTRIC POINT MACHINE	BALISE FOR ORP	BUFFER STOP	TRACK CIRCUIT IS NOT PROVIDED FOR TRAIN DETECTION (WITH CATENARY)	
			ONE STOP SIGN MARKER	TRACK CIRCUIT IS NOT PROVIDED FOR TRAIN DETECTION	

VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE
01	09 JUN 2021	ISSUED FOR REFERENCE

DEPARTMENT OF TRANSPORTATION (DOTr)

PHILIPPINE NATIONAL RAILWAYS

CONSULTANT

JICA DESIGN TEAM (JDT)

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TONICHI ENGINEERING CONSULTANTS, INC.

PACIFIC CONSULTANTS CO.,LTD.

Tokyo Metro Co.,Ltd.

TITLE	JDT	SMEC
DESIGNER	H. TSUKIOKA	-
CHECK	T. MATSUMOTO	-
TEAM LEADER	T. ISHIZUKA	-
P. MANAGER	N. KAWAI	-

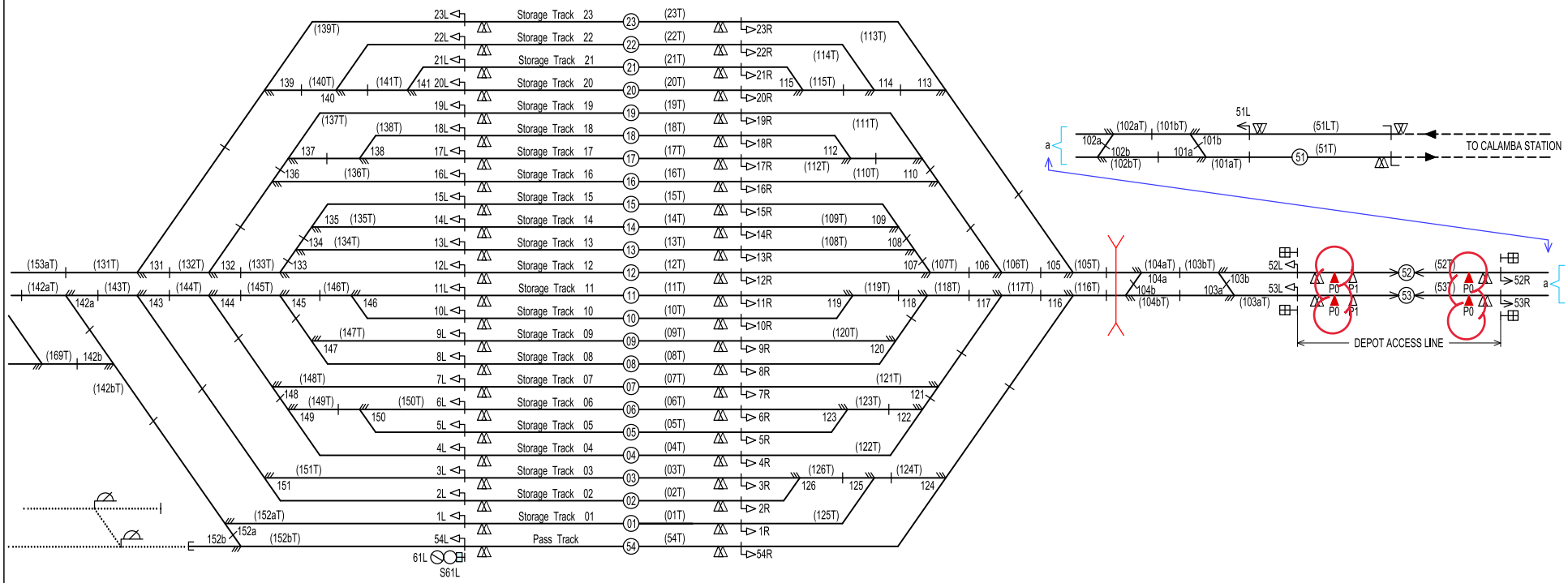
MALOLOS - CLARK RAILWAY PROJECT (MCRP)
NORTH SOUTH RAILWAY PROJECT-SOUTH (NSRP-SOUTH)

Package CP NS-01 : Bidding Documents

SIGNALING LAYOUT IN DEPOT
1/2

DATE	21 MAY 2019
SCALE	NONE
SHEET No.	1 OF 2
DRG No.	NSRP-DWG-DEP-SIG-0001
DRG S.	-
REV	01

For Reference



LEGEND

- ATO/ATP ROUTER
- ATP SHUNTING ROUTER
- WAYSIDE SIGNAL FOR SHUNTING SIGNAL
- WAYSIDE SIGNAL FOR SHUNTING INDICATOR
- ROUTE INDICATOR
- ELECTRIC POINT MACHINE
- POINT MACHINE WITH LEVER
- BALISE FOR TASC
- BALISE FOR ORP
- BALISE FOR TRAIN POSITION CORRECTION
- START AND END POINT OF ROUTE
- BUFFER STOP
- ONE STOP SIGN MARKER
- END OF TRACK CIRCUIT
- TRACK CIRCUIT
- TRACK CIRCUIT IS NOT PROVIDED FOR TRAIN DETECTION (WITH CATENARY)
- TRACK CIRCUIT IS NOT PROVIDED FOR TRAIN DETECTION
- STAFF CROSSING
- Balise for Reports Position (2 pieces installed)

VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE

DEPARTMENT OF TRANSPORTATION (DOTr)

PHILIPPINE NATIONAL RAILWAYS

CONSULTANT

JICA DESIGN TEAM (JDT)

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PACIFIC CONSULTANTS CO.,LTD.

Tokyo Metro Co.,Ltd.

TITLE	JDT	SMEC
DESIGNER	H. TSUKIOKA	-
CHECK	T. MATSUMOTO	-
TEAM LEADER	T. ISHIZUKA	-
P. MANAGER	N. KAWAI	-

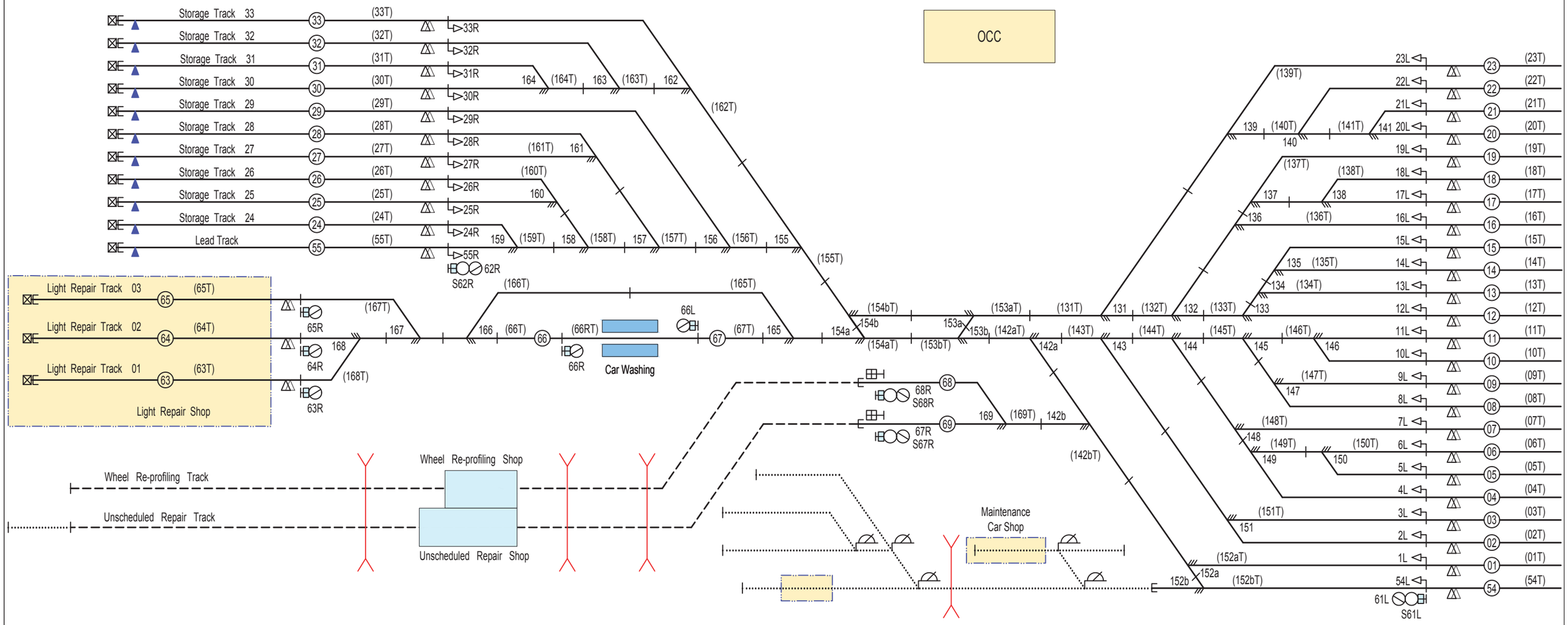
MALOLOS - CLARK RAILWAY PROJECT (MCRP)
NORTH SOUTH RAILWAY PROJECT-SOUTH (NSRP-SOUTH)

Package CP NS-01 : Bidding Documents

SIGNALING LAYOUT IN DEPOT
1/2

DATE	21 MAY 2019
SCALE	NONE
SHEET No.	1 OF 2
DRG No.	NSRP-DWG-DEP-SIG-0001
DRG S.	-
REV	00

GPB No. 9
For Reference



LEGEND

- ATO/ATP ROUTER
- ATP SHUNTING ROUTER
- WAYSIDE SIGNAL FOR SHUNTING SIGNAL
- WAYSIDE SIGNAL FOR SHUNTING INDICATOR
- ROUTE INDICATOR
- ELECTRIC POINT MACHINE
- POINT MACHINE WITH LEVER
- BALISE FOR ORP
- BALISE FOR TRAIN POSITION CORRECTION
- ①~ⓝ START AND END POINT OF ROUTE
- BUFFER STOP
- ONE STOP SIGN MARKER
- END OF TRACK CIRCUIT
- TRACK CIRCUIT
- TRACK CIRCUIT IS NOT PROVIDED FOR TRAIN DETECTION (WITH CATENARY)
- TRACK CIRCUIT IS NOT PROVIDED FOR TRAIN DETECTION
- STAFF CROSSING
- Balise for Reports Position (2 pieces installed)

VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE
01	09 JUN 2021	ISSUED FOR REFERENCE

DEPARTMENT OF TRANSPORTATION (DOTr)

PHILIPPINE NATIONAL RAILWAYS

CONSULTANT

JICA DESIGN TEAM (JDT)

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Tokyo Metro Co.,Ltd.

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DESIGNER	H. TSUKIOKA	-
CHECK	T. MATSUMOTO	-
TEAM LEADER	T. ISHIZUKA	-
P. MANAGER	N. KAWAI	-

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

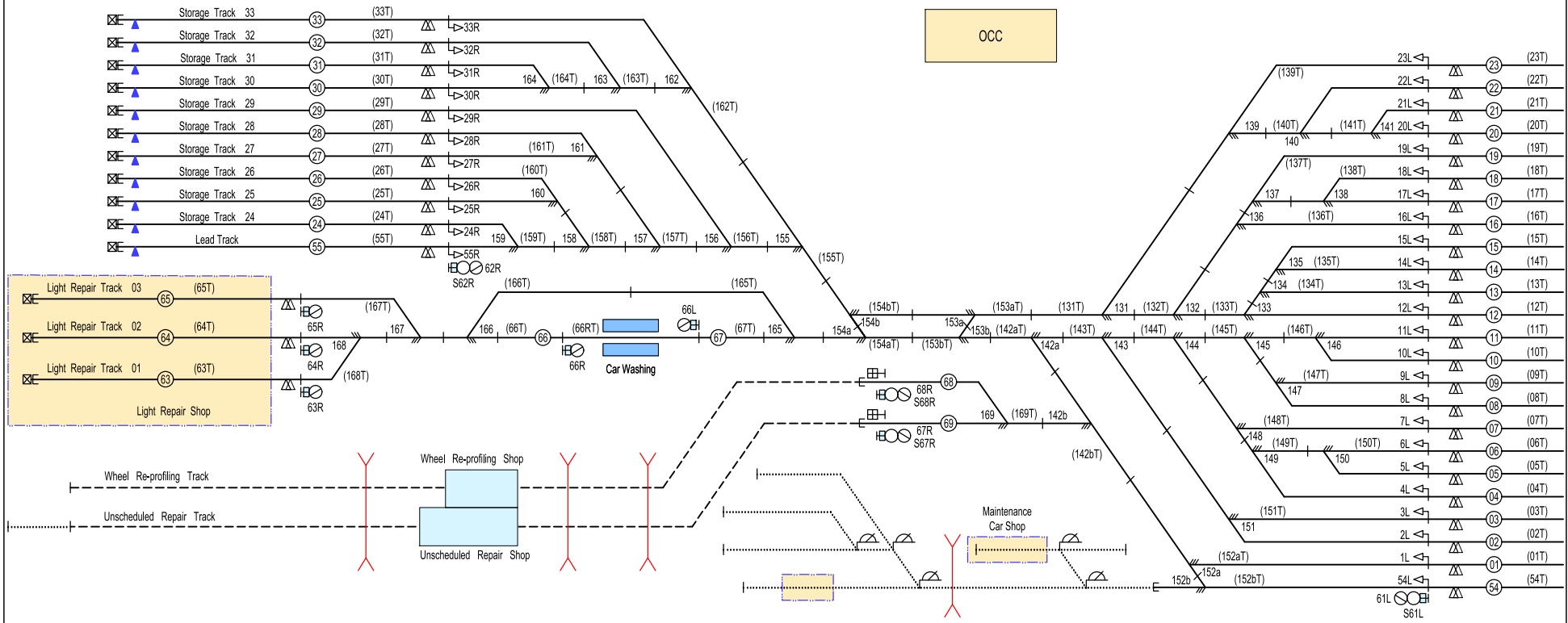
Package CP NS-01 : Bidding Documents

SIGNALING LAYOUT IN DEPOT
2/2

DATE	21 MAY 2019
SCALE	NONE
SHEET No.	2 OF 2
DRG No.	NSRP-DWG-DEP-SIG-0002
DRG S.	-
REV	01

GBB No. 9

For Reference



LEGEND

- ATO/ATP ROUTER
- ATP SHUNTING ROUTER
- WAYSIDE SIGNAL FOR SHUNTING SIGNAL
- WAYSIDE SIGNAL FOR SHUNTING INDICATOR
- ROUTE INDICATOR
- ELECTRIC POINT MACHINE
- POINT MACHINE WITH LEVER
- BALISE FOR TASC
- BALISE FOR ORP
- BALISE FOR TRAIN POSITION CORRECTION
- ① ~ ⓝ START AND END POINT OF ROUTE
- BUFFER STOP
- ONE STOP SIGN MARKER
- END OF TRACK CIRCUIT
- TRACK CIRCUIT
- TRACK CIRCUIT IS NOT PROVIDED FOR TRAIN DETECTION (WITH CATENARY)
- TRACK CIRCUIT IS NOT PROVIDED FOR TRAIN DETECTION
- STAFF CROSSING
- Balise for Reports Position (2 pieces installed)

VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE

DEPARTMENT OF TRANSPORTATION (DOTr)

PHILIPPINE NATIONAL RAILWAYS

CONSULTANT

JICA DESIGN TEAM (JDT)

ORIENTAL CONSULTANTS GLOBAL CO.,LTD.

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TONICHI ENGINEERING CONSULTANTS, INC.

PACIFIC CONSULTANTS CO.,LTD.

Tokyo Metro Co.,Ltd.

TITLE	JDT	SMEC
DESIGNER	H. TSUKIOKA	-
CHECK	T. MATSUMOTO	-
TEAM LEADER	T. ISHIZUKA	-
P. MANAGER	N. KAWAI	-

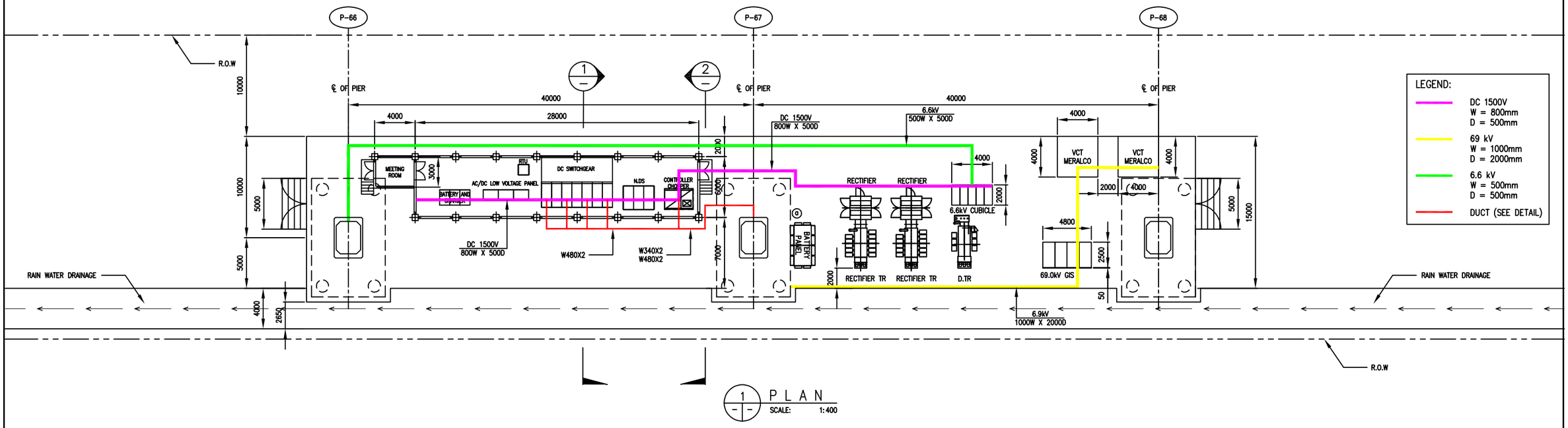
MALOLOS - CLARK RAILWAY PROJECT (MCRP)
NORTH SOUTH RAILWAY PROJECT-SOUTH (NSRP-SOUTH)

Package CP NS-01 : Bidding Documents

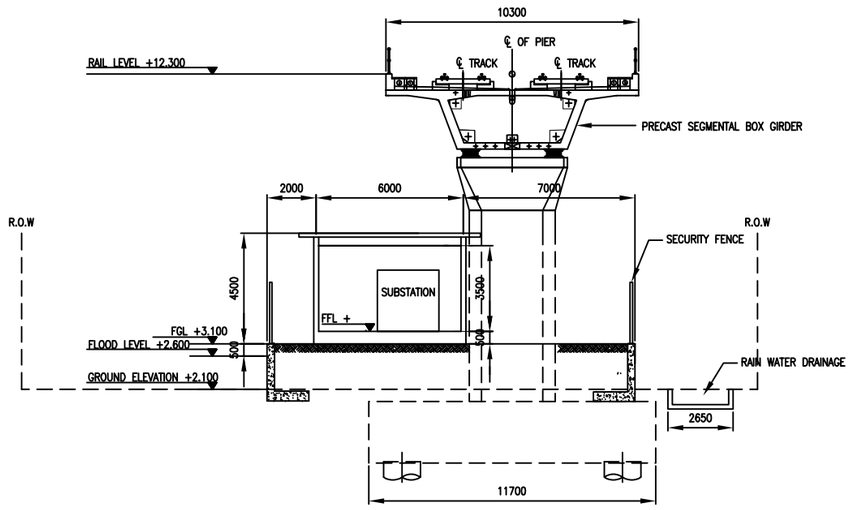
SIGNALING LAYOUT IN DEPOT
2/2

DATE	21 MAY 2019
SCALE	NONE
SHEET No.	2 OF 2
DRG No.	NSRP-DWG-DEP-SIG-0002
DRG S.	-
REV	00

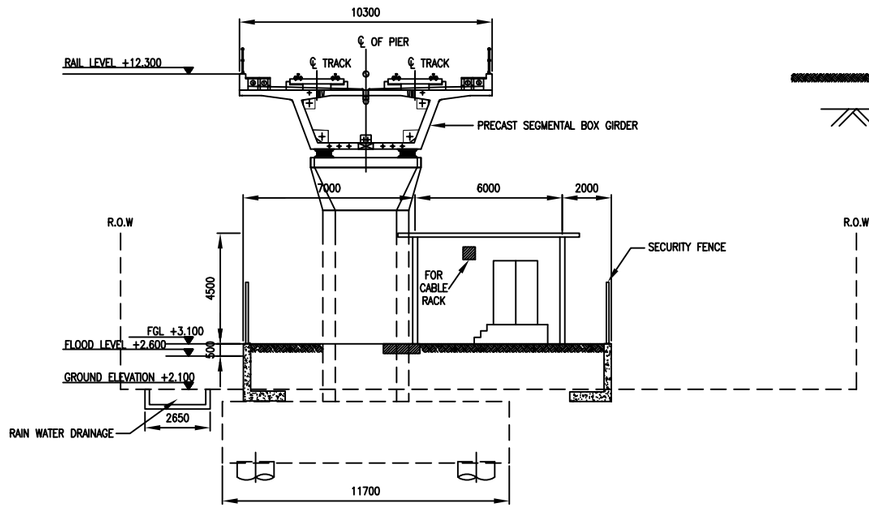
GBB No. 9



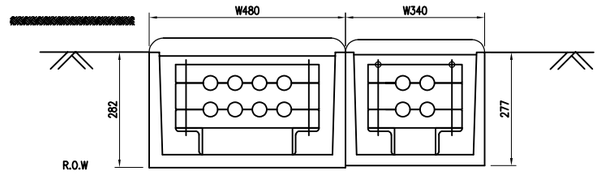
1 — PLAN
SCALE: 1:400



2 — SECTION-1
SCALE: 1:250



3 — SECTION-2
SCALE: 1:250



4 — DUCT DETAIL
SCALE: 1:15

FOR REFERENCE

VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE
01	09 JUN 2021	RESISTOR CHANGED TO BATTERY POST

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	M.OGIKUBO	–
CHECK	T.MATSUMOTO	–
TEAM LEADER	T.ISHIZUKA	–
P. MANAGER	N.KAWAI	–

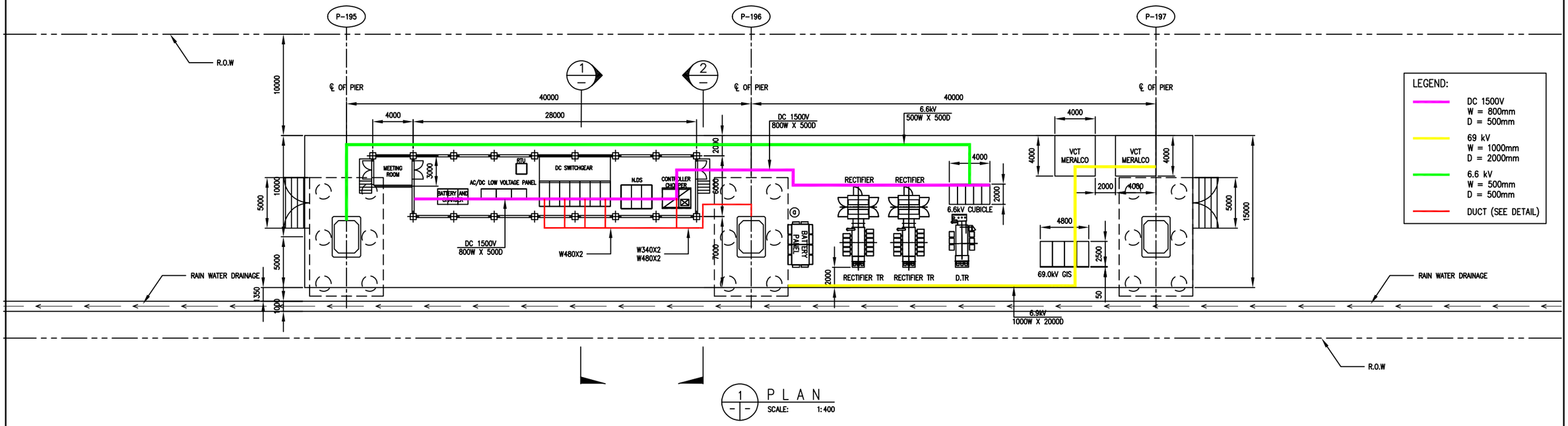
MALOLOS – CLARK RAILWAY PROJECT (MCRP)
NORTH SOUTH RAILWAY PROJECT-SOUTH (NSRP-SOUTH)

Package CP NS-01 : Bidding Documents

SUBSTATION LAYOUT
(SS No. S10)

DATE	16 MAY 2019
SCALE	AS SHOWN
SHEET No.	18 OF 40
DRG No.	MCRP-DWG-C/M-PSS-2101
DRG S.	–
REV	01

GBB No. 9



1 PLAN
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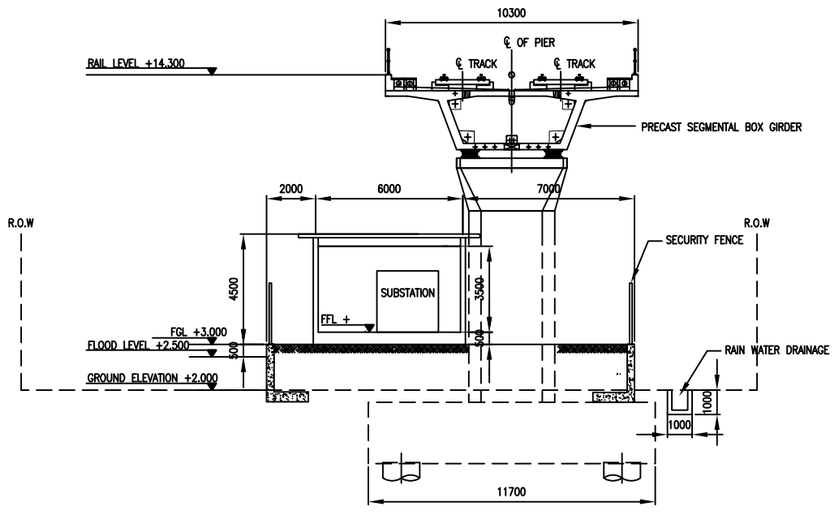

2 SECTION-1
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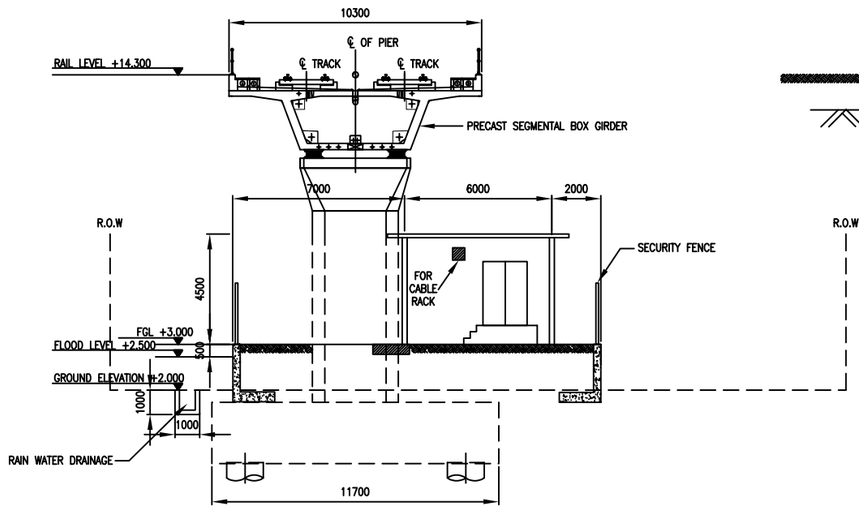

3 SECTION-2
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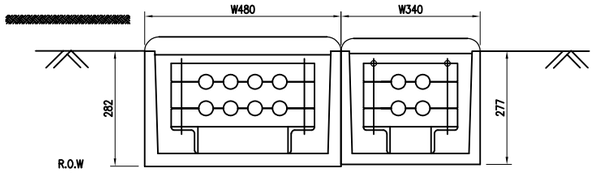


4 DUCT DETAIL
SCALE: 1:15

FOR REFERENCE

VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE
01	09 JUN 2021	RESISTOR CHANGED TO BATTERY POST

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	M.OGIKUBO	–
CHECK	T.MATSUMOTO	–
TEAM LEADER	T.ISHIZUKA	–
P. MANAGER	N.KAWAI	–

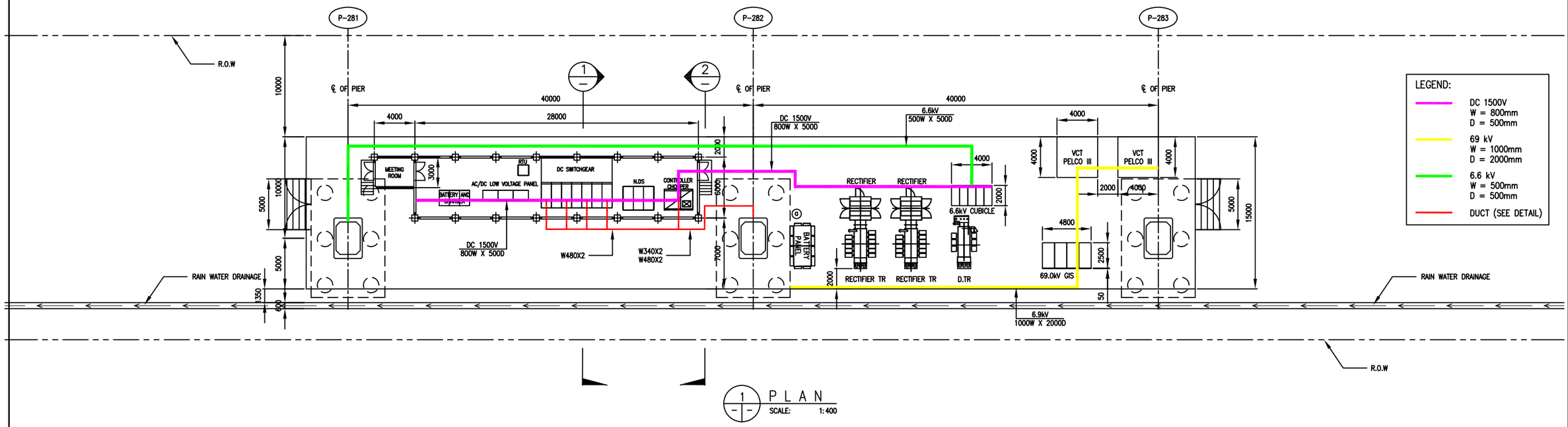
MALOLOS – CLARK RAILWAY PROJECT (MCRP)
NORTH SOUTH RAILWAY PROJECT–SOUTH (NSRP–SOUTH)

Package CP NS–01 : Bidding Documents

SUBSTATION LAYOUT
(SS No. S11)

DATE 16 APRIL 2019
SCALE AS SHOWN
SHEET No. 19 OF 40
DRG No. MCRP–DWG–A/C–PSS–2102
DRG S. –
REV 01

GBB No. 9



1 PLAN
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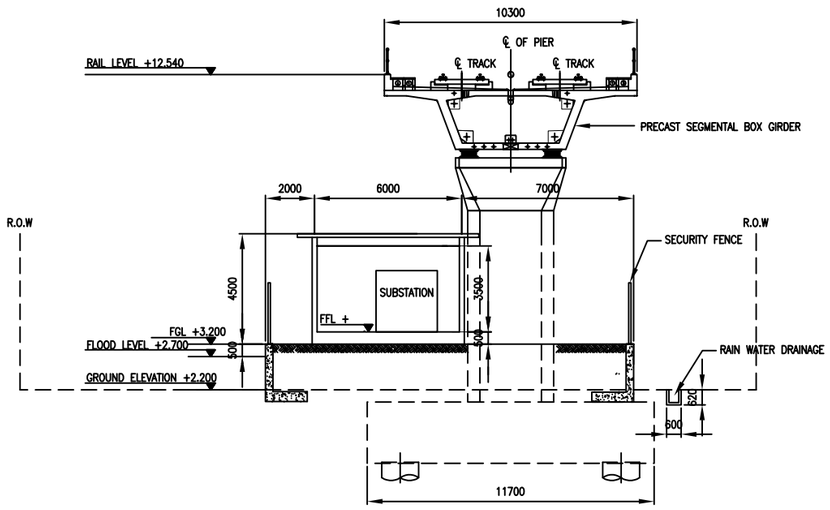
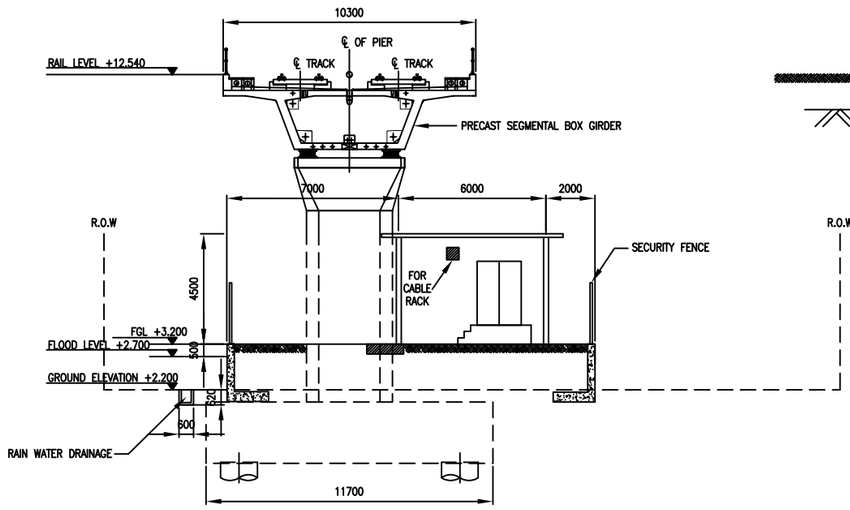
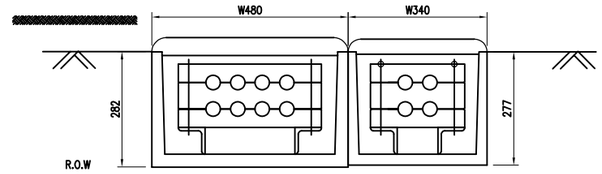


2 SECTION-1
SCALE: 1: 250



3 SECTION-2
SCALE: 1: 250



4 DUCT DETAIL
SCALE: 1: 15

FOR REFERENCE

VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE
01	09 JUN 2021	RESISTOR CHANGED TO BATTERY POST

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	M.OGIKUBO	–
CHECK	T.MATSUMOTO	–
TEAM LEADER	T.ISHIZUKA	–
P. MANAGER	N.KAWAI	–

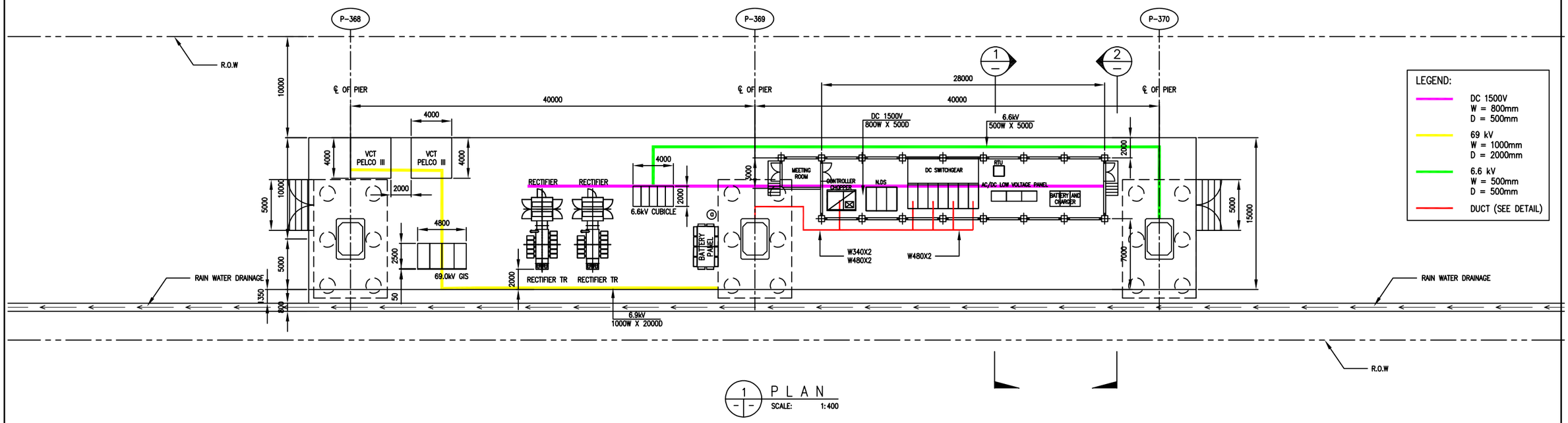
MALOLOS – CLARK RAILWAY PROJECT (MCRP)
NORTH SOUTH RAILWAY PROJECT-SOUTH (NSRP-SOUTH)

Package CP NS-01 : Bidding Documents

SUBSTATION LAYOUT
(SS No. S12)

DATE: 16 MAY 2019
SCALE: AS SHOWN
SHEET No.: 20 OF 40
DRG No.: MCRP-DWG-A/C-PSS-2103
DRG S.: –
REV: 01

GBB No. 9



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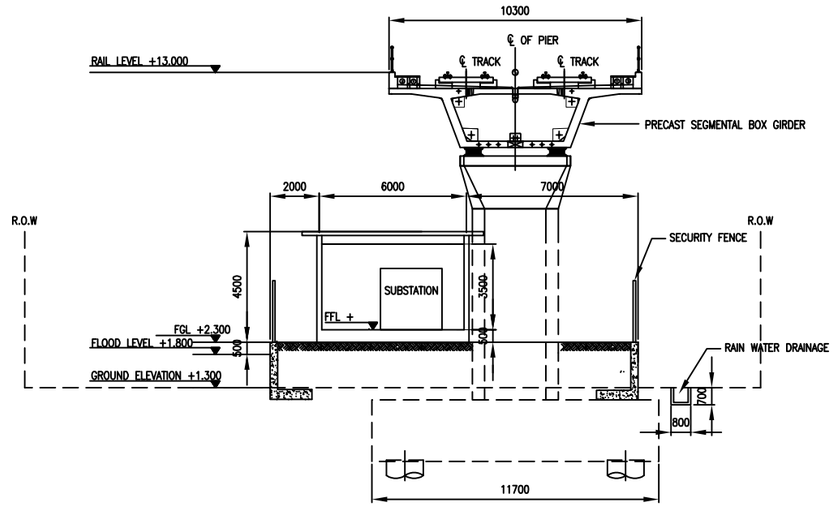
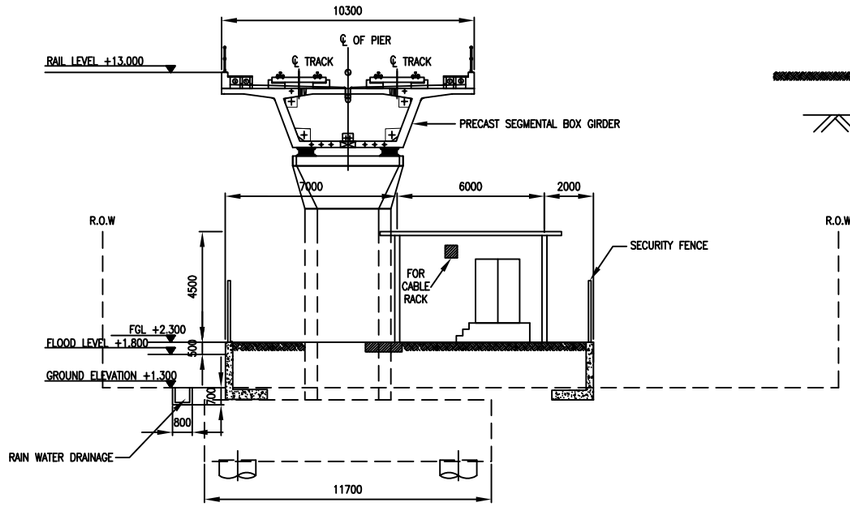
SCALE: 1:400



2 — SECTION-1
SCALE: 1: 250



3 — SECTION-2
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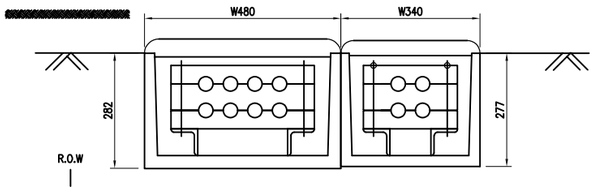


4 — DUCT DETAIL
SCALE: 1: 15

FOR REFERENCE

VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE
01	09 JUN 2021	RESISTOR CHANGED TO BATTERY POST

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	M.OGIKUBO	–
CHECK	T.MATSUMOTO	–
TEAM LEADER	T.ISHIZUKA	–
P. MANAGER	N.KAWAI	–

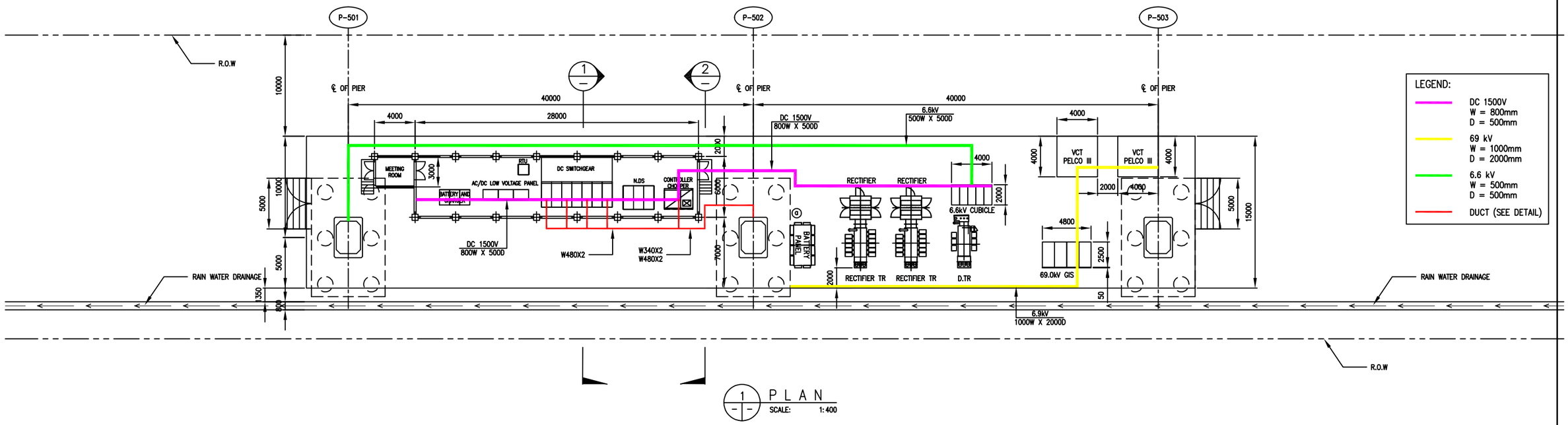
MALOLOS – CLARK RAILWAY PROJECT (MCRP)
NORTH SOUTH RAILWAY PROJECT–SOUTH (NSRP–SOUTH)

Package CP NS–01 : Bidding Documents

SUBSTATION LAYOUT
(SS No. S13)

DATE 15 APRIL 2019
SCALE AS SHOWN
SHEET No. 21 OF 40
DRG No. MCRP–DWG–S/A–PSS–2104
DRG S. – REV 01

GBB No. 9



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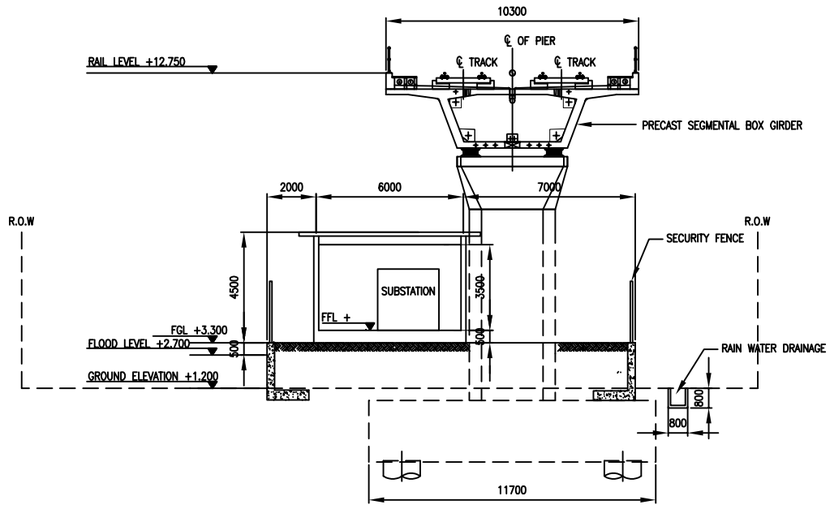

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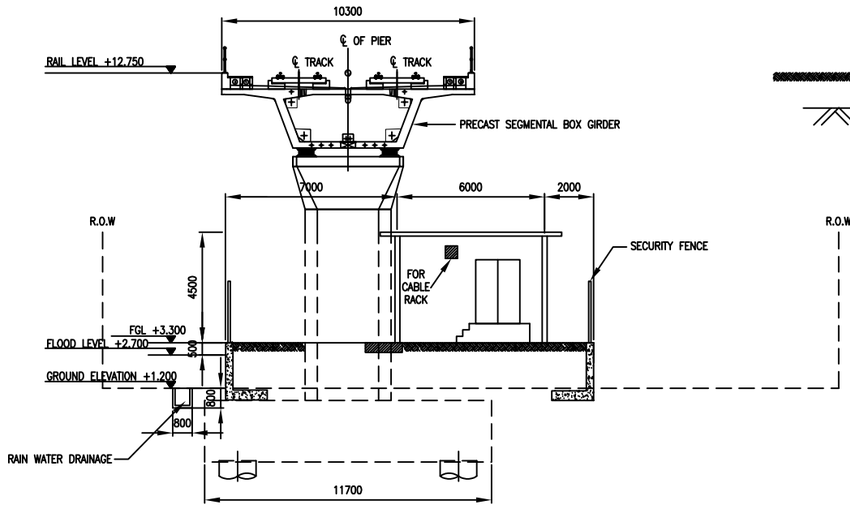
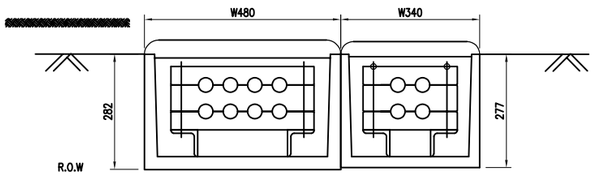
SCALE: 1:250



3 SECTION-2
SCALE: 1:250



4 DUCT DETAIL
SCALE: 1:15

FOR REFERENCE

VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE
01	09 JUN 2021	RESISTOR CHANGED TO BATTERY POST

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	M.OGIKUBO	–
CHECK	T.MATSUMOTO	–
TEAM LEADER	T.ISHIZUKA	–
P. MANAGER	N.KAWAI	–

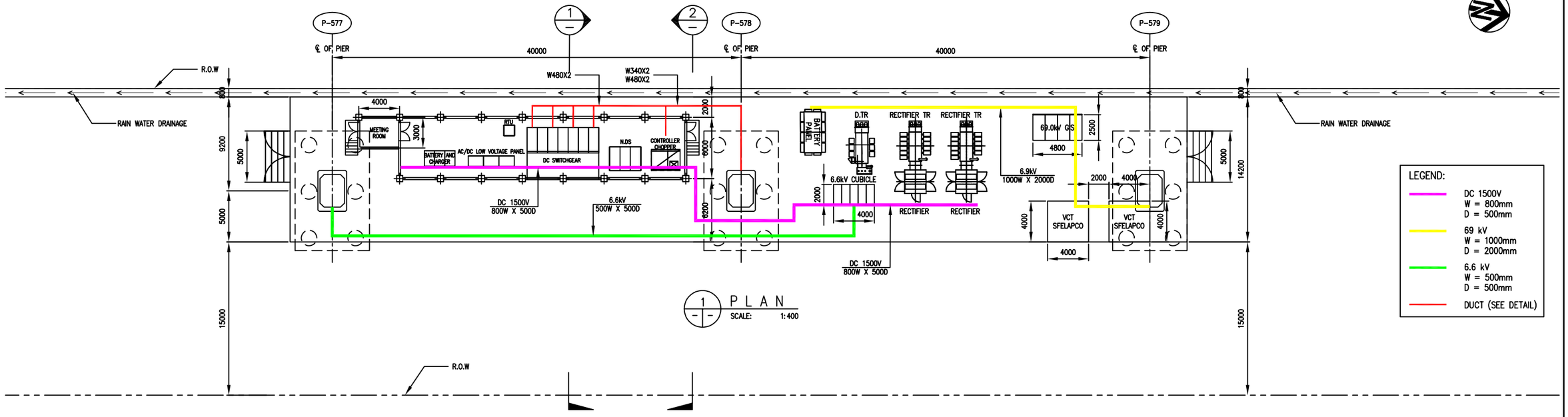
MALOLOS – CLARK RAILWAY PROJECT (MCRP)
NORTH SOUTH RAILWAY PROJECT-SOUTH (NSRP-SOUTH)

Package CP NS-01 : Bidding Documents

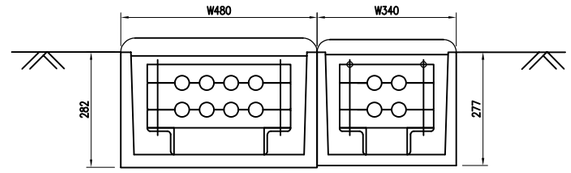
SUBSTATION LAYOUT
(SS No. S14)

DATE 16 MAY 2019
SCALE AS SHOWN
SHEET No. 22 OF 40
DRG No. MCRP-DWG-S/A-PSS-2105
DRG S. –
REV 01

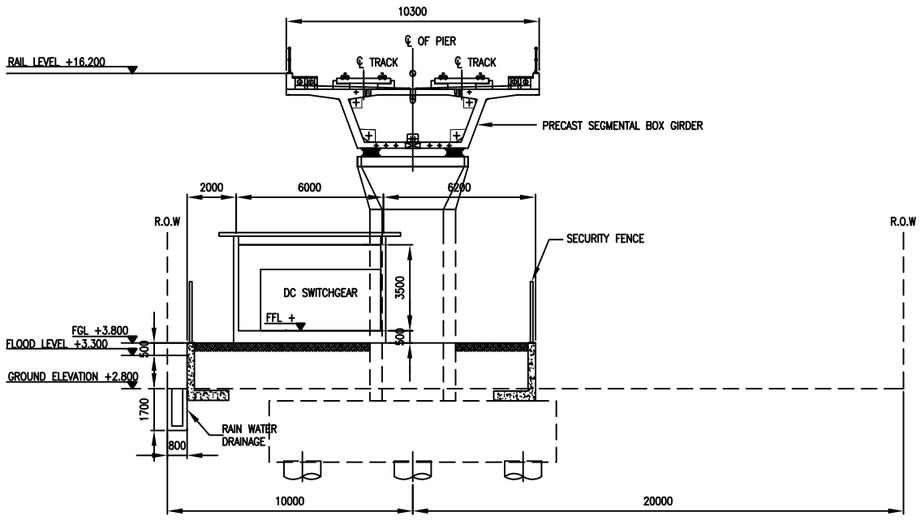
GBB No. 9



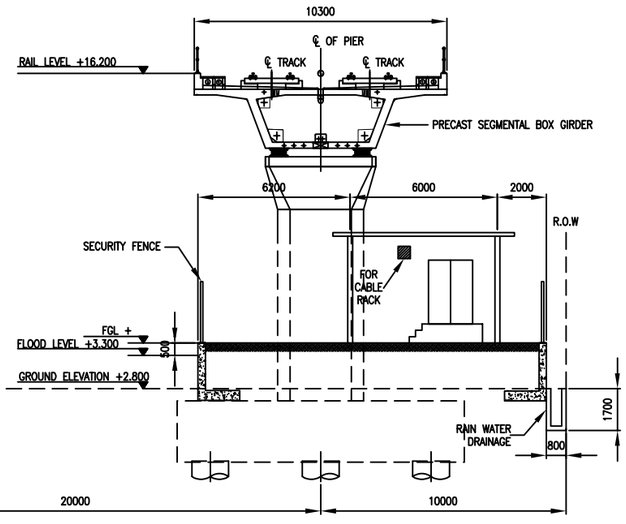
1 PLAN
SCALE: 1:400



4 DUCT DETAIL
SCALE: 1:15



2 SECTION-1
SCALE: 1: 250



3 SECTION-2
SCALE: 1: 250

FOR REFERENCE

VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE
01	09 JUN 2021	RESISTOR CHANGED TO BATTERY POST

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	M.OGIKUBO	–
CHECK	T.MATSUMOTO	–
TEAM LEADER	T.ISHIZUKA	–
P. MANAGER	N.KAWAI	–

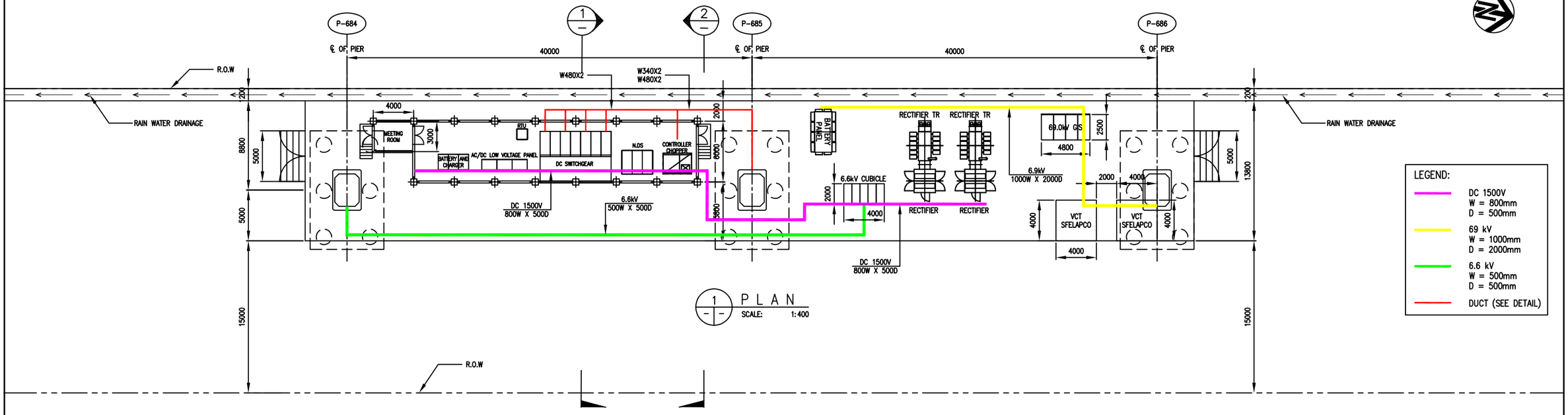
MALOLOS – CLARK RAILWAY PROJECT (MCRP)
NORTH SOUTH RAILWAY PROJECT–SOUTH (NSRP–SOUTH)

Package CP NS–01 : Bidding Documents

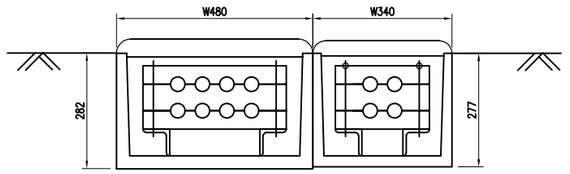
SUBSTATION LAYOUT
(SS No. S15)

DATE: 16 MAY 2019
SCALE: AS SHOWN
SHEET No.: 23 OF 40
DRG No.: MCRP–DWG–S/A–PSS–2106
DRG S.: –
REV: 01

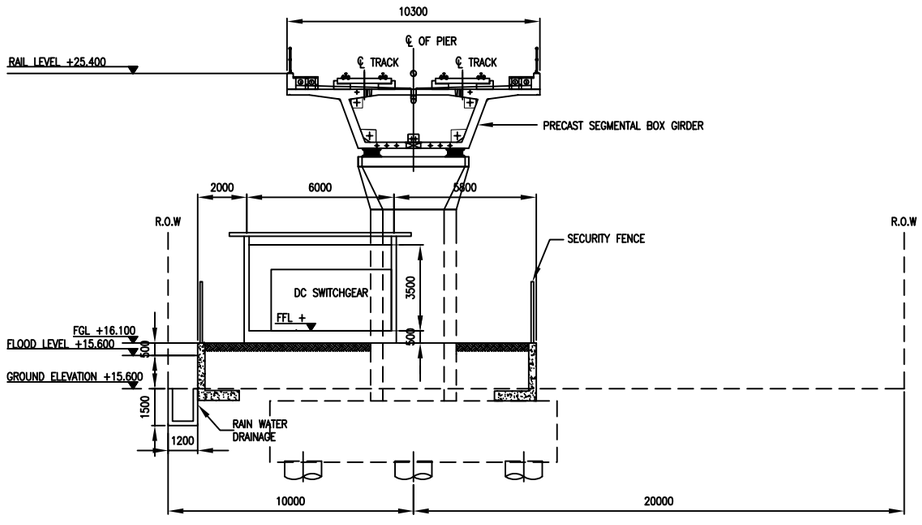
GBB No. 9



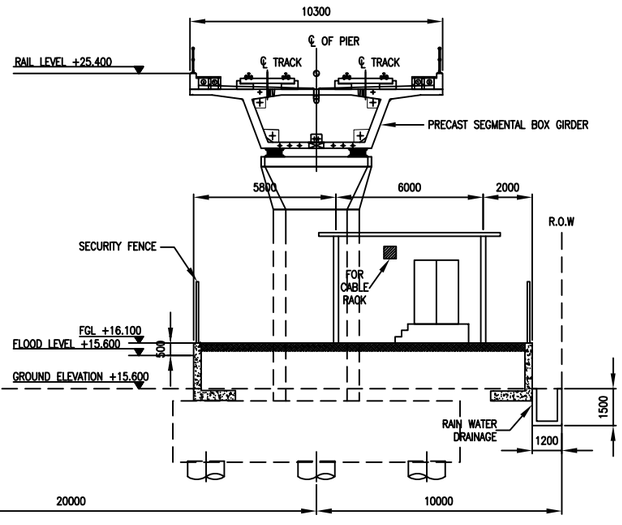
1 — PLAN
SCALE: 1:400



4 — DUCT DETAIL
SCALE: 1: 15



2 — SECTION–1
SCALE: 1: 250



3 — SECTION–2
SCALE: 1: 250

FOR REFERENCE

VERSIONS	DATE	DESCRIPTION
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01	09 JUN 2021	RESISTOR CHANGED TO BATTERY POST

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	M.OGIKUBO	–
CHECK	T.MATSUMOTO	–
TEAM LEADER	T.ISHIZUKA	–
P. MANAGER	N.KAWAI	–

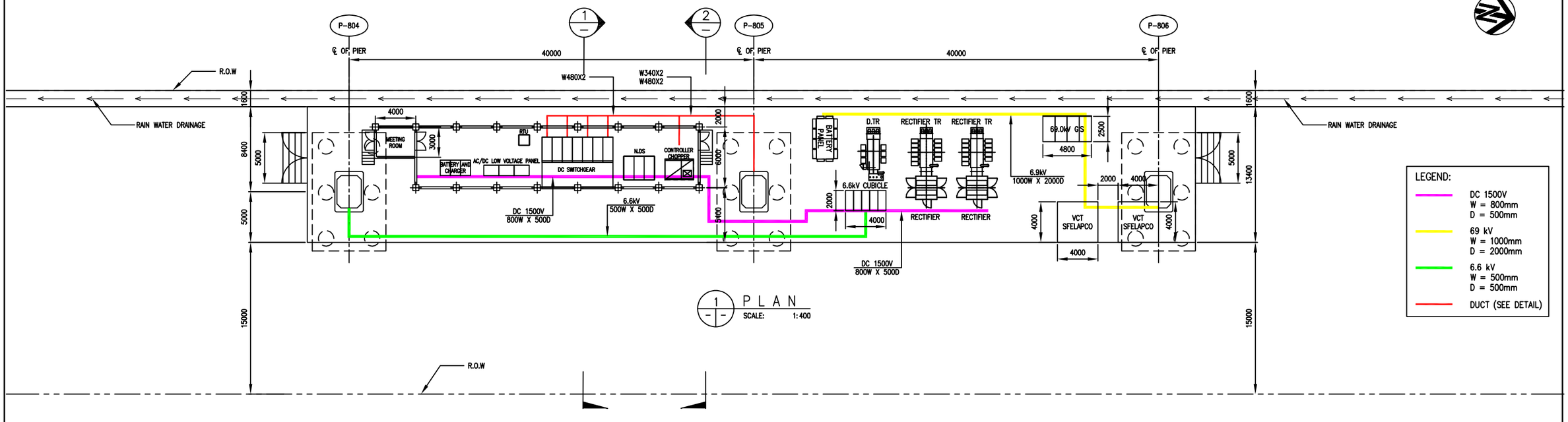
MALOLOS – CLARK RAILWAY PROJECT (MCRP)
NORTH SOUTH RAILWAY PROJECT–SOUTH (NSRP–SOUTH)

Package CP NS–01 : Bidding Documents

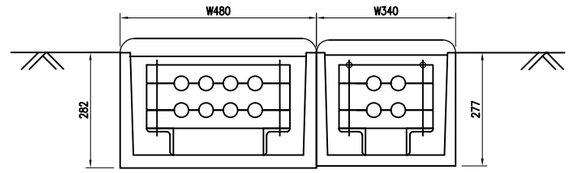
SUBSTATION LAYOUT
(SS No. S16)

DATE: 16 MAY 2019
SCALE: AS SHOWN
SHEET No.: 24 OF 40
DRG No.: MCRP–DWG–A/S–PSS–2107
DRG S.: –
REV: 01

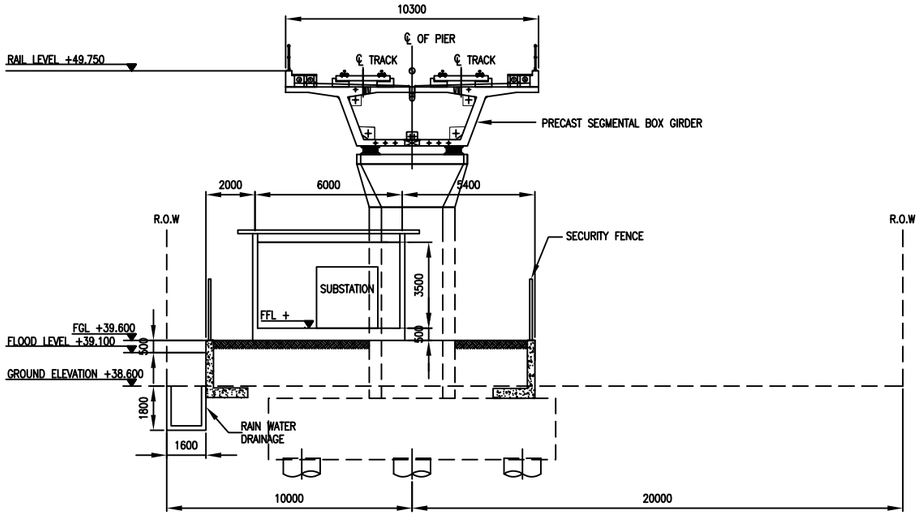
GBB No. 9



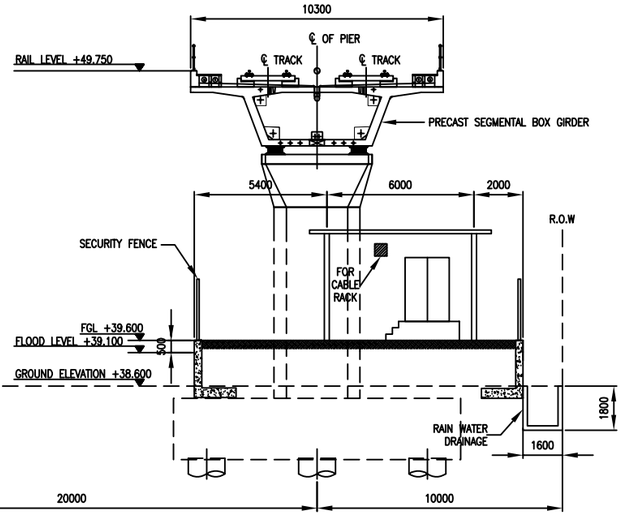
1 — PLAN
SCALE: 1: 400



4 — DUCT DETAIL
SCALE: 1: 15



2 — SECTION–1
SCALE: 1: 250



3 — SECTION–2
SCALE: 1: 250

FOR REFERENCE

VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE
01	09 JUN 2021	RESISTOR CHANGED TO BATTERY POST

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	M.OGIKUBO	–
CHECK	T.MATSUMOTO	–
TEAM LEADER	T.ISHIZUKA	–
P. MANAGER	N.KAWAI	–

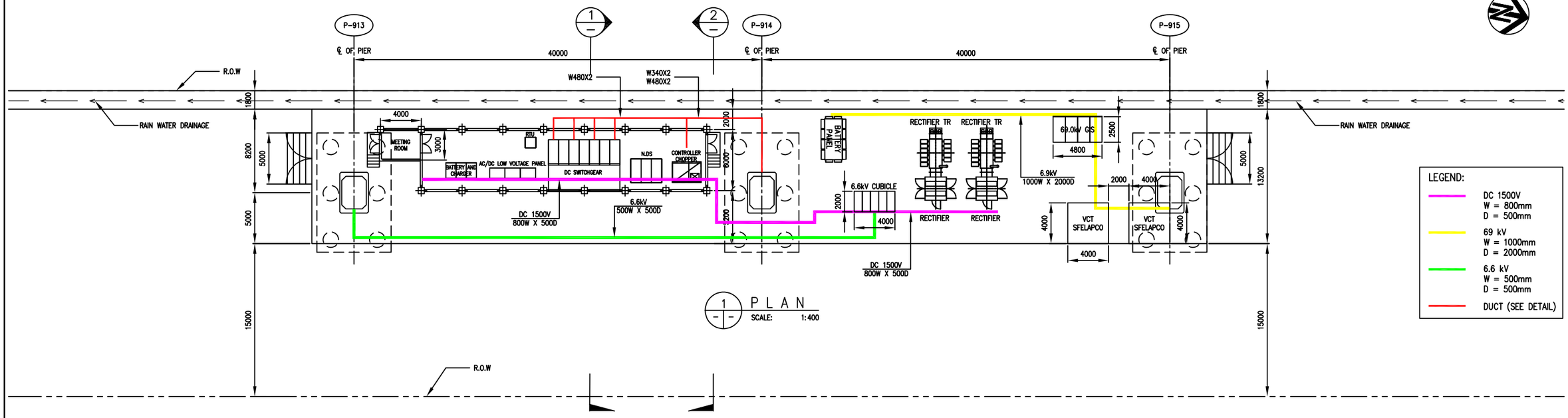
MALOLOS – CLARK RAILWAY PROJECT (MCRP)
NORTH SOUTH RAILWAY PROJECT–SOUTH (NSRP–SOUTH)

Package CP NS–01 : Bidding Documents

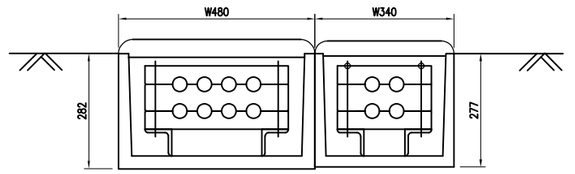
SUBSTATION LAYOUT
(SS No. S17)

DATE	16 MAY 2019
SCALE	AS SHOWN
SHEET No.	25 OF 40
DRG No.	MCRP–DWG–A/S–PSS–2108
DRG S.	–
REV	01

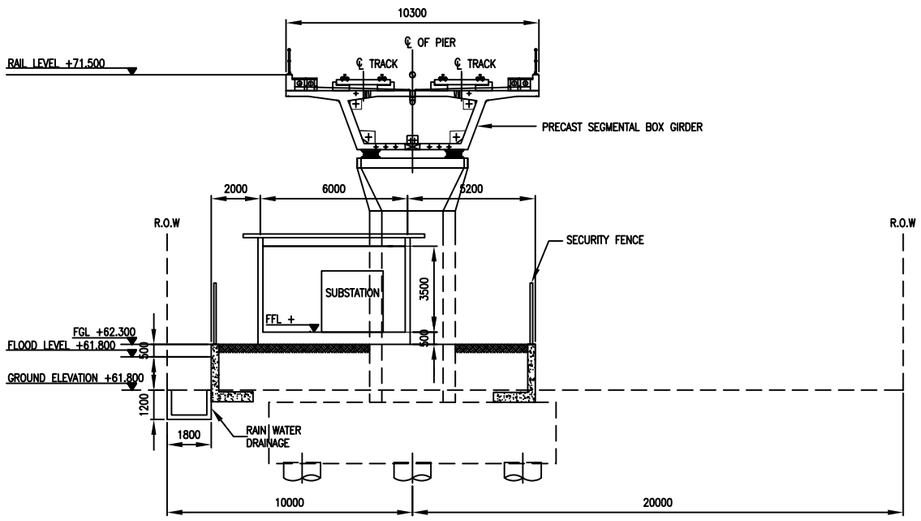
GBB No. 9



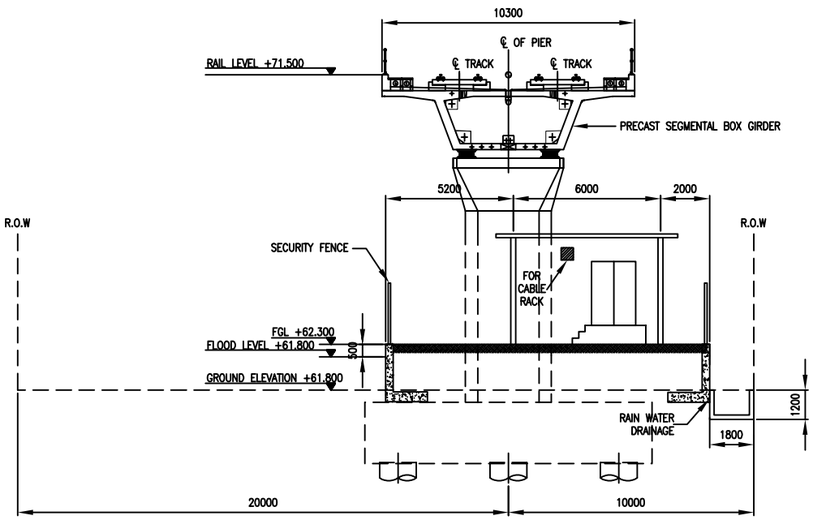
1 PLAN
SCALE: 1:400



4 DUCT DETAIL
SCALE: 1:15



2 SECTION-1
SCALE: 1: 250



3 SECTION-2
SCALE: 1: 250

FOR REFERENCE

VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE
01	09 JUN 2021	RESISTOR CHANGED TO BATTERY POST

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	M.OGIKUBO	–
CHECK	T.MATSUMOTO	–
TEAM LEADER	T.ISHIZUKA	–
P. MANAGER	N.KAWAI	–

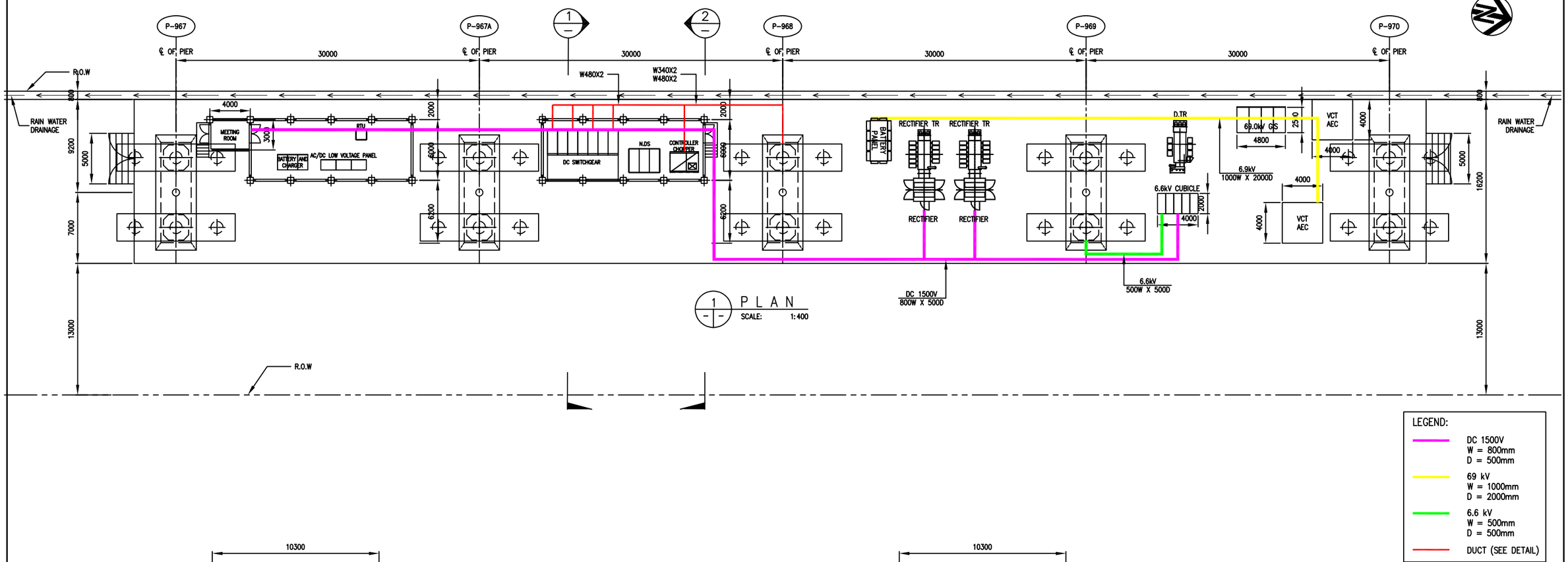
MALOLOS – CLARK RAILWAY PROJECT (MCRP)
NORTH SOUTH RAILWAY PROJECT–SOUTH (NSRP–SOUTH)

Package CP NS–01 : Bidding Documents

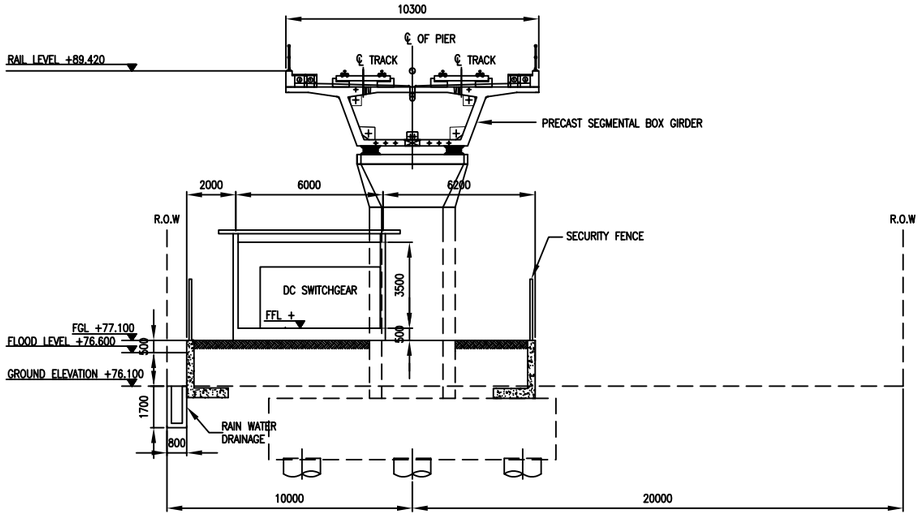
SUBSTATION LAYOUT
(SS No. S18)

DATE	16 MAY 2019
SCALE	AS SHOWN
SHEET No.	26 OF 40
DRG No.	MCRP–DWG–A/S–PSS–2109
DRG S.	–
REV	01

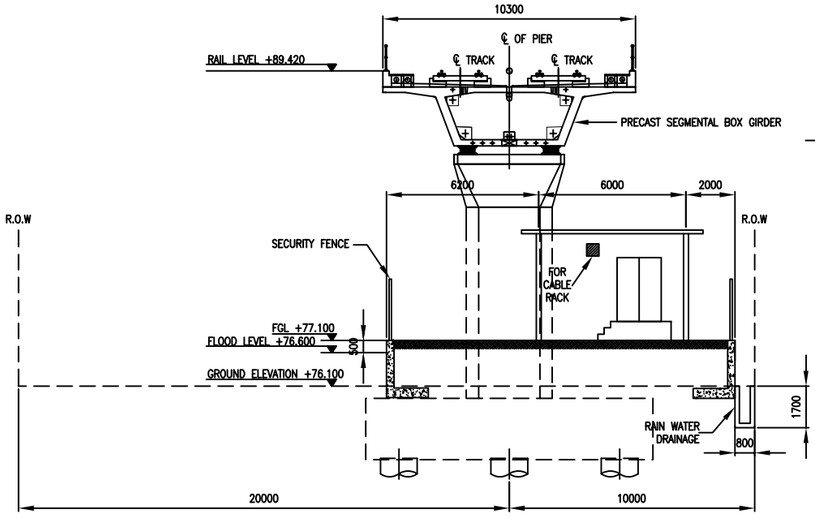
GBB No. 9



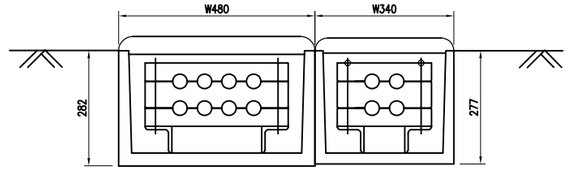
1 PLAN
SCALE: 1:400



2 SECTION–1
SCALE: 1: 250



3 SECTION–2
SCALE: 1: 250



4 DUCT DETAIL
SCALE: 1: 15

LEGEND:
- DC 1500V W = 800mm D = 500mm
- 69 kV W = 1000mm D = 2000mm
- 6.6 kV W = 500mm D = 500mm
- DUCT (SEE DETAIL)

FOR REFERENCE

VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE
01	09 JUN 2021	RESISTOR CHANGED TO BATTERY POST

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	M.OGIKUBO	–
CHECK	T.MATSUMOTO	–
TEAM LEADER	T.ISHIZUKA	–
P. MANAGER	N.KAWAI	–

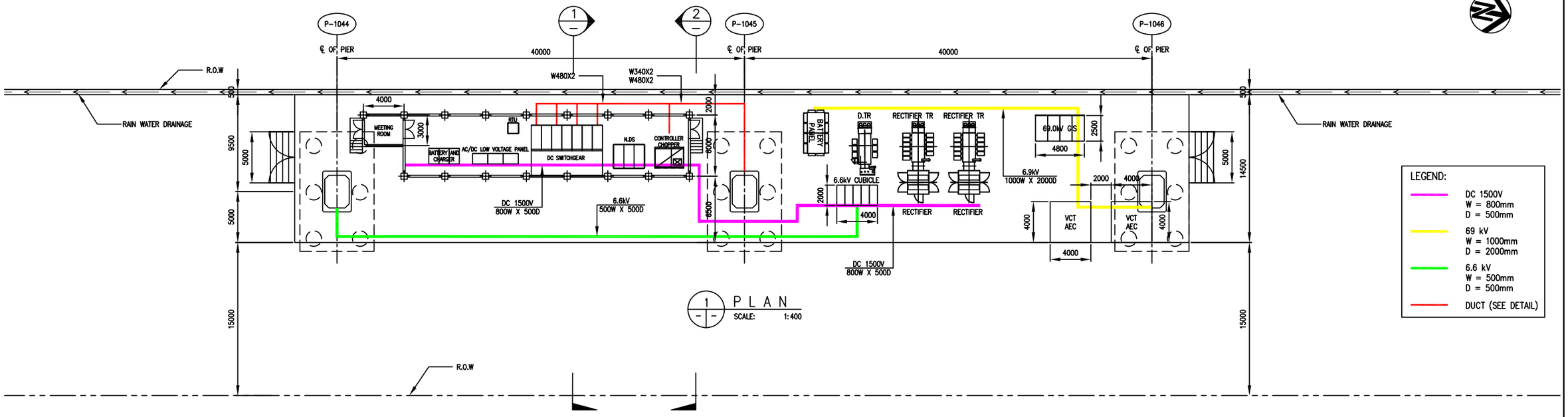
MALOLOS – CLARK RAILWAY PROJECT (MCRP)
NORTH SOUTH RAILWAY PROJECT–SOUTH (NSRP–SOUTH)

Package CP NS–01 : Bidding Documents

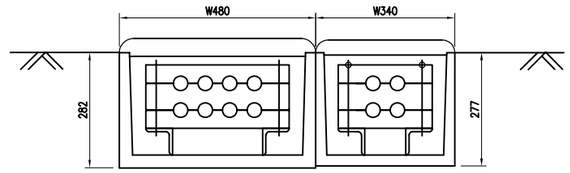
SUBSTATION LAYOUT
(SS No. S19)

DATE: 16 MAY 2019
SCALE: AS SHOWN
SHEET No.: 27 OF 40
DRG No.: MCRP–DWG–A/S–PSS–2110
DRG S.: –
REV: 01

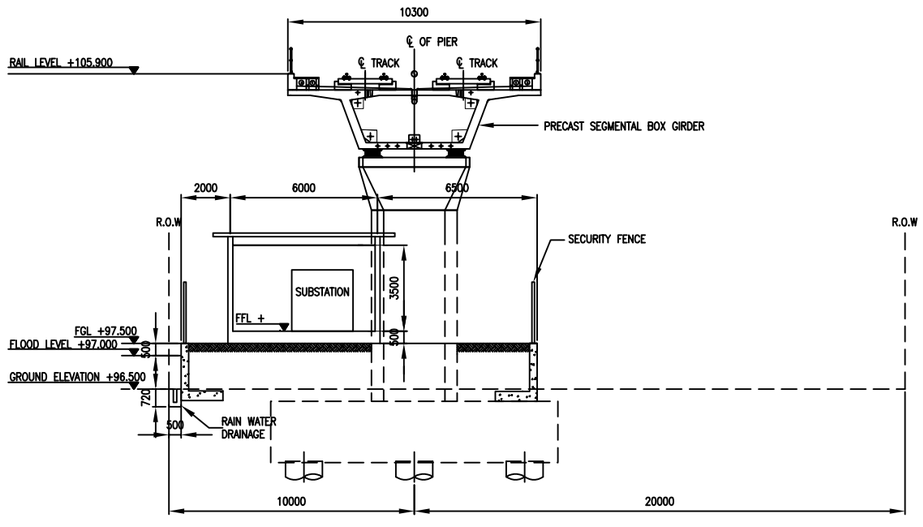
GBB No. 9



1 — PLAN
SCALE: 1:400



4 — DUCT DETAIL
SCALE: 1:15



2 — SECTION-1
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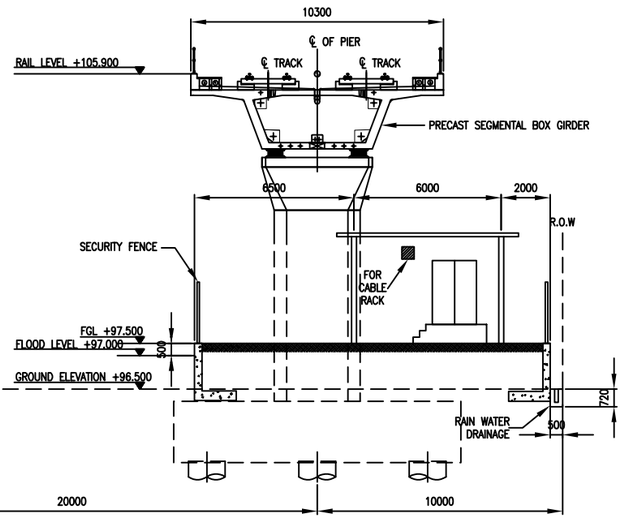

3 — SECTION-2
SCALE: 1:250

FOR REFERENCE

VERSIONS	DATE	DESCRIPTION
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01	09 JUN 2021	RESISTOR CHANGED TO BATTERY POST

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	M.OGIKUBO	–
CHECK	T.MATSUMOTO	–
TEAM LEADER	T.ISHIZUKA	–
P. MANAGER	N.KAWAI	–

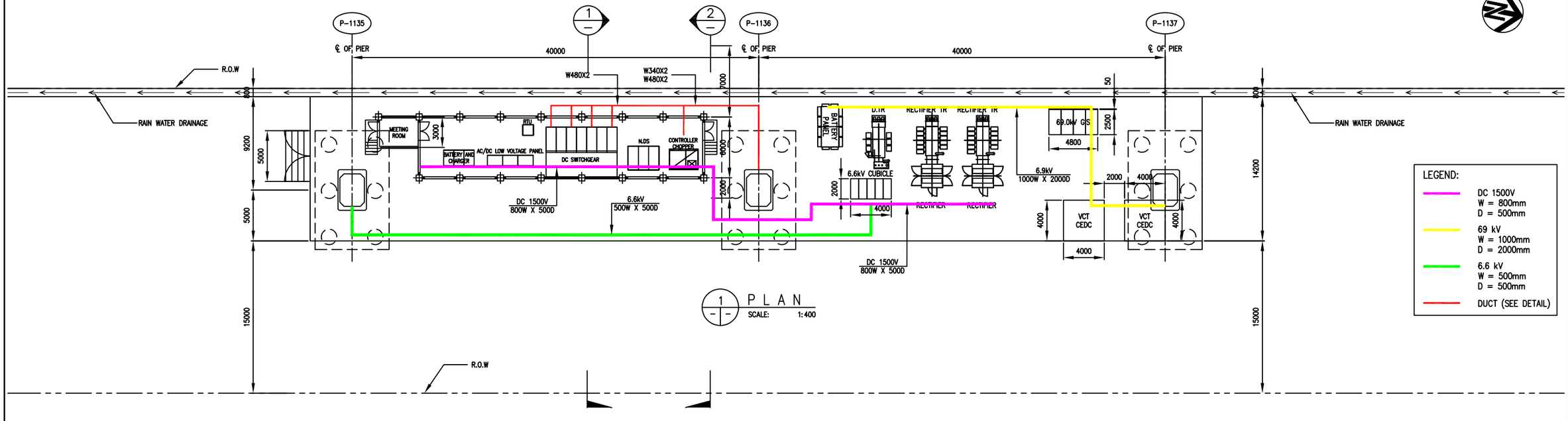
MALOLOS – CLARK RAILWAY PROJECT (MCRP)
NORTH SOUTH RAILWAY PROJECT-SOUTH (NSRP-SOUTH)

Package CP NS-01 : Bidding Documents

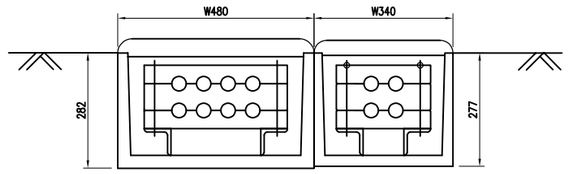
SUBSTATION LAYOUT
(SS No. S20)

DATE	16 MAY 2019
SCALE	AS SHOWN
SHEET No.	28 OF 40
DRG No.	MCRP-DWG-C/A-PSS-2111
DRG S.	–
REV	01

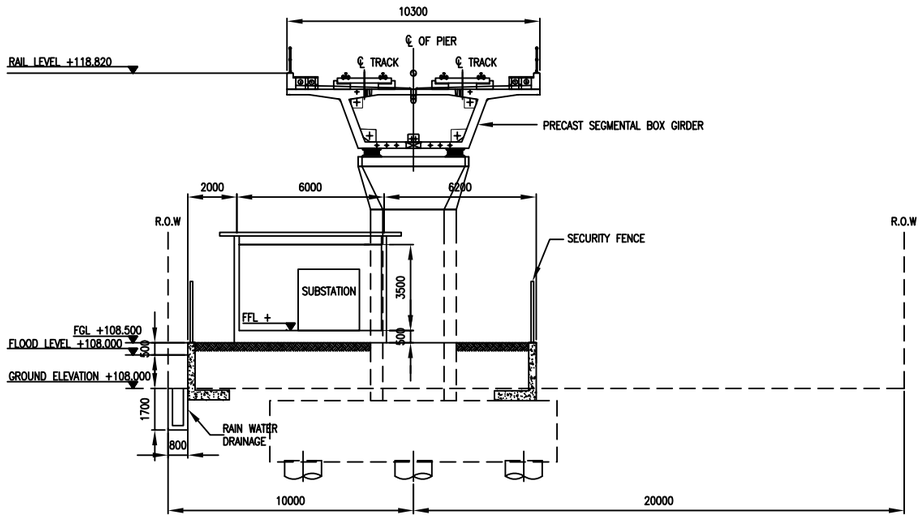
GBB No. 9



1 PLAN
SCALE: 1:400



4 DUCT DETAIL
SCALE: 1:15



2 SECTION-1
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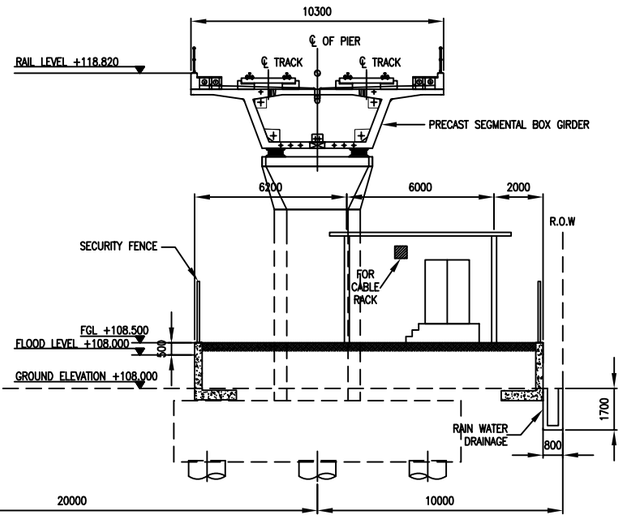

3 SECTION-2
SCALE: 1:250

FOR REFERENCE

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01	09 JUN 2021	RESISTOR CHANGED TO BATTERY POST

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	M.OGIKUBO	–
CHECK	T.MATSUMOTO	–
TEAM LEADER	T.ISHIZUKA	–
P. MANAGER	N.KAWAI	–

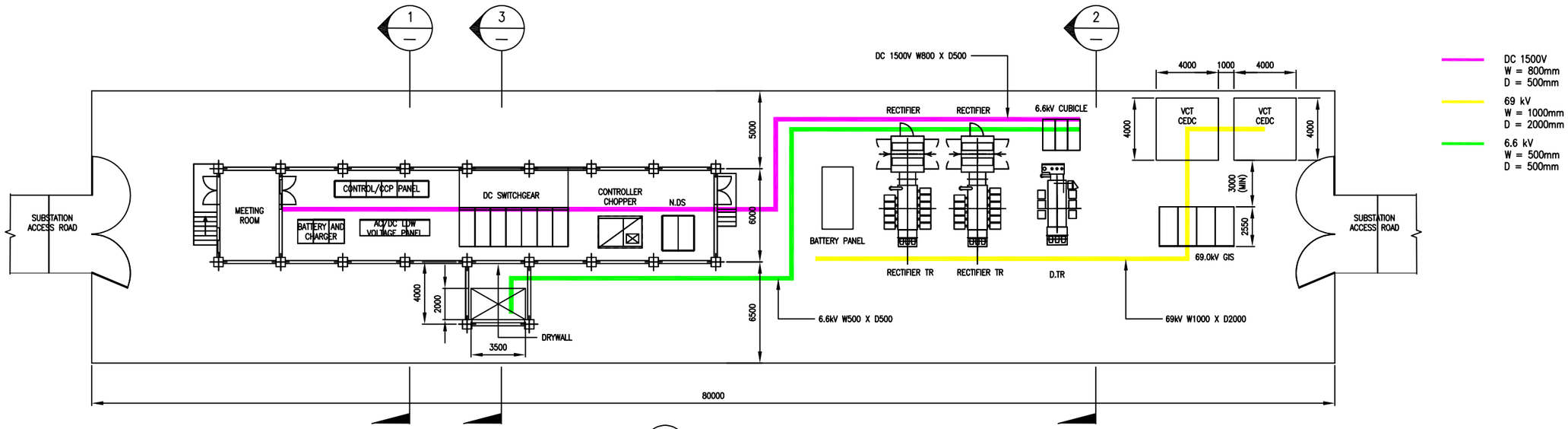
MALOLOS – CLARK RAILWAY PROJECT (MCRP)
NORTH SOUTH RAILWAY PROJECT–SOUTH (NSRP–SOUTH)

Package CP NS–01 : Bidding Documents

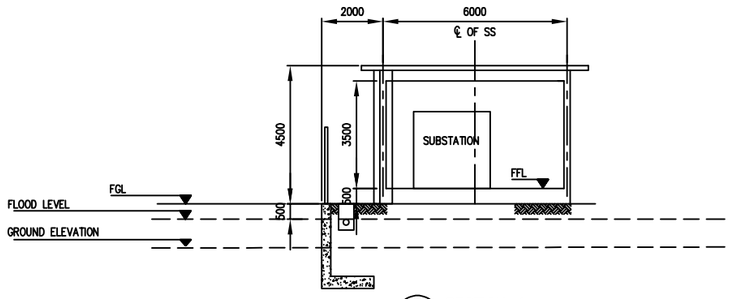
SUBSTATION LAYOUT
(SS No. S21)

DATE	16 MAY 2019
SCALE	AS SHOWN
SHEET No.	29 OF 40
DRG No.	MCRP–DWG–C/C–PSS–2112
DRG S.	–
REV	01

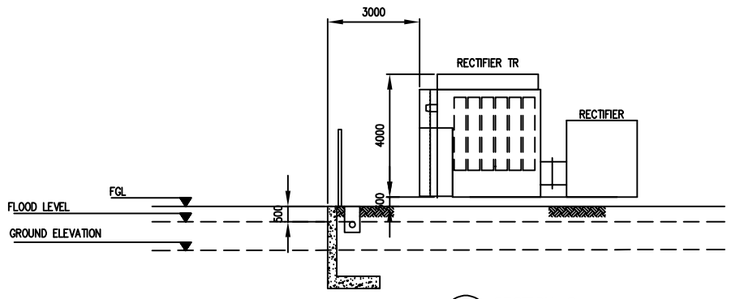
GBB No. 9



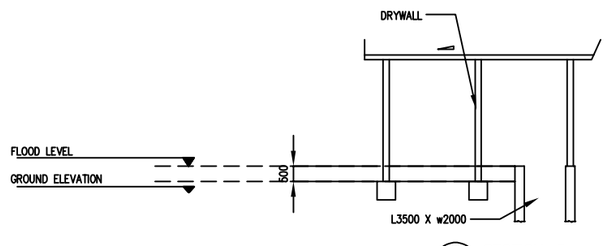
1 PLAN
SCALE: 1:200



2 SECTION–1
SCALE: 1: 200



3 SECTION–2
SCALE: 1: 200



4 SECTION–3
SCALE: 1: 200

FOR REFERENCE

VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE
01	09 JUN 2021	RESISTOR CHANGED TO BATTERY POST

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	M.OGIKUBO	–
CHECK	T.MATSUMOTO	–
TEAM LEADER	T.ISHIZUKA	–
P. MANAGER	N.KAWAI	–

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

Package CP NS–01 : Bidding Documents

SUBSTATION LAYOUT
(SS No. S22)

DATE 15 APRIL 2019
SCALE AS SHOWN
SHEET No. 30 OF 40
DRG No. MCRP–DWG–C/C–PSS–2113
DRG S. –
REV 01

		Contractors for performance testing. This amounts to 76 months for the whole of the Works. Refer to Table: Summary of Section below. Furthermore, the Contractor is required to achieve elements of the Works by Key Dates specified in the Attachment 1 to Particular Conditions Part A Contract Data.
Defects Notification Period	1.1.3.7	Two (2) Years per Section / Sub-section
Sections	1.1.5.6	Refer to Table: Summary of Sections below.
Electronic transmission systems	1.3	All correspondence/submissions of any nature between the Contractor and the Engineer shall be transmitted via an Electronic Document Management System (EDMS) selected by the Employer (see Employer's Requirements for more details). *[Insert Contractor's name and address.]*
Governing Law	1.4	The Laws of the Republic of the Philippines
Ruling language	1.4	English
Language for communications	1.4	English
Time for access to, and possession of, all parts of the Site	2.1	The Employer shall give the Contractor right of access to, and/or occupation of the Site in accordance with the schedule described in Attachment-2 to Particular Conditions Part A Contract Data. Access will be given by Section / Sub-section.
Engineer's Duties and Authority	3.1(B)(ii)	Variations resulting in an increase of the Accepted Contract Amount in excess of one percent (1%) shall require approval of the Employer.
Performance Security	4.2	The Performance Security will be in the form of one "demand guarantee" for ten percent (10 %) of the Accepted Contract Amount and for the same currencies and proportion as the Accepted Contract

		Amount.
General Design Obligations	5.1	Period for notifying errors, faults and defects in the Employer's Requirements: ninety (90) days.
Normal working hours	6.5	Work on the site is permitted 24 hours a day, 7 days a week. 9 hours shift working inclusive of 60 minutes meal period is permitted. However, overtime at the Contractor's expense will be permitted in accordance with Clause 6.5 (b) of the GC, subject to compliance with the applicable rules and regulations of Philippines Labor Codes. Each worker shall have a minimum of one rest day per week.
Commencement of Works	8.1	The Commencement of the Works planned date is January 1, 2022. Access dates are scheduled in Attachment 2.
Delay damages for the Works	8.7	Five hundredths of a percent (0.05%) of the Accepted Contract Amount per day for delay in the completion of the whole of the Works and for delay in achieving each Key Date for the respective elements of the Works. Refer to Table: Summary of Sections below.
Maximum amount of delay damages	8.7	The maximum amount for cumulative delay damages for the Contract shall not exceed ten percent (10%) of the final Contract Price.
Provisional Sums	13.5.(b)(ii)	Fifteen percent (15%) of the actual amounts paid (or due to be paid) by the Contractor.
Total advance payment	14.2	One overall Advance Payment of fifteen percent (15%) of the Accepted Contract Amount payable in the currencies and proportions in which the Accepted Contract Amount is payable
Repayment amortization rate of advance payment	14.2(b)	Thirty percent (30%).

		Contractors for performance testing. This amounts to ~~79~~ 76 months for the whole of the Works. Refer to Table: Summary of Section below. Furthermore, the Contractor is required to achieve elements of the Works by Key Dates specified in the Attachment 1 to Particular Conditions Part A Contract Data.
Defects Notification Period	1.1.3.7	Two (2) Years per Section / Sub-section
Sections	1.1.5.6	Refer to Table: Summary of Sections below.
Electronic transmission systems	1.3	All correspondence/submissions of any nature between the Contractor and the Engineer shall be transmitted via an Electronic Document Management System (EDMS) selected by the Employer (see Employer's Requirements for more details). *[Insert Contractor's name and address.]*
Governing Law	1.4	The Laws of the Republic of the Philippines
Ruling language	1.4	English
Language for communications	1.4	English
Time for access to, and possession of, all parts of the Site	2.1	The Employer shall give the Contractor right of access to, and/or occupation of the Site in accordance with the schedule described in Attachment-2 to Particular Conditions Part A Contract Data. Access will be given by Section / Sub-section.
Engineer's Duties and Authority	3.1(B)(ii)	Variations resulting in an increase of the Accepted Contract Amount in excess of one percent (1%) shall require approval of the Employer.
Performance Security	4.2	The Performance Security will be in the form of one "demand guarantee" for ten percent (10 %) of the Accepted Contract Amount and for the same currencies and proportion as the Accepted Contract

		Amount. ~~The amount of the Performance Security will be reduced in accordance with the provision of PC Sub-Clause 4.2.~~
General Design Obligations	5.1	Period for notifying errors, faults and defects in the Employer's Requirements: ninety (90) days.
Normal working hours	6.5	Work on the site is permitted 24 hours a day, 7 days a week. 9 hours shift working inclusive of 60 minutes meal period is permitted. However, overtime at the Contractor's expense will be permitted in accordance with Clause 6.5 (b) of the GC, subject to compliance with the applicable rules and regulations of Philippines Labor Codes. Each worker shall have a minimum of one rest day per week.
Commencement of Works	8.1	The Commencement of the Works planned date is January 1, 2022. Access dates are scheduled in Attachment 2.
Delay damages for the Works	8.7	Five hundredths of a percent (0.05%) of the Accepted Contract Amount per day for delay in the completion of the whole of the Works and for delay in achieving each Key Date for the respective elements of the Works. Refer to Table: Summary of Sections below.
Maximum amount of delay damages	8.7	The maximum amount for cumulative delay damages for the Contract shall not exceed ten percent (10%) of the final Contract Price.
Provisional Sums	13.5.(b)(ii)	Fifteen percent (15%) of the actual amounts paid (or due to be paid) by the Contractor.
Total advance payment	14.2	One overall Advance Payment of fifteen percent (15%) of the Accepted Contract Amount payable in the currencies and proportions in which the Accepted Contract Amount is payable

Table: Summary of Sections

Section Name/Description (Sub-Clause 1.1.5.6)	Time for Completion (Sub-Clause 1.1.3.3)	Damages for Delay (Sub-Clause 8.7)
Section 1: Platform Screen Door (PSD) and related works at the stations of the North- South Commuter Railway Project (Malolos-Tutuban) (NSCR). Approximately length of NSCR, 37.6km and 9 stations.	Thirty-Seven (37) months for the whole of the works for Section 1 certified as Substantially Complete. *[To be finalized referring to the NSCR' schedule]*	Five hundredths of a percent (0.05%) of the corresponding Amount of Section 1* per day for delay in the completion of the whole of works for Section 1 and for delay in achieving each Key Date for the respective elements of the Works.
Section 2: the Malolos Clark Railway Project (MCRP). Approximately length of MCRP, 50.5 km and 6 stations including the north depot.	Forty (40) months for the whole of the works for Section 2 excluding attendance on NS-02 and NS-03 contractors for performance testing of on-board equipment	Five hundredths of a percent (0.05%) of the corresponding Amount of Section 2* per day for delay in the completion of the whole of works for Section 2 and for delay in achieving each Key Date for the respective elements of the Works.
Section 3: Section between NSCR stations (Solis exclusive) and Blumentritt and Tutuban stations (inclusive) of the Malolos Clark Railway Project- (Blumentritt Extension) (MCRP-Ext.). Approximate length of 6.479 km and 2 stations.	Forty-Eight (48) months) for the whole of the works for Section 3.	Five hundredths of a percent (0.05%) of the corresponding Amount for Section 3* per day for delay in the completion of the whole of works for Section 3 and for delay in achieving each Key Date for the respective elements of the Works.
Section 4:Section between Blumentritt station (exclusive) and Calamba station (inclusive) of the North South Railway Project-South Line (Commuter) (NSRP-South). Approximately length of 54.6 km and 18 stations including the south depot.	Seventy-Six (76) months for the whole of the works for Section 4 and the whole of the Works excluding attendance on NS-02 and NS-03 Contractors for performance testing of on-board equipment	Five hundredths of a percent (0.05%) of the corresponding Amount for Section 4* per day for delay in the completion of the whole of works for Section 4 and for the completion of the whole of the Works, and for delay in achieving each Key Date for the respective elements of the Works.
Attendance on the Rolling Stock Contractors NS-02 and NS-03 will be required between months 37 to 76. Provided that there are no delays attributable to the NS-01 Contractor from the respective contract programs for Integrated Testing and Commissioning, Trial Operation and performance testing, no damages will be payable by the NS-01 Contractor. If the NS-01 Contractor is culpable, then damages as given above will be payable for each day of delay.		

Note: * The Amount for each Section will be the Accepted Contract Amount multiplied by the percentage for each Section as given in Contract Data Sub-Clause 14.9.

Table: Summary of Sections

Section Name/Description (Sub-Clause 1.1.5.6)	Time for Completion (Sub-Clause 1.1.3.3)	Damages for Delay (Sub-Clause 8.7)
Section 1: Platform Screen Door (PSD) and related works at the stations of the North- South Commuter Railway Project (Malolos-Tutuban) (NSCR). Approximately length of NSCR, 37.6km and 9 stations.	Thirty-Seven (37) months for the whole of the works for Section 1 certified as Substantially Complete. *[To be finalized referring to the NSCR' schedule]*	Five hundredths of a percent (0.05%) of the corresponding Amount of Section 1* per day for delay in the completion of the whole of works for Section 1 and for delay in achieving each Key Date for the respective elements of the Works.
Section 2: the Malolos Clark Railway Project (MCRP). Approximately length of MCRP, 50.5 km and 6 stations including the north depot.	~~Thirty-Seven~~Forty (~~37~~40) months for the whole of the works for Section 2 excluding attendance on NS-02 and NS-03 contractors for performance testing of on-board equipment	Five hundredths of a percent (0.05%) of the corresponding Amount of Section 2* per day for delay in the completion of the whole of works for Section 2 and for delay in achieving each Key Date for the respective elements of the Works.
Section 3: Section between NSCR stations (Solis exclusive) and Blumentritt and Tutuban stations (inclusive) of the Malolos Clark Railway Project- (Blumentritt Extension) (MCRP-Ext.). Approximate length of 6.479 km and 2 stations.	Forty-Eight (48) months) for the whole of the works for Section 3.	Five hundredths of a percent (0.05%) of the corresponding Amount for Section 3* per day for delay in the completion of the whole of works for Section 3 and for delay in achieving each Key Date for the respective elements of the Works.
Section 4:Section between Blumentritt station (exclusive) and Calamba station (inclusive) of the North South Railway Project-South Line (Commuter) (NSRP-South). Approximately length of 54.6 km and 18 stations including the south depot.	Seventy-~~Nine~~ Six (~~79~~76) months for the whole of the works for Section 4 and the whole of the Works excluding attendance on NS-02 and NS-03 Contractors for performance testing of on-board equipment	Five hundredths of a percent (0.05%) of the corresponding Amount for Section 4* per day for delay in the completion of the whole of works for Section 4 and for the completion of the whole of the Works, and for delay in achieving each Key Date for the respective elements of the Works.
Attendance on the Rolling Stock Contractors NS-02 and NS-03 will be required between months 37 to ~~79~~76. Provided that there are no delays attributable to the NS-01 Contractor from the respective contract programs for Integrated Testing and Commissioning, Trial Operation and performance testing, no damages will be payable by the NS-01 Contractor. If the NS-01 Contractor is culpable, then damages as given above will be payable for each day of delay.		

Note: * The Amount for each Section will be the Accepted Contract Amount multiplied by the