



General Bid Bulletin No. 15
16 July 2021

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

TO ALL PROSPECTIVE BIDDERS:

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

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

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

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

For your guidance and information.

For the Bids and Awards Committee

SIGNATURE REDACTED

ENGR. JAIME M. NAVARRETE, JR
Chairperson

Annex A

PACKAGE CP NS-01: E&M SYSTEMS AND TRACK WORKS
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Annex A

Item No.	Volume Section No. Page No. Clause No. / Title Reference Text	Clarification Request	Proposed Revised Text (if any)	Response
1	Part 2 – Employer’s Requirements Section V1. Employer’s Requirements Technical Requirements – Signaling, ERT 104, 2.11.2.2 ATP Mode, In ATP Mode the train will be driven by the train operator obeying cab signals. ATP Mode shall be the normal of operation in the event of failure of ATO	ETCS UNISIG specification does not include "ATP Mode" or "ATP Manual mode". Our understanding is that "ATP Mode" or "ATP Manual mode" throughout the whole document refers to "Full Supervision Mode". Assuming that this is correct, request to please modify the document accordingly or include a note clarifying this point?		The Bidder’s understanding is correct. ATP mode or ATP manual mode refer to Full Supervision mode. Please refer to Annex B.
2	Part 2 – Employer’s Requirements Section V1. Employer’s Requirements Technical Requirements – Signaling, ERT 108, 2.12.6, The information to be transmitted to the train as a minimum, but not limited to the following: ... 3) Train Regulation Commands	Neither ETCS UNISIG or AoE include the terminology train regulation commands. SUBSET-125 refers to journey and the timing points to perform similar functionality. Please clarify the term "Train Regulation Commands"?		The train regulation commands include speed management of trains based on the regulation ordered by ATS system.
3	Part 2 – Employer’s Requirements Section V1. Employer’s Requirements Technical Requirements – Signaling,	Please confirm that when the IOCC provided under package CP NS-01 replaces the individual OCC’s at Malanday, Mabalacat and Banlic, the Local ATS provided in the NSCR-N1 area is		The Bidder’s understanding is correct. This is confirmed that the local ATS provided in NSCR-N1 will have the same functionality as in CP NS-01. The Contractor shall perform

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Item No.	Volume Section No. Page No. Clause No. / Title Reference Text	Clarification Request	Proposed Revised Text (if any)	Response
	ERT 124, 2.17, Local ATS requirements	required to have same functionality as the one provided under CP NS01 and at least in the interface between the Central OCC (or IOCC) and the Local ATS (e.g. section 2.17.6 Degraded operation)?		the necessary interface works with other contractors.
4	Part 2 – Employer’s Requirements Section V1. Employer’s Requirements Technical Requirements – Signaling, 2.17.3, ERT 128, The SCR controller shall be able to operate the interlocking area under their jurisdiction from the interlocking VDU	Can we assume that as the interlocking design for the number of interlocking mains is under contractor’s responsibility, and it may not be required a main interlocking per station, previous requirement can be fulfilled as long as a VDU is provided in the station and able to operate the area under its jurisdiction?		Reference to ERT 118, Clause 2.16, 'The Contractor shall indicate whether the interlocking(s) shall be centralized or distributed throughout the line and located at certain stations.' Reference to ERT 122, Clause 2.16.9, 'Each CBI shall be provided with VDU workstations which will be provided at the SCR’s of interlocking stations with points and crossing.'
5	Part 2 – Employer’s Requirements Section V1. Employer’s Requirements Technical Requirements – Signaling, 2.26.8 , ERT 163, Train Control/Tunnel Ventilation System (TVS) Interface: Distinctive signals and commands	Please clarify the functionality associated with this interface between the TVS and the Signaling System?		The functionality will include providing trigger to TVS system based on the interface with other 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
	shall be exchanged between the Signaling System and the TVS system			
6	Part 2 – Employer’s Requirements Section VI. Employer’s Requirements Technical Requirements -Depot Facilities, ERT – 758ff, N04.01 AUTOMATIC CAR BODY WASHER, 3.6. Planned size of the foundation and drainage slab for this machine is around 7.0 m width (excl. operation room and mechanical room) and maximum 50 m length for drainage slab.	It is understood that the wash equipment shall be installed at the foundation provided by the Building Contractor and that this area will have no roof. Please confirm that the Building Contractor will provide the operation room and mechanical room to house the respective equipment (Control board, treatment equipment, detergent etc.) of the Car Body Washer.		The Bidder’s understanding is incorrect. Building contractor will not be providing any operation or mechanical room to house the respective equipment of the Car Body Washer. If it is required to meet the performance requirements, same shall be provided by NS-01 contractor at his own cost after carrying due interface with the Building Contractor and obtaining design approval from the Engineer.
7	Part 2 – Employer’s Requirements Section VI. Employer’s Requirements Technical Requirements -Depot Facilities, ERT – 758ff, N04.01 AUTOMATIC CAR BODY WASHER, 4.1. The Contractor shall take sufficient interface with the Building Contractor regarding size, structure, performance for; but not limited to	Please confirm that the Train Wash Plant will be provided with a draining pipe connecting it with overall depot waste water treatment plant. It is understood that the waste water from the Automatic Car Body Washer needs to meeting the design criteria of the Depot Waste Water Plant, which will be dealt with during Interface Clarification in the execution phase. Please confirm this understanding.		The Bidder's understanding is correct
8	Part 2 – Employer’s Requirements Section VI. Employer’s Requirements	Please confirm that 196 bogie frame stands shall be provided.		The Bidder's understanding is correct

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Item No.	Volume Section No. Page No. Clause No. / Title Reference Text	Clarification Request	Proposed Revised Text (if any)	Response
	Technical Requirements -Depot Facilities, ERT-815, N17.07 Bogie Frame Stand Set, Quantity: Twenty-four (24) sets, the bogie frame stand set shall be of a fabricated steel structure and consist of eight (8) stands per set,			
9	Part 2 – Employer’s Requirements Section VI. Employer’s Requirements Technical Requirements -Depot Facilities, ERT-935, N30.01 Weatherproof Testing Equipment, 3.1. The weatherproof testing equipment shall include the water pump with a pump room	Please clarify if the Building Contractor will provide the pump room as per clause 3.1 of the specification.		Pump room building is not in the scope of Building Contractor. If required, same shall be provided by the NS-01 contractor. Space marked for waterproof test shop near Underfloor Cleaning Shop (UCS) can be utilized for installation of any weatherproof testing equipment. Necessary interfaces shall be performed with Building contractor.
10	Part 2 – Employer’s Requirements Section VI. Employer’s Requirements Technical Requirements – Power Supply, ERT-382/383, 4.4.5 BP (Battery Post) , 4.4.5 BP (Battery Post) (1) The BP system consists of following;	Please clarify what kind of “Remote maintenance” function shall be provided in Control Panel of Battery Post.		The remote maintenance function shall be developed jointly with the equipment manufacturer during design stage and submit for the approval of the Engineer.

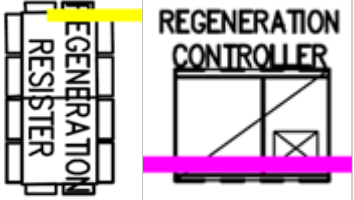
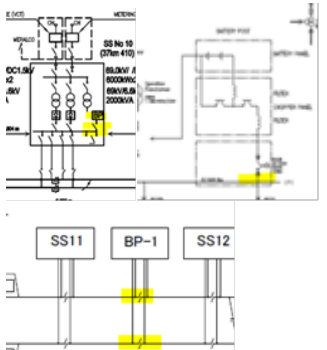
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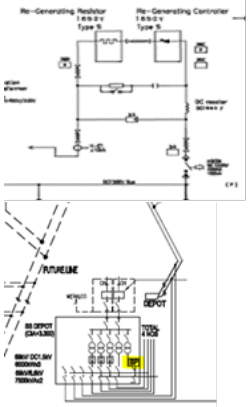
Annex A

Item No.	Volume Section No. Page No. Clause No. / Title Reference Text	Clarification Request	Proposed Revised Text (if any)	Response
	Control Panel - Remote maintenance			
11	Vol. 2. Sec. VI, 934, 7.9.2.3 (n) Banknote Handling System, Viii. The banknote change system shall be capable of dispensing three (3) denominations of banknotes, each shall have a capacity of at least 2000 banknotes and dispense banknote in a speed of at least 3 banknotes per second.	Are banknote accept and banknote change a recycling device or two independent devices? Three change box,each capacity 2000 banknotes,it is a big dimension module,and it is an independent change module		The bid conditions shall prevail. The contractor shall propose subject to the review and approval of the Engineer.
12	Vol. 2. Sec. VI, 935, 7.9.2.3 (O) Coin Handling System,	How many coin recycling hoppers are needed? What is the capacity requirement? How many coin replenishment boxes are needed? What is the capacity requirement?		The number of recycling hoppers and coin replenishment boxes shall be proposed by the contractor subject to the review and approval of the Engineer. Please refer to Section 7.9.2.3 for the capacity requirement.
13	Vol. 2. Sec. VI, 939, 7.9.4 Station Accounting Computer (SAC),	Are there any detailed requirements for servers and workstations and other equipment?		The contractor shall propose subject to the review and approval of the Engineer.
14	Vol. 2. Sec. VI, 941, 7.9.5 Center Computer System (CCS).,	Are there any detailed requirements for servers and workstations and other equipment?		The contractor shall propose subject to the review and approval of the Engineer.
15	Part 2 Drawings, DRG No. MCRP-DWG-A/C-PSS-2002 , Regeneration	Reference substation layout shows regenerative resistor as regenerative absorption device whereas the substation single line diagram		Please refer to GBB 9 Annex A Item 68 response and Annex B for the revised drawing pages 94-106.

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Item No.	Volume Section No. Page No. Clause No. / Title Reference Text	Clarification Request	Proposed Revised Text (if any)	Response
	<p>Controller and Regeneration Resister shown in substation layout.</p> 	<p>shows battery posts as regenerative absorption device. We understand the requirement is a battery post (not resistor). Kindly confirm.</p>		
16	<p>Part 2 Drawings, DRG No. MCRP-DWG-A/C-PSS-2002 & MCRP-DWG-PSS-1001 & MCRP-DWG-X/X-OCS-0002</p> 	<p>The elementary power section fed by BP shown in OCS drawing and PSS drawings are not matching. The chainages of feeding locations are different. Kindly clear the ambiguity.</p>		<p>Please refer to Annex B for the revised drawing.</p>

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Item No.	Volume Section No. Page No. Clause No. / Title Reference Text	Clarification Request	Proposed Revised Text (if any)	Response
17	Part 2 Drawings, DRG No. MCRP-DWG-DEP-PSS-3001 & MCRP-DWG-PSS-1001 	The regeneration systems shown for depot substation are not matching between Substation Depot connection and traction power feeding system drawings. Bidder understands that MCRP corridor doesn't require resistor type regeneration absorption device (used in NSRP). MCRP corridor need only battery post type regeneration system for all substations. Kindly clarify.		The Bidder's understanding is correct. Please refer to Annex B for the revised drawing.
18	General Bid Bulletin No.2, 62 of 86, General Bid bulletin No. 2, Annex A, S.No. 130 , The bidder can propose energy storage systems for regenerative devices for NSRP corridor.	The functionality of both the systems are different and depends on the requirement of end user. So, the Bidder once again requests the Employer to provide clear requirement to avoid discrepancy on a later stage.		The conceptual design for substations in the North Section is Regenerative Absorption Device/Battery Post (energy storage system) whereas for the South Section is a Regenerative Absorption Device/Resistor Bank. North Section requires Battery Posts in anticipation of the reported frequent power outages.

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Annex A

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19	General Bid Bulletin No.2, 64 of 86, General Bid bulletin No. 2, Annex A, S.No.131 , The figure on the left is an integral part of the battery post which is situated outdoor. This is a conceptual design which should be developed by the contractor.	This response seems to be ambiguous. Regeneration controller is not an integral part of battery post system. Also, bidder understands that MCRP corridor require battery post system and NSRP corridor require regeneration resistor type. Kindly confirm.		The Bidder's understanding is correct.
20	,, Package CP NS-01: E&M Systems and track works, General Bid bulletin No. 3, Annex A, Page No. 07 of 21. and Item no. 23 , The requested data will be shared by interfacing contractors during the preliminary design stages.	The Employer's response for this Query was not related to the Bidder's Query. The Bidder's Query was "What is the difference in purpose between Battery Post and Substation Battery Post (Regenerative Power absorption device)?" Kindly clarify.		The Substation Battery Post and the Wayside or Trackside Battery Post serves a common purpose. Battery Post installation is required in anticipation of the reported frequent power outage for the north section. Battery posts are located in substations and along trackside (at boundaries of different distribution utilities). For other purpose and function please refer to CPNS01_GBB2 Annex A item 116 page 54 of 86 and Clause 4.1.3.7 ERT 367.

Annex B

PACKAGE CP NS-01: E&M SYSTEMS AND TRACK WORKS
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Annex B

ITEM NO.	REFERENCE/CLAUSE/ SECTION	REVISIONS / AMENDMENTS
Volume II Part 2 – Employer’s Requirements		
1	ERT-368, Clause 4.1.3 (7) (xi)	Added new statement: “Housing for substation battery panel for substation battery post shall be suitable for indoor or outdoor installation depending on space available.”
2	ERT-384, Clause 4.4.5 (1) (4)	Replaced text “Capacitor” with “Battery” Deleted: “5) Resistor panel”
3	ERT-384, Clause 4.4.5 (2) (5)	Added: “/battery panel in wayside” Added: “whilst for battery panel in substation shall be suitable for indoor or outdoor depending on space available.”
4	ERT 30. Clause 1.13.8(1)	The resistance to longitudinal movement of the rail with respect to the fastener shall be 5+/-2kN throughout the life of the fastening system.
5	ERG-47, Clause 7.3.1	Use of Engineers Template stated.
6	ERT 104, Clause 2.11.2.2	Added ' ATP mode or ATP manual mode refers to Full Supervision mode in the document.'
Volume III Part 2 – Employer’s Requirements d) Employer’s Drawings		
7	Part 2 Vol.3 E_M Version 11.0 FINAL Rev. A. ERD (a) page 164	Revised Traction Power Feeding System Drawing
8	GBB-9 Annex B, Item No.16	Substation Layout Drawings (SS No. 10) to (SS No. 22) “Local Annunciator Panel Added”

9	Part 2 Vol.3 E_M Version 11.0 FINAL Rev. A. ERD (a) page 194	Revised drawing Substation Connection (SS DEPOT)
10	Part 2 Vol.3 E_M Version 11.0 FINAL Rev. A. ERD (a) page 234	Revised drawing: 6.6kV Power Supply Schematic Diagram 1/2
11	Part 2 Vol.3 E_M Version 11.0 FINAL Rev. A. ERD (a) page 235	Revised drawing: 6.6kV Power Supply Schematic Diagram 2/2

Annex B – Attachment 1

- stabilization.
- v. The BP system shall be utilized to safely bring passengers to the nearest station during adjacent TSS power failure. The BP’s shall be sized to allow for multiple trains within the electrical sections to move out of the affected section.
 - vi. The BP system shall have flexible control of charge-discharge cycles in accordance to the battery’s State-of- Charge.
 - vii. The BP system shall provide power to the Overhead Contact line System with DC traction supply at a nominal 1500V DC and return shall be via the running rails.
 - viii. The instantaneous voltage at any train along the route shall not fall below 1100V DC during normal operations with all substations in rated service and shall not fall below 1000V DC with any abnormal operating condition under any single outage condition.
 - ix. The exact number, the location and the required capacity of the battery post shall be determined during the traction power simulation study. The simulation shall determine the optimum quantity and position of the battery posts to maximize the overall energy efficiency of the system. The quantity of battery posts as 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.
 - xi. Housing for substation battery panel for substation battery post shall be suitable for indoor or outdoor installation depending on space available.
- 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:

stabilization.

- v. The BP system shall be utilized to safely bring passengers to the nearest station during adjacent TSS power failure. The BP’s shall be sized to allow for multiple trains within the electrical sections to move out of the affected section.
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- 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.
- ~~xi.~~ Housing for substation battery panel for substation battery post shall be suitable for indoor or outdoor installation depending on space available.

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10) TSS equipment

4.4.5 BP (Battery Post)

- (1) The BP system consists of following;
 - 1) Control Panel
 - Charge and discharge control
 - System monitoring
 - Schedule and Sequence control
 - Data logging
 - Remote maintenance
 - 2) Filter Panel/Chopper
 - 3) DC switch panel
 - 4) Battery panel
- (2) Rating and Specifications
 - 1) Rated Current: $\geq 1200A$.
 - 2) Nominal input voltage: 1500V DC
 - 3) Rated input voltage: 1650V DC.
 - 4) Maximum voltage: 1800V
 - 5) Housing for BP/battery panel in wayside shall be indoor type whilst for battery panel in substation shall be suitable for indoor or outdoor depending on space available.

4.4.6 Power SCADA (SCADA for Power Supply System)

- (1) General
 - 1) The Contractor shall design, supply, install test and commission a microprocessor based Supervisory Control and Data Acquisition (SCADA) system for smooth operation, monitoring, control and logging of important features of the traction power system on the MCRP Line.
 - 2) The equipment shall be controlled and monitored comprising with each TSS, BP, SP but not limited to.
 - 3) At the OCC Central workstations are to be provided giving an effective means of display and control.
 - a. At the OCC three (3) displays showing various equipment states is to be provided.
 - b. The central computer server shall maintain an historical database of all messages transmitted over the Power SCADA links and the Contractor shall provide a means of accessing that database.
 - 4) Necessary RTU shall be installed to provide the most economic configuration based upon cost balances between RTU modularity and cabling costs, consistent with the performance requirements of this Specification.
 - 5) Communications between the equipment in the traction substations, electric room shall be over a duplicated communications network dedicated to Power SCADA, which shall be provided.
 - 6) In the event of a communications failure between a station and the central database the station traction power SCADA equipment shall continue to function as an autonomous

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 - Data logging
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- 2) Filter Panel/Chopper

- 3) DC switch panel

- 4) ~~BatteryCapaeitor~~ panel

- ~~5) Resistor panel~~

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- 2) Nominal input voltage: 1500V DC
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- 6) In the event of a communications failure between a station and the central database the

washers or helical springs through an insulated ferrule must be used to secure the holding down system. Surface configuration of the pad shall be consistent with the properties of the material offered. The final size of pad shall suit the type of base plates used.

- 5) High tensile strength holding-down bolts shall conform to JIS B1051/1052, ISO 898-1 or equivalent international standard. Helical compression springs shall be manufactured from high carbon spring steel or an equivalent standard.
- 6) The anchor bolts and ground/coach screw shall be capable of withstanding a pull-out test appropriate to the insert selected. Requirements of the test shall be according to EN standards for pull-out tests for the inserts.

1.13.6 Rail Seat Pads

- 1) Pads are to be inserted between the underside of the rail foot and the rail seat area to provide a resilient bearing surface and so that the rail is electrically isolated from the baseplate in the rail area. Pads shall be manufactured from the proven materials and shall be shaped so that they are located permanently in place. The pads shall conform to the conditions of JIS E 1117, or equivalent international standards to be given a Notice of No Objection by the Engineer.
- 2) The pad material offered shall be suitable for use in the Manila environment of high temperature and high humidity without degradation or significant differences in compression stiffness at the predicted extreme ranges of temperature. Pads shall be resistant to ozone and mold growth and in exposed locations to ultraviolet light also.
- 3) Rail seat pads shall be of the studded rubber type, with natural rubber being the predominant polymer or equivalent. The pads shall have a minimum thickness of 10 mm.

1.13.7 Baseplate Shims

- 1) Pads for insertion under the fastener system shall be manufactured from proven materials.
- 2) Surface configuration of the pad shall be consistent with the properties of the pad material offered. The final size shall suit the type of baseplates adopted and be larger than the footprint of the baseplate.
- 3) The electrical resistivity of resilient pad material shall be a minimum of BS903: Part C2: 1982, 1×10^8 ohm-cm.

1.13.8 Resistance of Rail to Longitudinal Movement with Respect to a Baseplate

- 1) The resistance to longitudinal movement of the rail with respect to a baseplate shall be a minimum 5 +/- 2 kN throughout the life of the fastening system. Preference shall be given to a fastening system capable of being adapted to provide both zero and low toe loads to suit requirements for structural flexure and thermal expansion of concrete beneath the rail, where required by the civil structure design.
- 2) The Contractor shall design into the fastening system, a zero-toe load or variation in toe loads that will allow the viaduct or bridge structure to expand or contract due to thermal and dynamic loading. Viaduct/deck joints are located approximately every 40 m. The Contractor, as part of the design, shall do a study of the viaduct/deck interface with the rail to determine the extent of required Zero

of which shall be satisfactory compliance.

- 4) Baseplates shall be anchored by a minimum of two (2) high tensile bolts at straight sections of the mainline. If necessary due to lateral loadings, four (4) high tensile bolts at curve sections radius less than 500 m may be used. Spring compression washers or helical springs through an insulated ferrule must be used to secure the holding down system. Surface configuration of the pad shall be consistent with the properties of the material offered. The final size of pad shall suit the type of base plates used.
- 5) High tensile strength holding-down bolts shall conform to JIS B1051/1052, ISO 898-1 or equivalent international standard. Helical compression springs shall be manufactured from high carbon spring steel or an equivalent standard.
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- 1) The resistance to longitudinal movement of the rail with respect to a baseplate shall be a minimum 5 +/- 2.9kN throughout the life of the fastening system. Preference shall be given to a fastening system capable of being adapted to provide both zero and low toe loads to suit requirements for structural flexure and thermal expansion of concrete beneath the rail, where required by the civil structure design.
- 2) The Contractor shall design into the fastening system, a zero-toe load or variation

management on the Project. The Contractor shall provide the Project-wide use of the system during the Design and Construction Phases and also the Defects Notification Periods.

7.2. Project Document Control Procedure

Within twenty-eight (28) days after Commencement Date, the Contractor shall submit a Project Document Control Procedure to the Engineer for review, which shall include but not be limited to the following:

- (1) a document approval system which shall specify the level of authority for approval of all documents and material before submission to the Engineer,
- (2) a system of issuing documents to ensure that pertinent documents are issued to all appropriate locations,
- (3) a document change or re-issue system to ensure that only the latest revision of a document can be used, and
- (4) a submission identification system that identifies each submission uniquely by the following:

Contract number, Discipline, Submission number; and Revision indicator.

7.3. Document Submissions

- 7.3.1. All submissions shall be made using templates provided by the Engineer. Where templates are not provided by the Engineer the presentation and format shall be agreed with the Engineer prior to the submission of the relevant submissions.
- 7.3.2. The Contractor shall submit a Drawing Register to the Engineer in electronic copy and hard copy with each submission of drawings and at an interval agreed by the Engineer. The drawing register shall be in a format submitted for review and given a Notice of No Objection by the Engineer and shall include each document reference number, version, date, title, and data-file name.

7.4. Submission and Response Procedure

7.4.1. General

Where submissions related to the Works are required, except where specific procedures are given for certain items, all submissions shall be submitted and reviewed according to the procedure laid down in the following clauses.

7.4.2. Proposal

Each submission shall be accompanied by a brief introduction to explain which equipment, part, or section of the Contract Works to which the submission refers, listing the documents enclosed with the submission, and describing in outline how all relevant requirements of the Works Requirements are achieved by the proposals.

7.4.3. Submission Response Request

For each submittal, the Contractor shall prepare a Submission Response Request (SRR) carrying the date of submission, the submission reference number, the submission title, and the authorized signature of the Contractor’s responsible engineer to confirm that, in the opinion of the Contractor, the submission:

management on the Project. The Contractor shall provide the Project-wide use of the system during the Design and Construction Phases and also the Defects Notification Periods.

7.2. Project Document Control Procedure

Within twenty-eight (28) days after Commencement Date, the Contractor shall submit a Project Document Control Procedure to the Engineer for review, which shall include but not be limited to the following:

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Train re-starting from a signal stop shall be automatic.

Train starting or re-starting from a station stop shall be initiated by the train operator.

When a train is stationary, the train operator shall apply a Full Service brake.

The train operator shall have the capability of taking over control of the train any time while degrading the mode appropriately.

2.11.2.2 ATP Mode

ATP mode or ATP manual mode refers to Full Supervision mode in the document. In ATP Mode the train will be driven by the train operator obeying cab signals. ATP Mode shall be the normal mode of operation in the event of failure of ATO.

In ATP Mode, the Train Control System shall:

- 1) Provide cab signals and all other indications necessary to operate the train including current speed;
- 2) Determine continuously the MSS and MAL;
- 3) Prevent train operation in excess of the MSS or MAL;
- 4) Provide audible and visual warning if the train speed exceeds the MSS;
- 5) Enable train doors when the train is docked, enabling only the doors on the platform side of the train; and
- 6) Prevent the train from starting if train doors are not detected closed.

ATP Mode shall be available on all trains.

2.11.2.3 On Sight Mode (OS Mode)

This mode enables the train to enter into a track section that could be already occupied by another train or obstructed by any kind of obstacle. The authority to use this mode shall come from trackside only (this mode cannot be selected by the driver). It remains in operation until sufficient conditions have been met to allow for a transfer to the Automatic train Protection/Full Supervision Mode. Maximum operating speed under this mode shall be 25 kmph.

2.11.2.4 Staff Responsible Mode

Staff Responsible-This mode allows the driver to move the train under his own responsibility in a ETCS system equipped area under certain situations e.g., after the ETCS on-board equipment starts up, to pass a signal at danger etc. It remains in operation until sufficient conditions have been met to allow for a transfer to the Automatic train Protection/Full Supervision Mode. Maximum operating speed under this mode shall be 25 kmph.

2.11.2.5 Reversing Mode

The mode of ETCS when the ETCS system allows the driver to change the direction of movement of the train driving from the same cab (the train orientation remains unchanged).

Train re-starting from a signal stop shall be automatic.

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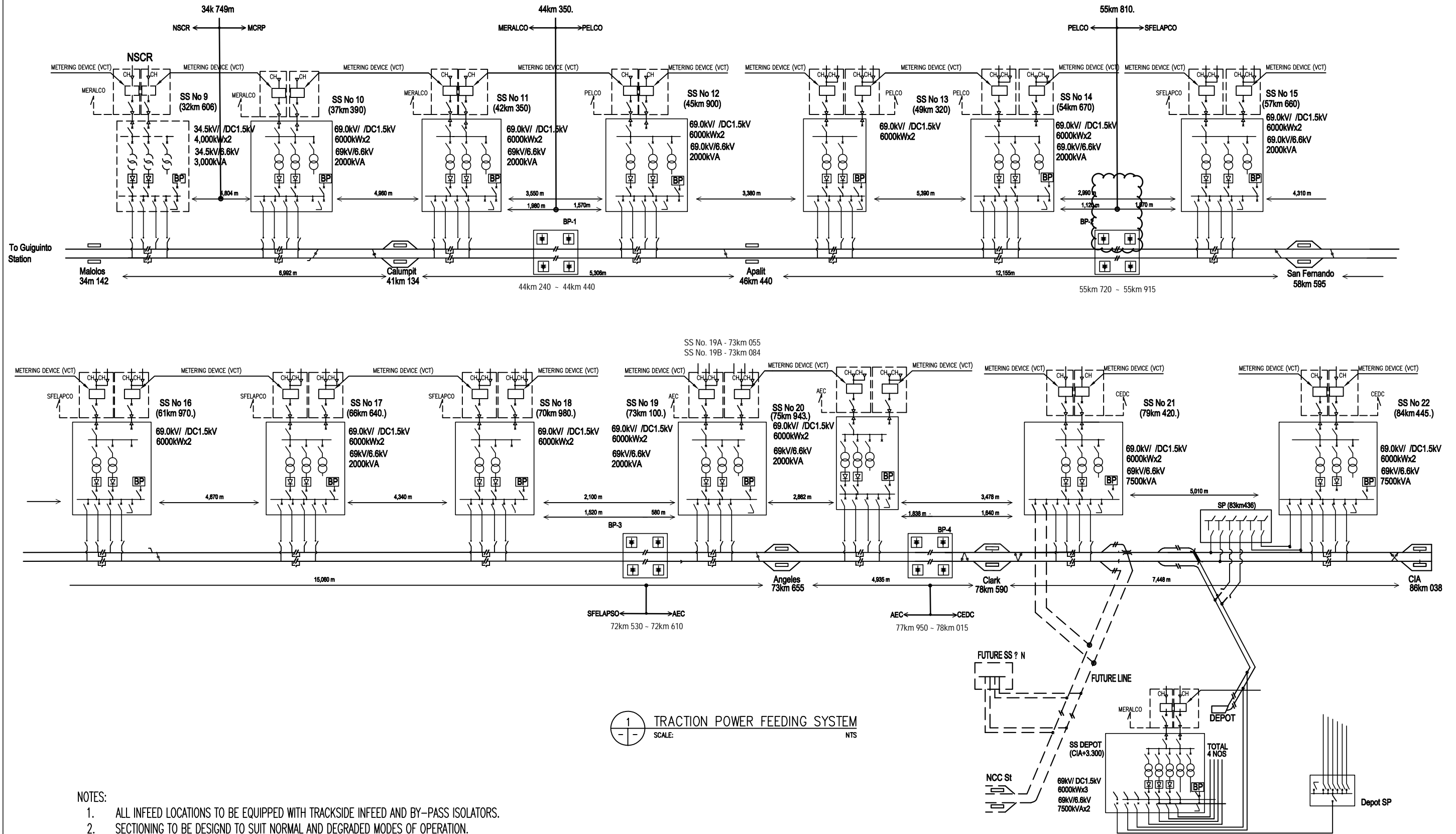
This mode enables the train to enter into a track section that could be already occupied by another train or obstructed by any kind of obstacle. The authority to use this mode shall come from trackside only (this mode cannot be selected by the driver). It remains in operation until sufficient conditions have been met to allow for a transfer to the Automatic train Protection/Full Supervision Mode. Maximum operating speed under this mode shall be 25 kmph.

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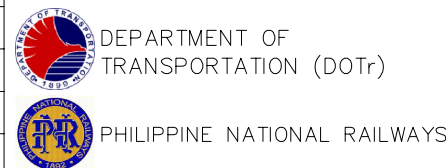


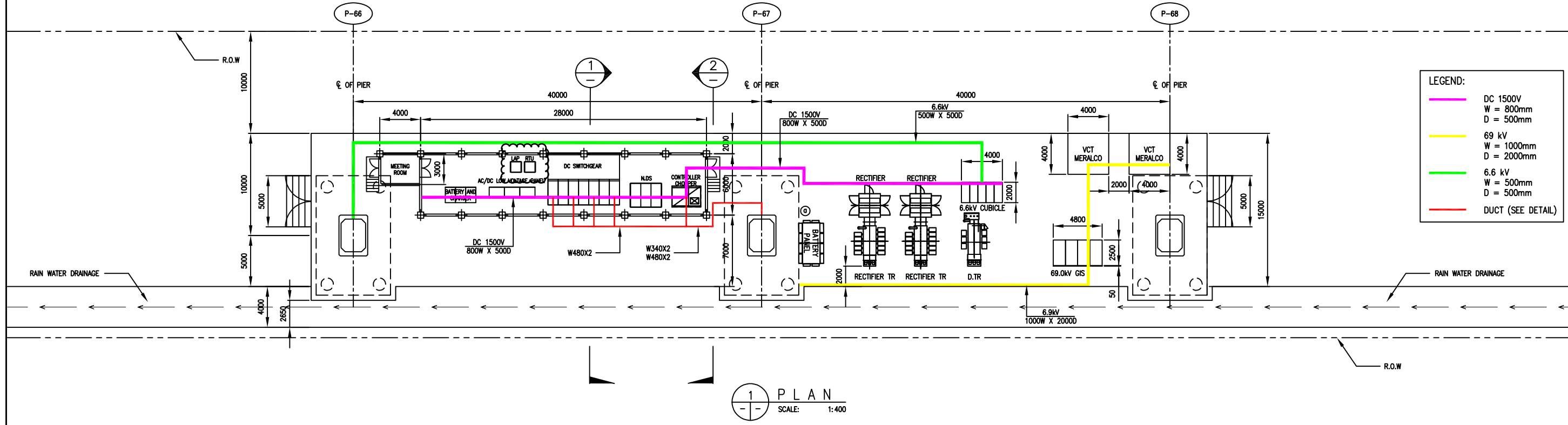
NOTES:

1. ALL INFEEED LOCATIONS TO BE EQUIPPED WITH TRACKSIDE INFEEED AND BY-PASS ISOLATORS.
2. SECTIONING TO BE DESIGND TO SUIT NORMAL AND DEGRADED MODES OF OPERATION.

FOR REFERENCE

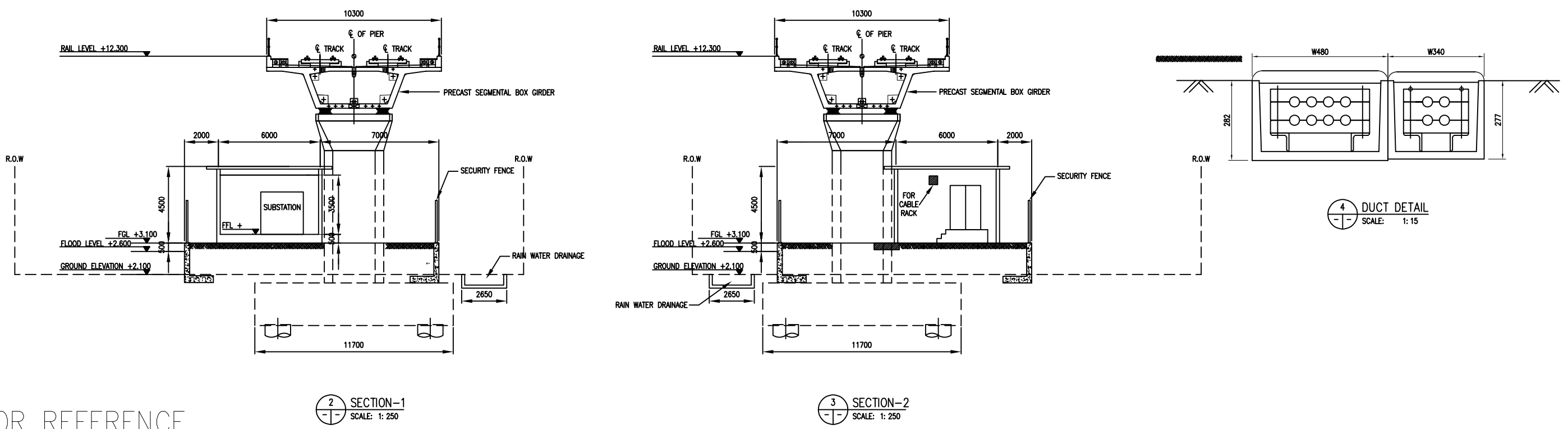
VERSIONS	DATE	DESCRIPTION	CONSULTANT			MALOLOS - CLARK RAILWAY PROJECT (MCRP) NORTH SOUTH RAILWAY PROJECT-SOUTH (NSRP-SOUTH)	DATE			
02	26/02/2020	INFEEED AND BY-PASS ISOLATORS ADDED	JICA DESIGN TEAM (JDT) ORIENTAL CONSULTANTS GLOBAL CO.,LTD. (OCGLOBAL) JAPAN INTERNATIONAL CONSULTANTS FOR TRANSPORTATION CO.,LTD. (JIC) KATAHIRA & ENGINEERS INTERNATIONAL TONICHI ENGINEERING CONSULTANTS, INC. PACIFIC CONSULTANTS CO.,LTD. Tokyo Metro Co.,Ltd.			Package CP NS-01 : Bidding Documents	24 MARCH 2020			
03	10/02/2020	APALIT CROSS OVER ADDED				DESIGNER	M. OGIKUBO	-	SCALE	NONE
04	26/02/2021	ADDITIONAL TURNOUTS BASED ON TRACKS SCHEMATIC DRAWINGS				CHECK	T. MATSUMOTO	-	SHEET No.	3 OF 40
05	02/03/2020	ISSUED FOR REFERENCE				TEAM LEADER	T. ISHIZUKA	-	DRG No.	MCRP-DWG-PSS-1001
06	25/05/2021	LINES AT BP REMOVED & SS NO.10 TO SS NO.22 CHAINAGE REVISED.				P. MANAGER	N. KAWAI	-	DRG S.	1001
									REV	06





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
02	24 JUN 2021	LOCAL ANNUNCIATOR PANEL ADDED

DEPARTMENT OF TRANSPORTATION (DOTr)

 PHILIPPINE NATIONAL RAILWAYS

CONSULTANT

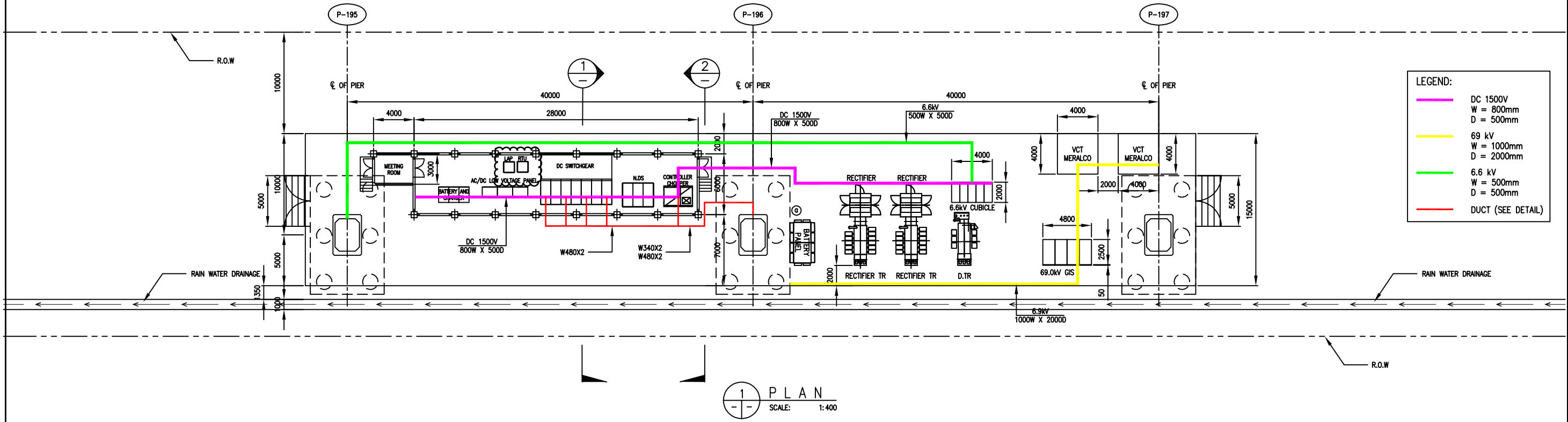
JICA DESIGN TEAM (JDT)

ORIENTAL CONSULTANTS GLOBAL CO.,LTD. KATAHIRA & ENGINEER INTERNATIONAL PACIFIC CONSULTANTS CO.,LTD.	JAPAN INTERNATIONAL CONSULTANTS FOR TRANSPORTATION CO.,LTD. TONICHI ENGINEERING CONSULTANTS, INC. Tokyo Metro Co.,Ltd.
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TITLE	JDT	SMEC
DESIGNER	M.OGIKUBO	-
CHECK	T.MATSUMOTO	-
TEAM LEADER	T.SHIZUKA	-
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)

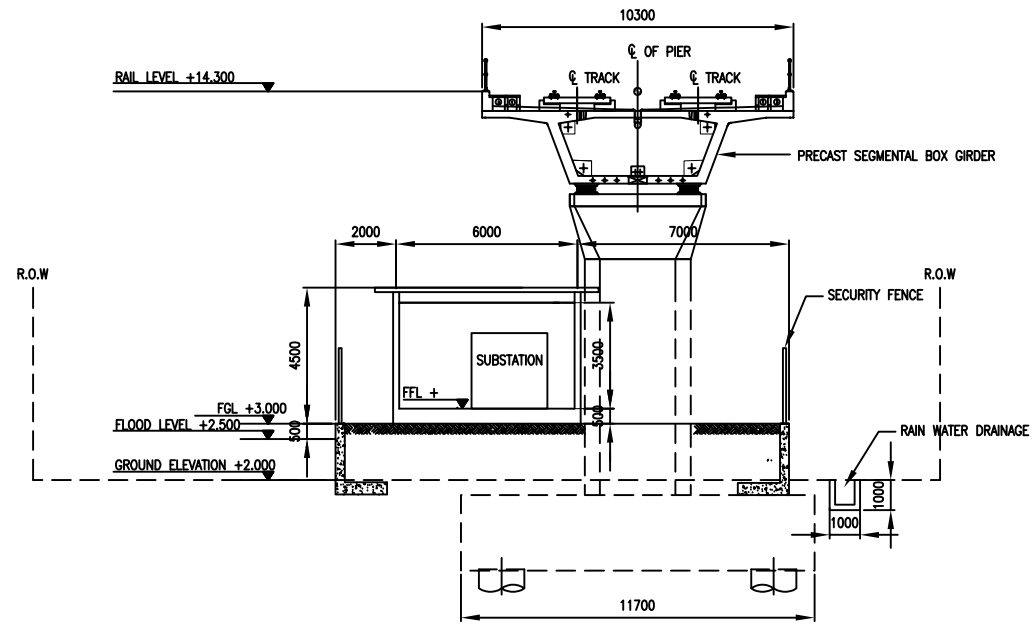
DATE	16 MAY 2019
SCALE	AS SHOWN
SHEET No.	18 OF 40
DRG No.	MCRP-DWG-C/M-PSS-2101
DRG S.	-
REV	02



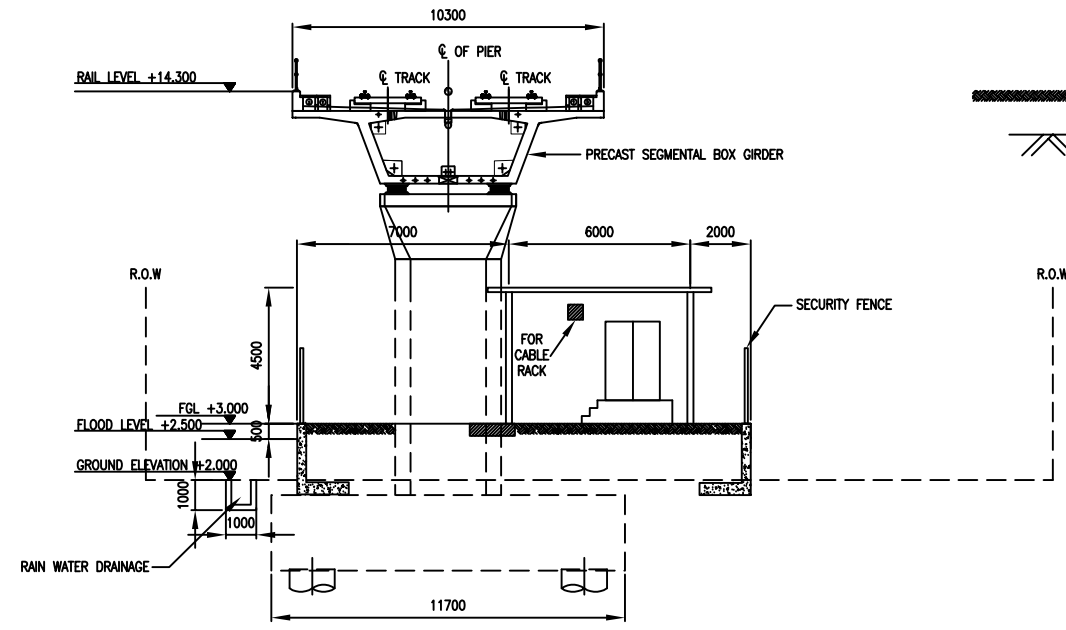
LEGEND:

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

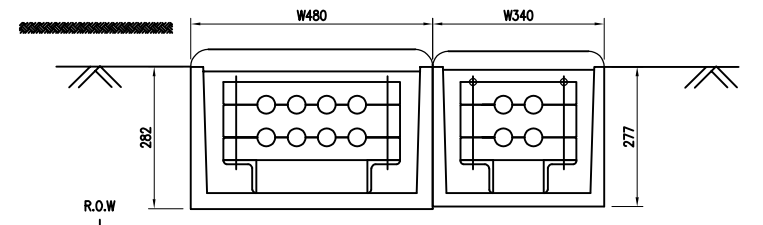
1 PLAN
SCALE: 1:400



2 SECTION-1
SCALE: 1:250



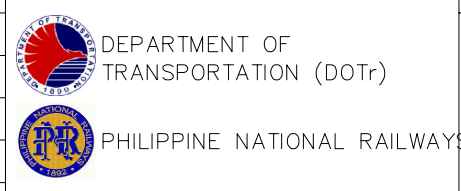
3 SECTION-2
SCALE: 1:250



4 DUCT DETAIL
SCALE: 1:15

FOR REFERENCE

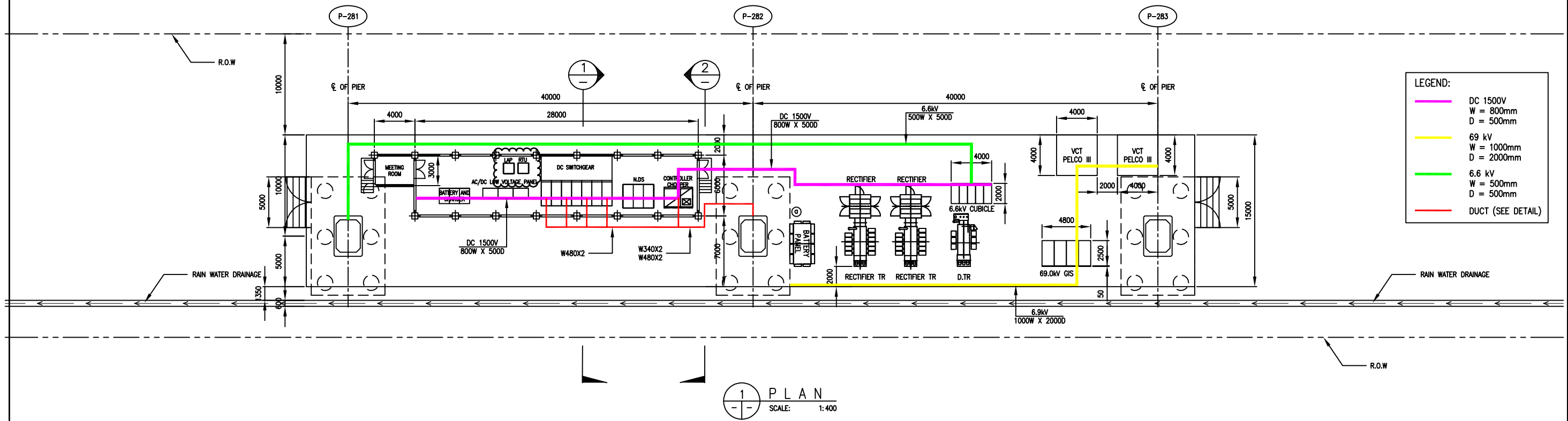
VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE
01	09 JUN 2021	RESISTOR CHANGED TO BATTERY POST
02	24 JUN 2021	LOCAL ANNUNCIATOR PANEL ADDED



CONSULTANT		
TITLE	JDT	SMEC
DESIGNER	M.OGIKUBO	-
CHECK	T.MATSUMOTO	-
TEAM LEADER	T.ISHIZUKA	-
P. MANAGER	N.KAWAI	-

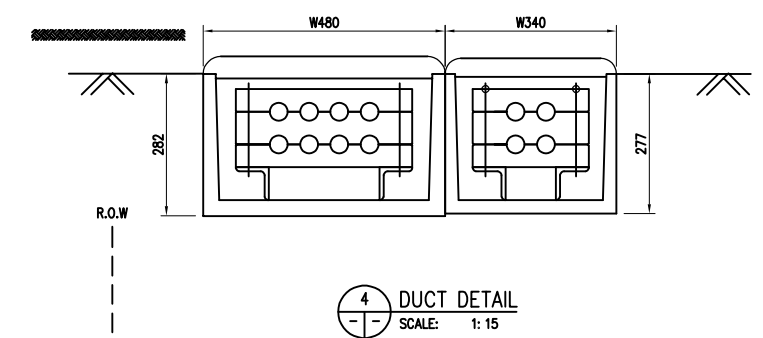
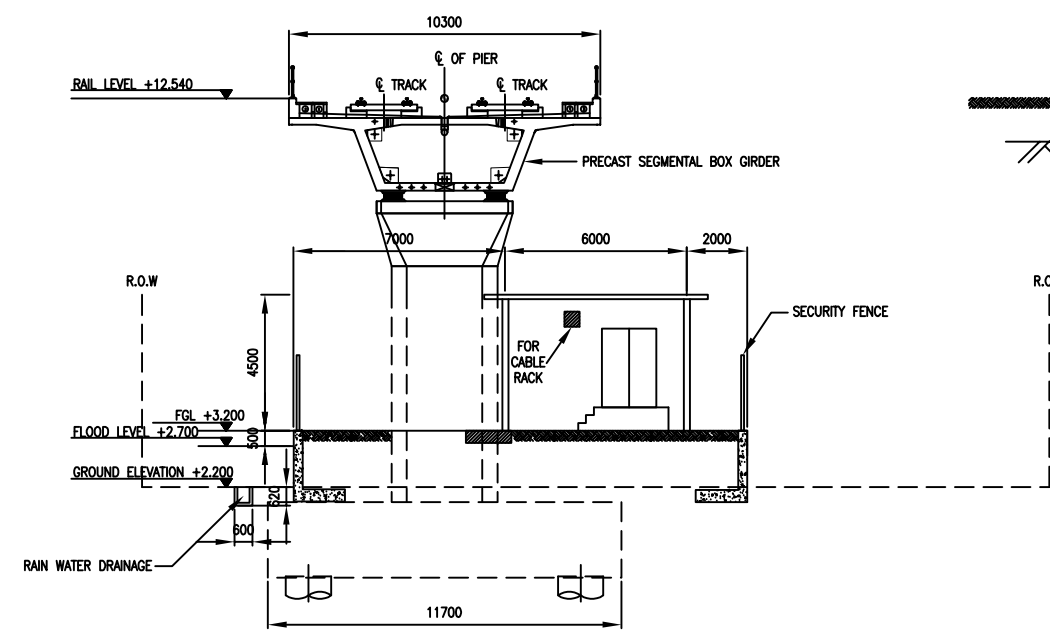
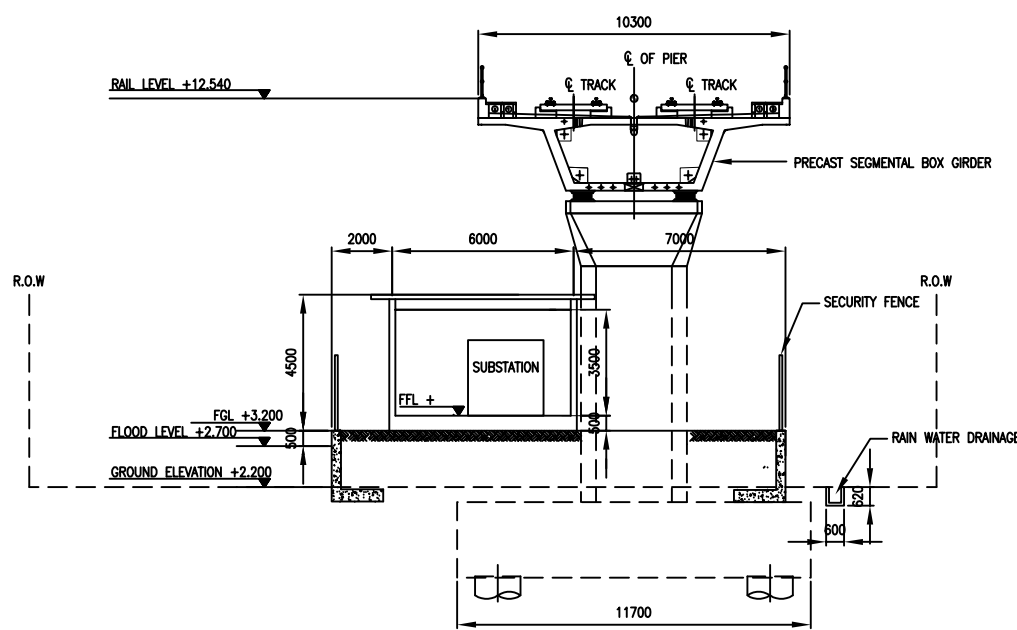
MALOLOS - CLARK RAILWAY PROJECT (MCRP) NORTH SOUTH RAILWAY PROJECT-SOUTH (NSRP-SOUTH)	
Package CP NS-01 : Bidding Documents	
SUBSTATION LAYOUT (SS No. S11)	

DATE	16 APRIL 2019
SCALE	AS SHOWN
SHEET No.	19 OF 40
DRG No.	MCRP-DWG-A/C-PSS-2102
DRG S.	-
REV	02



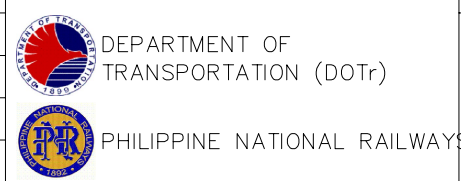
LEGEND:

- 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
02	24 JUN 2021	LOCAL ANNUNCIATOR PANEL ADDED



CONSULTANT

JICA DESIGN TEAM (JDT)

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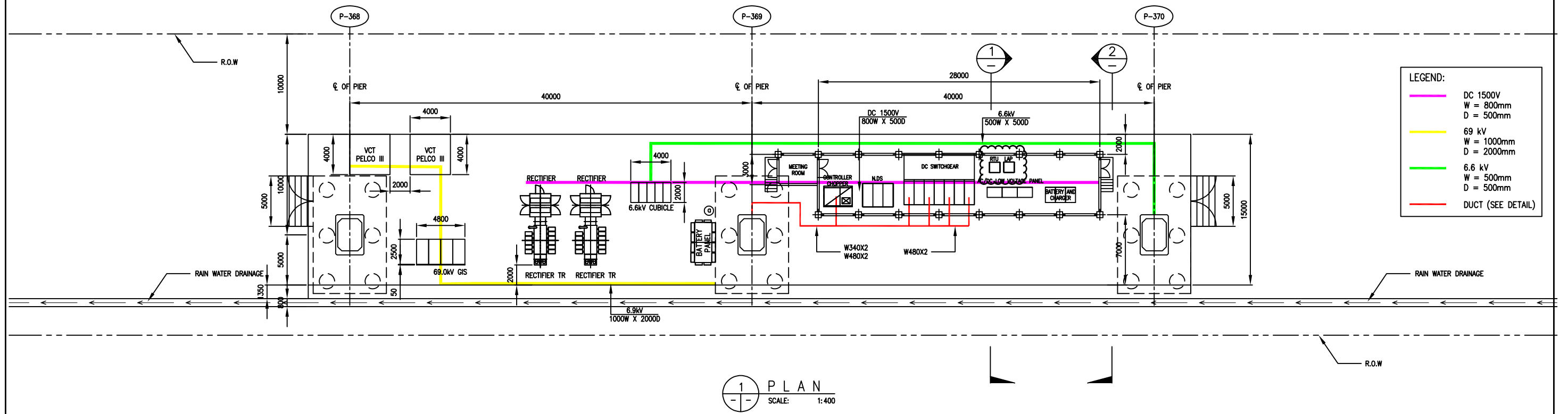
TITLE	JDT	SMEC
DESIGNER	M.OGIKUBO	-
CHECK	T.MATSUMOTO	-
TEAM LEADER	T.ISHIZUKA	-
P. MANAGER	N.KAWAI	-

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

Package CP NS-01 : Bidding Documents

SUBSTATION LAYOUT
(SS No. S12)

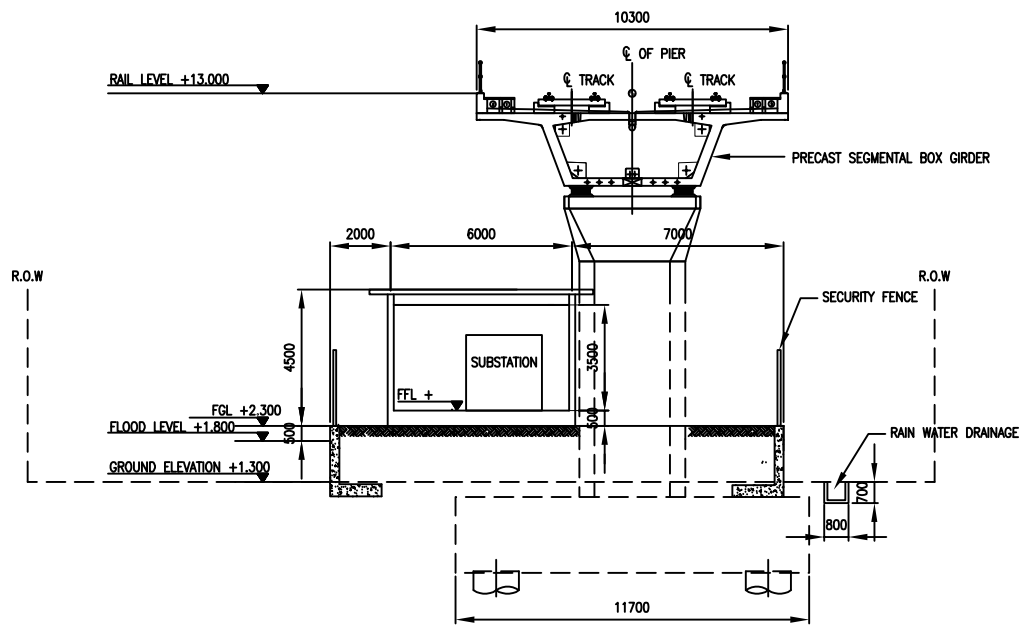
DATE	SCALE	SHEET No.	DRG No.	DRG S.	REV
16 MAY 2019	AS SHOWN	20 OF 40	MCRP-DWG-A/C-PSS-2103	-	02



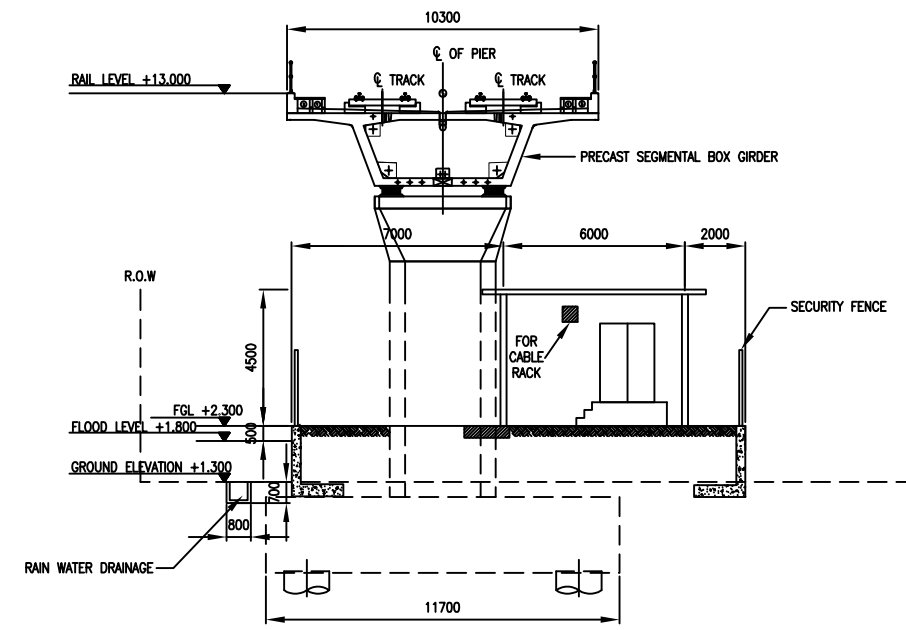
LEGEND:

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

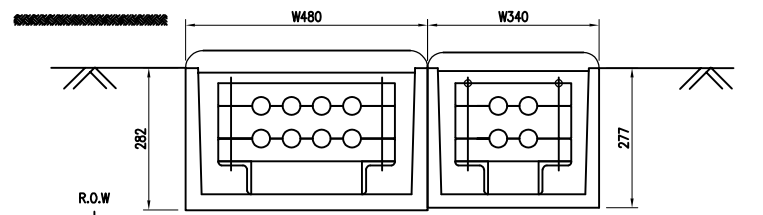
1 PLAN
SCALE: 1:400



2 SECTION-1
SCALE: 1:250



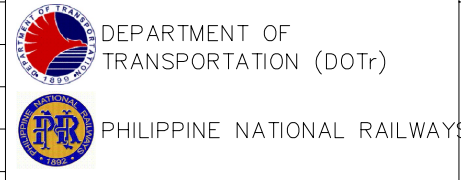
3 SECTION-2
SCALE: 1:250



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
02	24 JUN 2021	LOCAL ANNUNCIATOR PANEL ADDED



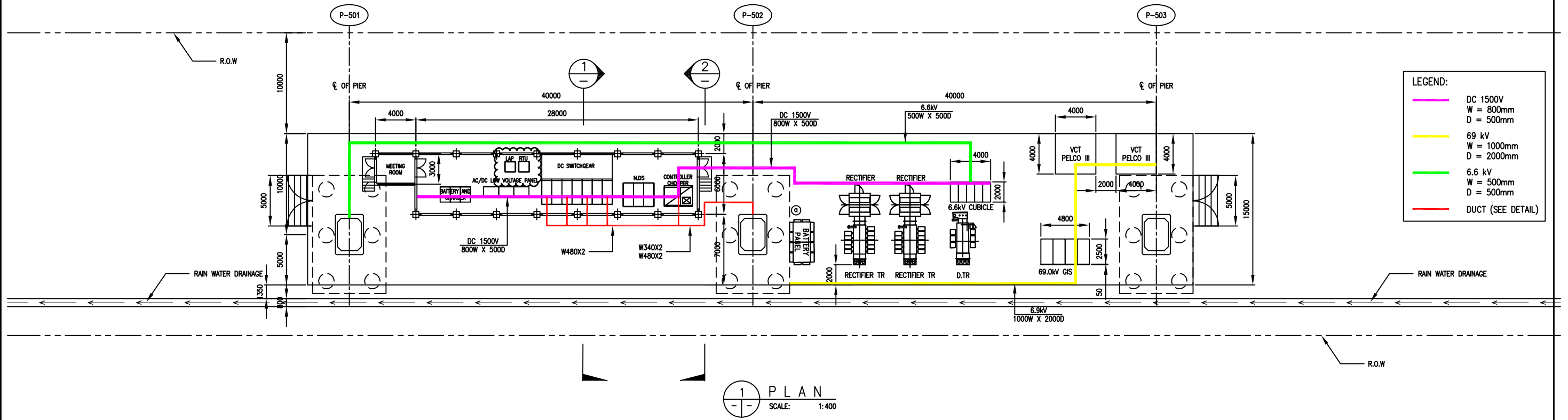
CONSULTANT

JICA DESIGN TEAM (JDT)

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

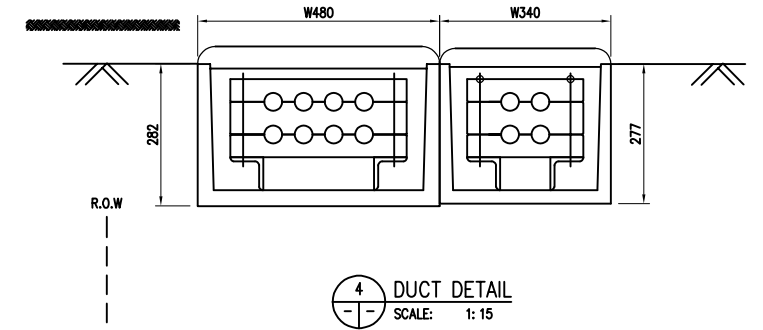
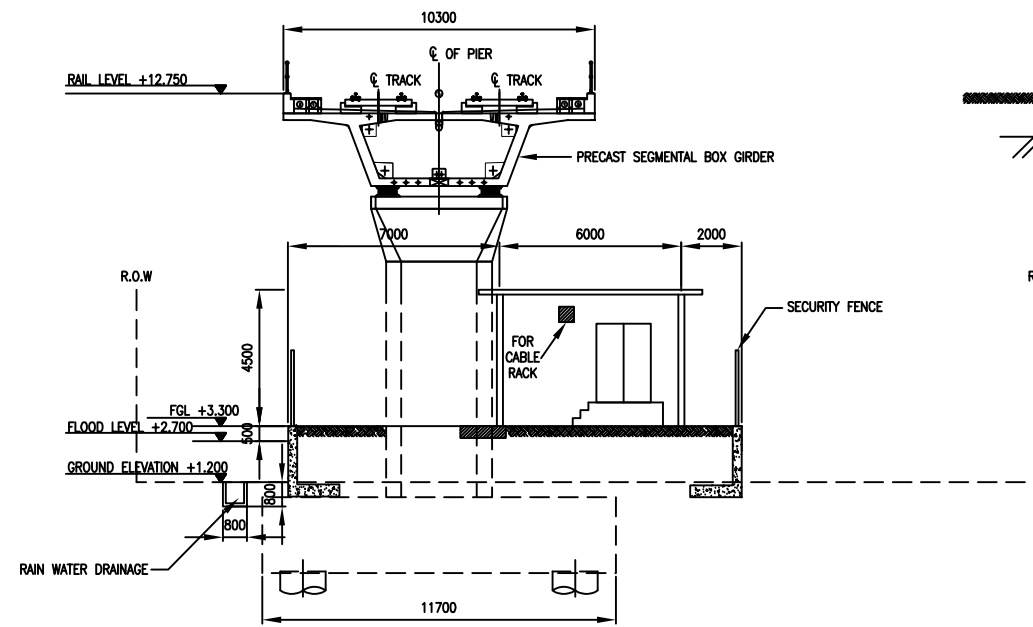
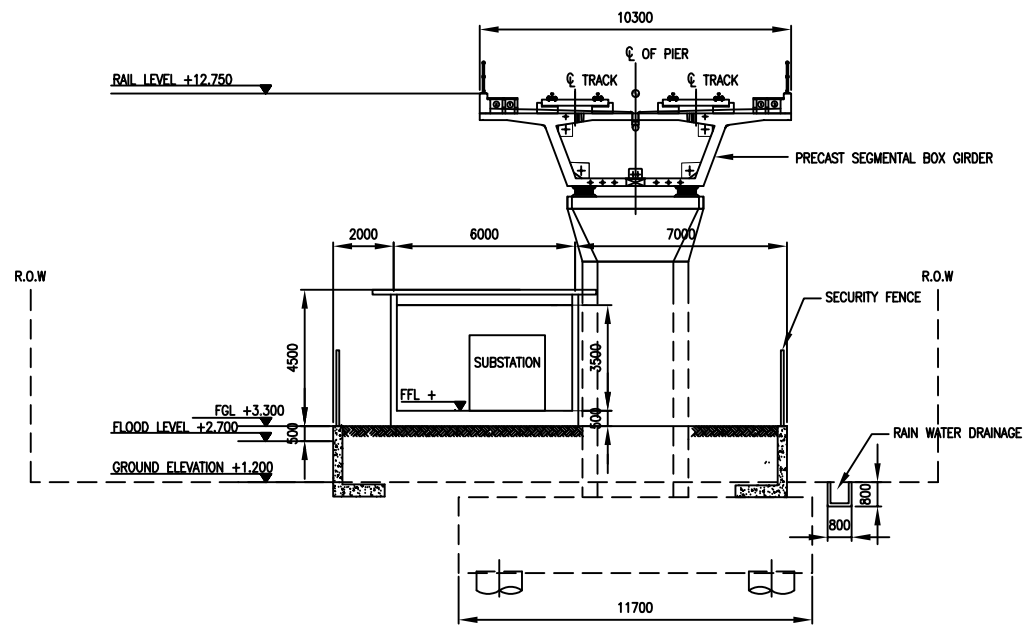
MALOLOS - CLARK RAILWAY PROJECT (MCRP) NORTH SOUTH RAILWAY PROJECT-SOUTH (NSRP-SOUTH)	
DATE	15 APRIL 2019
SCALE	AS SHOWN
SHEET No.	21 OF 40
DRG No.	MCRP-DWG-S/A-PSS-2104
DRG S.	-
REV	02

SUBSTATION LAYOUT
(SS No. S13)



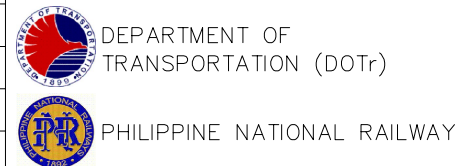
LEGEND:

	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
02	21 JUN 2021	LOCAL ANNUNCIATOR PANEL ADDED



CONSULTANT		
TITLE	JDT	SMEC
DESIGNER	M.OGKUBO	-
CHECK	T.MATSUMOTO	-
TEAM LEADER	T.ISHIZUKA	-
P. MANAGER	N.KAWAI	-

JICA DESIGN TEAM (JDT)

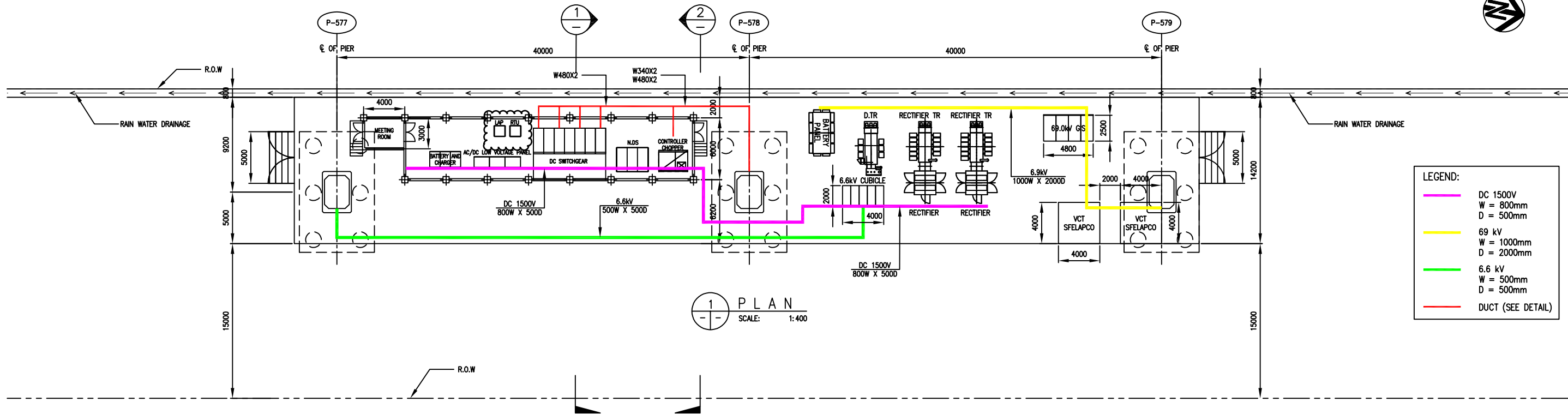
ORIENTAL CONSULTANTS GLOBAL CO.,LTD. | JAPAN INTERNATIONAL CONSULTANTS FOR TRANSPORTATION CO.,LTD.

KATAHIRA & ENGINEER INTERNATIONAL | TONICHI ENGINEERING CONSULTANTS, INC.

PACIFIC CONSULTANTS CO.,LTD. | Tokyo Metro Co.,Ltd.

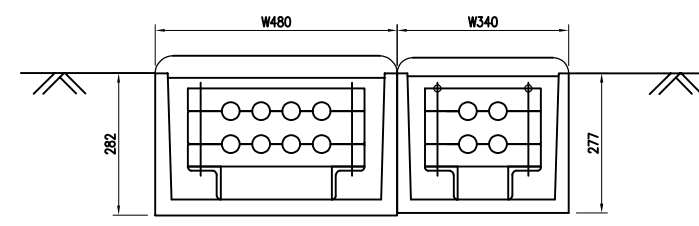
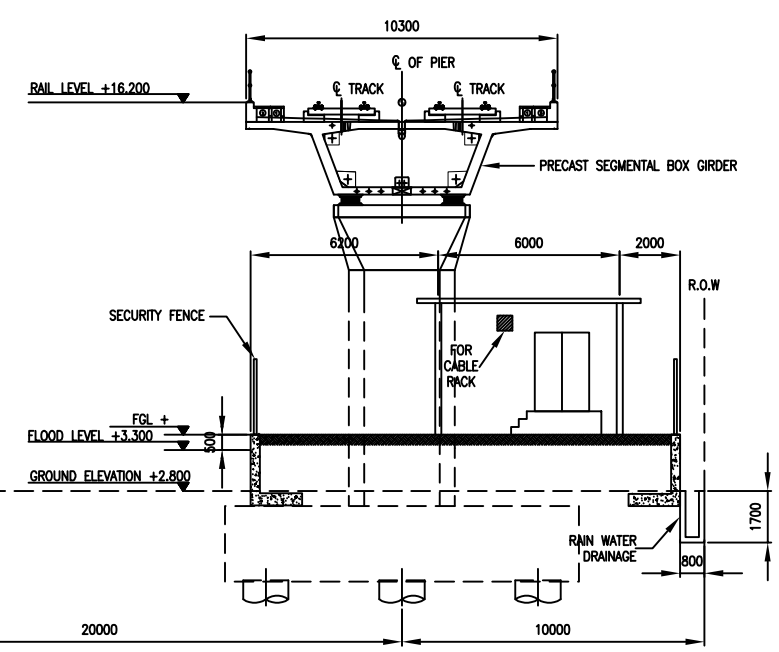
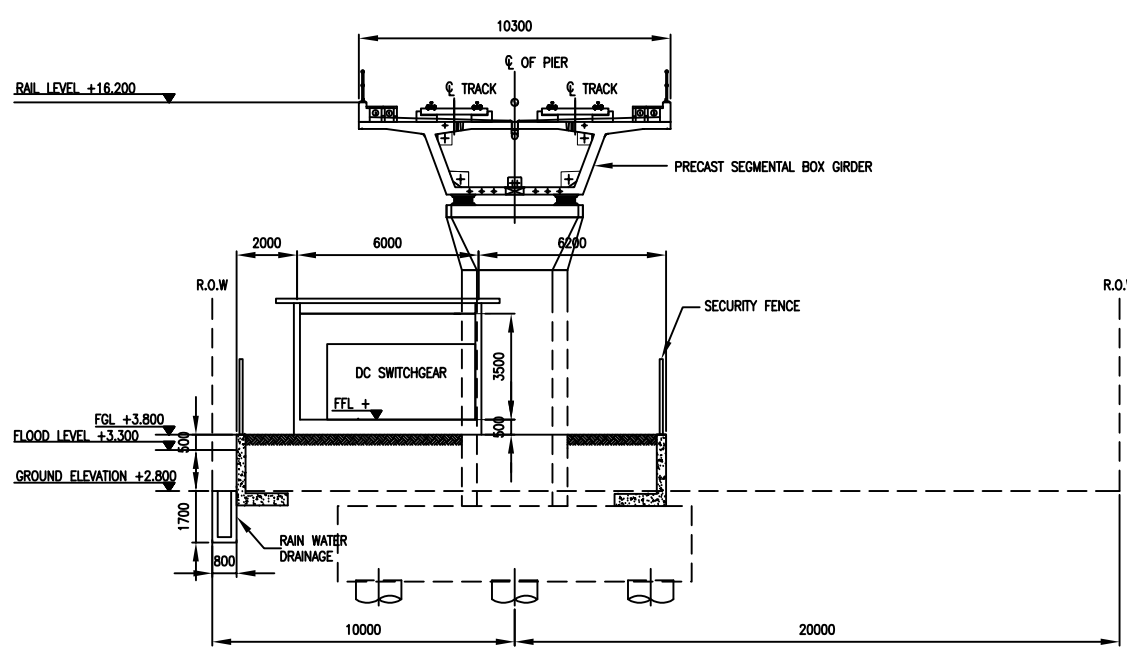
MALOLOS - CLARK RAILWAY PROJECT (MCRP) NORTH SOUTH RAILWAY PROJECT-SOUTH (NSRP-SOUTH)	
DATE	16 MAY 2019
SCALE	AS SHOWN
SHEET No.	22 OF 40
DRG No.	MCRP-DWG-S/A-PSS-2105
DRG S.	-
REV	02

SUBSTATION LAYOUT
(SS No. S14)



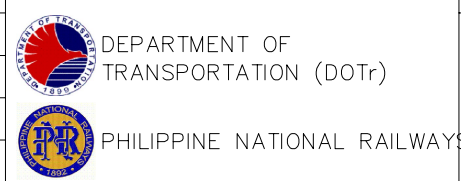
LEGEND:

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



FOR REFERENCE

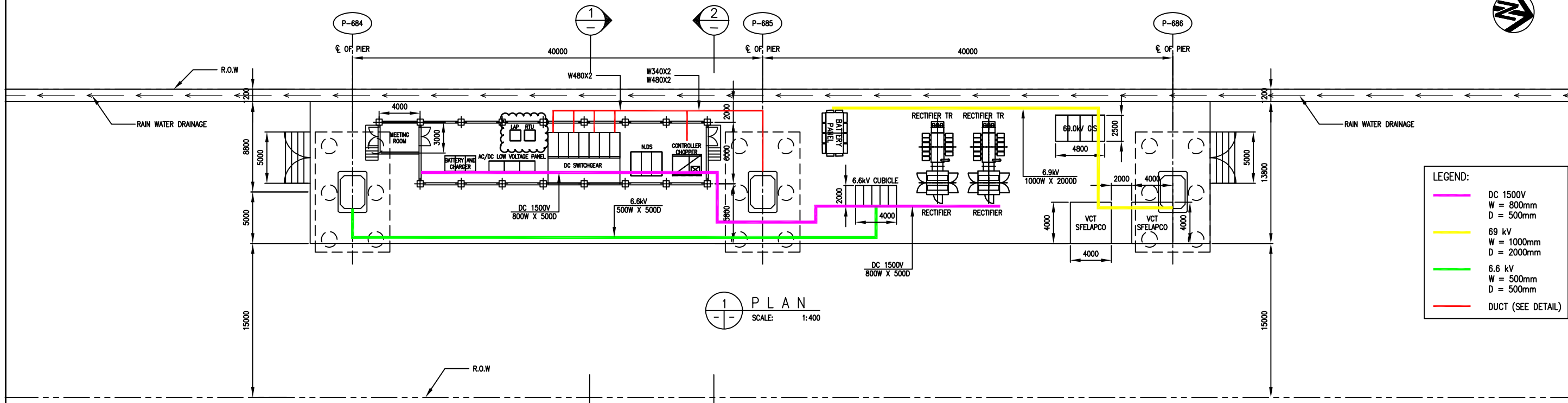
VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE
01	09 JUN 2021	RESISTOR CHANGED TO BATTERY POST
02	21 JUN 2021	LOCAL ANNUNCIATOR PANEL ADDED



CONSULTANT		
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)	

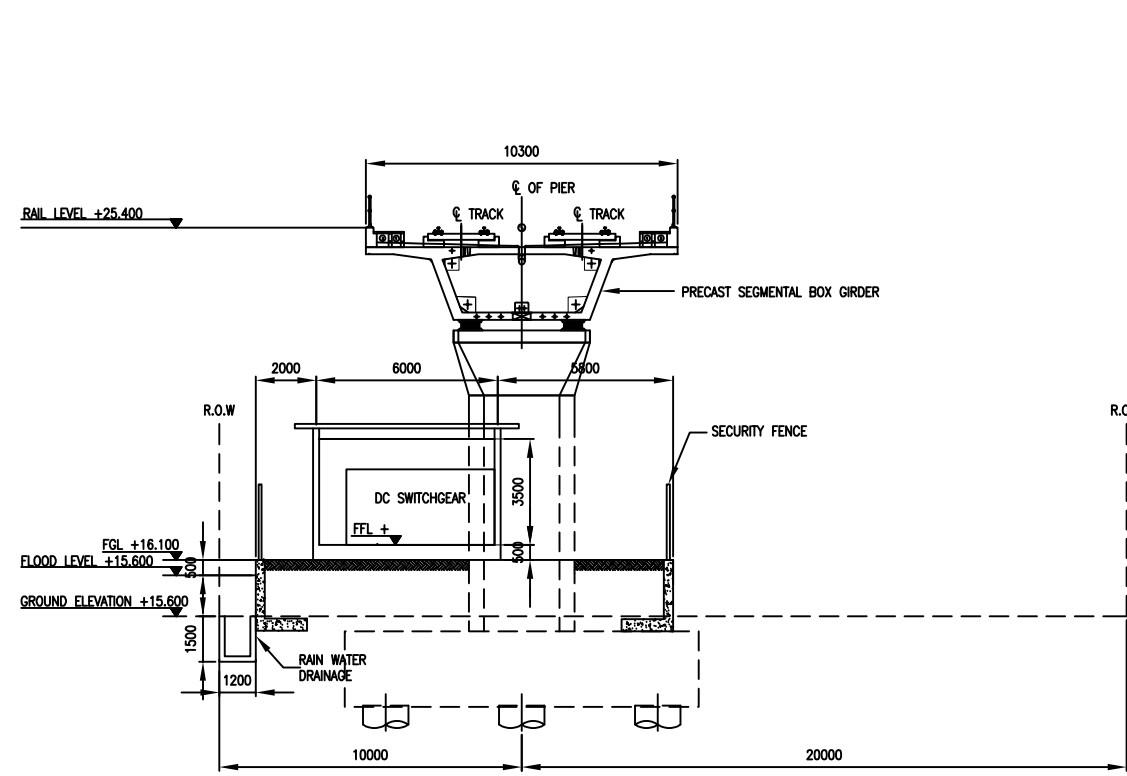
DATE	16 MAY 2019
SCALE	AS SHOWN
SHEET No.	23 OF 40
DRG No.	MCRP-DWG-S/A-PSS-2106
DRG S.	-
REV	02



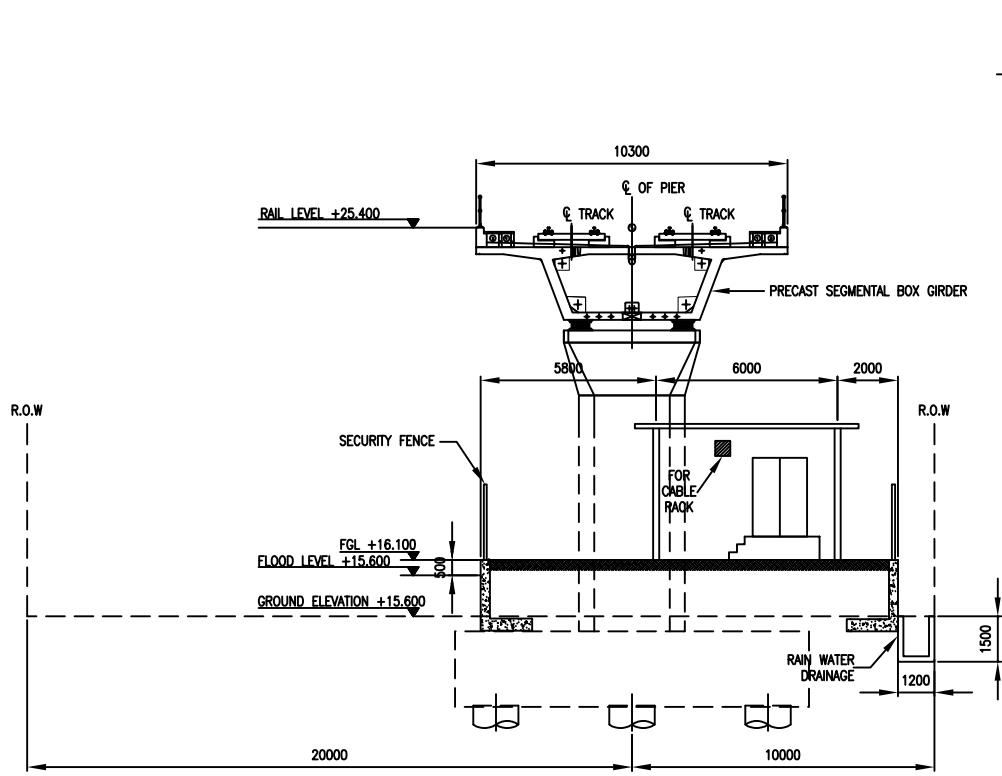
LEGEND:

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

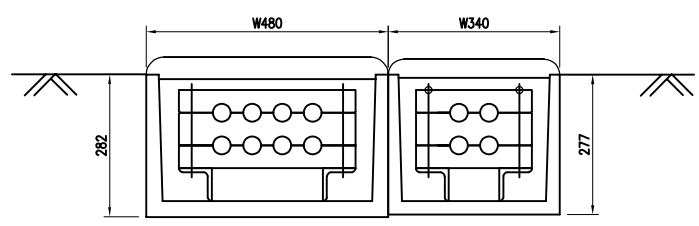
1 PLAN
SCALE: 1:400



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
02	21 JUN 2021	LOCAL ANNUNCIATOR PANEL ADDED

DEPARTMENT OF TRANSPORTATION (DOTr)
 PHILIPPINE NATIONAL RAILWAYS

CONSULTANT
 JICA DESIGN TEAM (JDT)

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

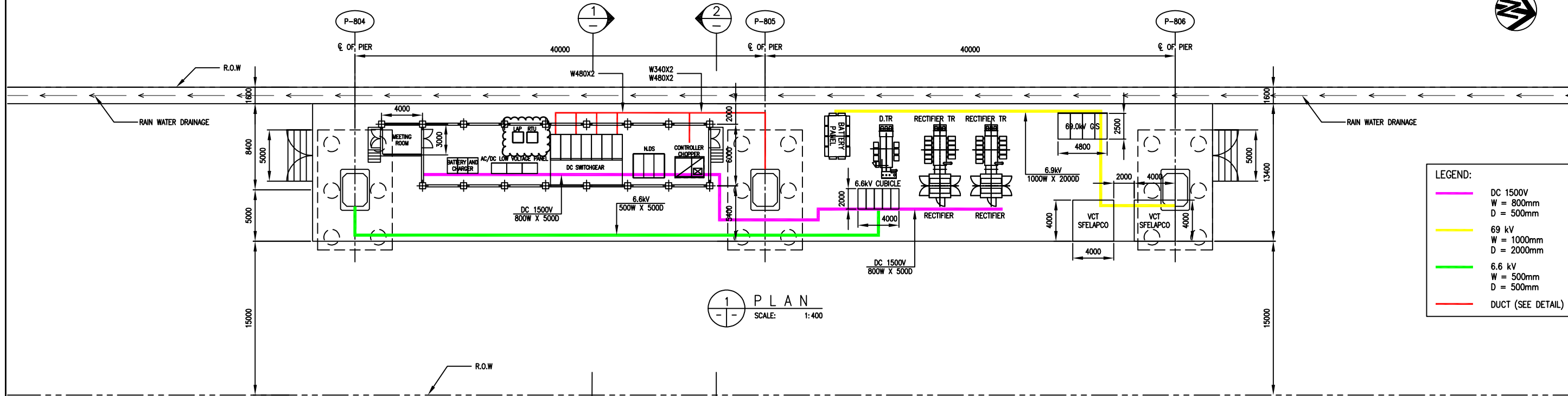
ORIENTAL CONSULTANTS GLOBAL CO.,LTD.
 KATAHIRA & ENGINEER INTERNATIONAL
 PACIFIC CONSULTANTS CO.,LTD.
 JAPAN INTERNATIONAL CONSULTANTS FOR TRANSPORTATION CO.,LTD.
 TONICHI ENGINEERING CONSULTANTS, INC.
 Tokyo Metro Co.,Ltd.

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

Package CP NS-01 : Bidding Documents

SUBSTATION LAYOUT
 (SS No. S16)

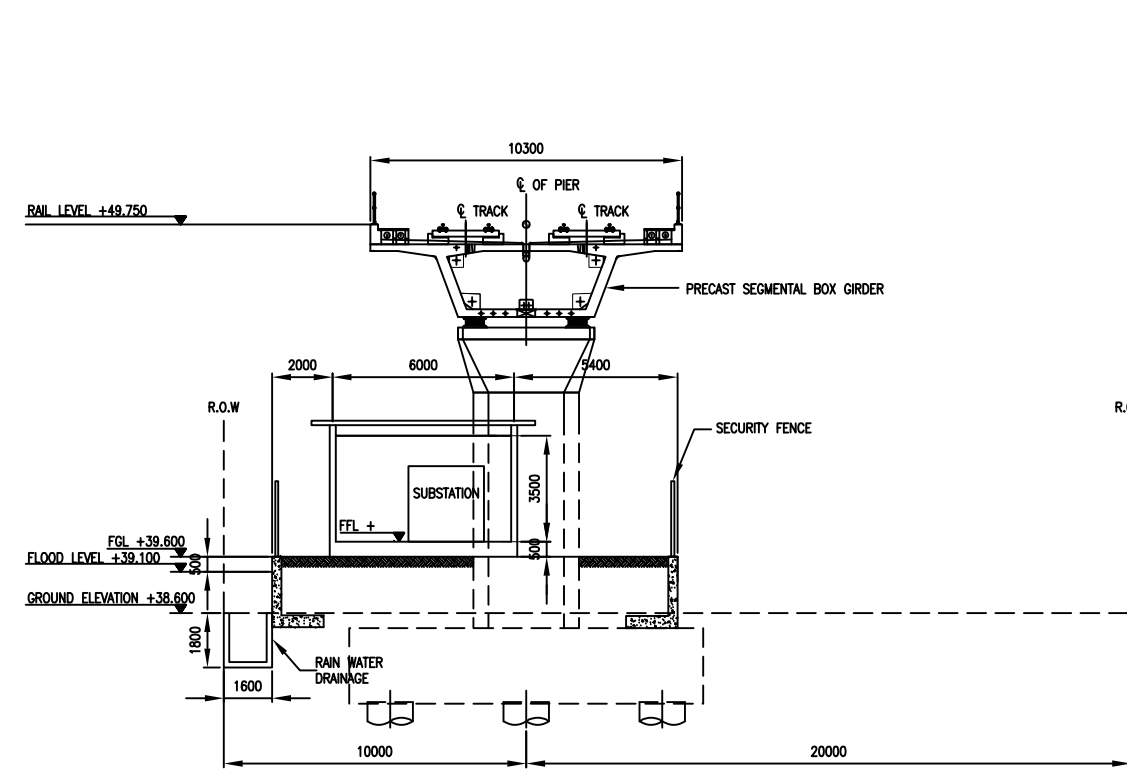
DATE	16 MAY 2019
SCALE	AS SHOWN
SHEET No.	24 OF 40
DRG No.	MCRP-DWG-A/S-PSS-2107
DRG S.	-
REV	02



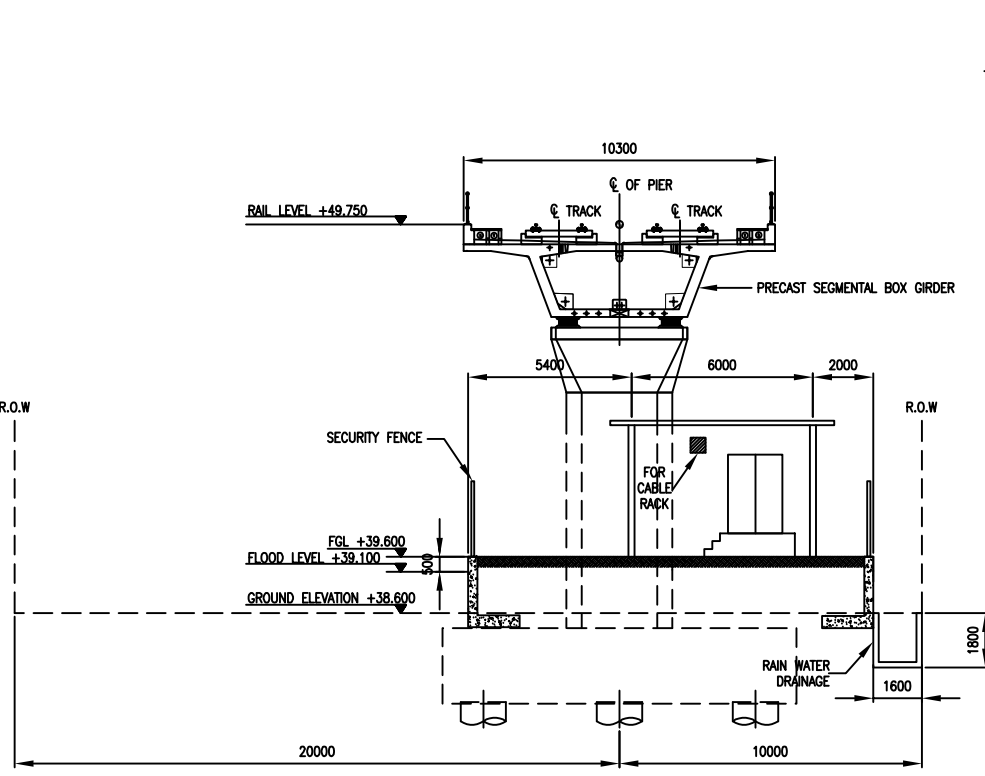
LEGEND:

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

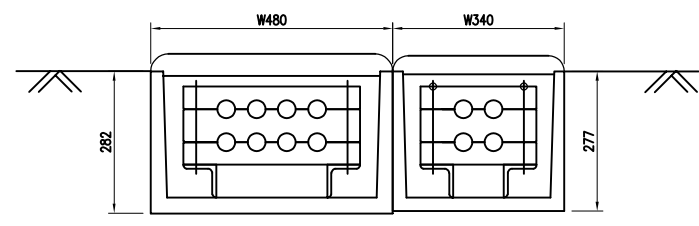
1 PLAN
SCALE: 1:400



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
02	21 JUN 2021	LOCAL ANNUNCIATOR PANEL ADDED

DEPARTMENT OF TRANSPORTATION (DOTr)
PHILIPPINE NATIONAL RAILWAYS

CONSULTANT
JICA DESIGN TEAM (JDT)

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

ORIENTAL CONSULTANTS GLOBAL CO.,LTD.
KATAHIRA & ENGINEER INTERNATIONAL
PACIFIC CONSULTANTS CO.,LTD.

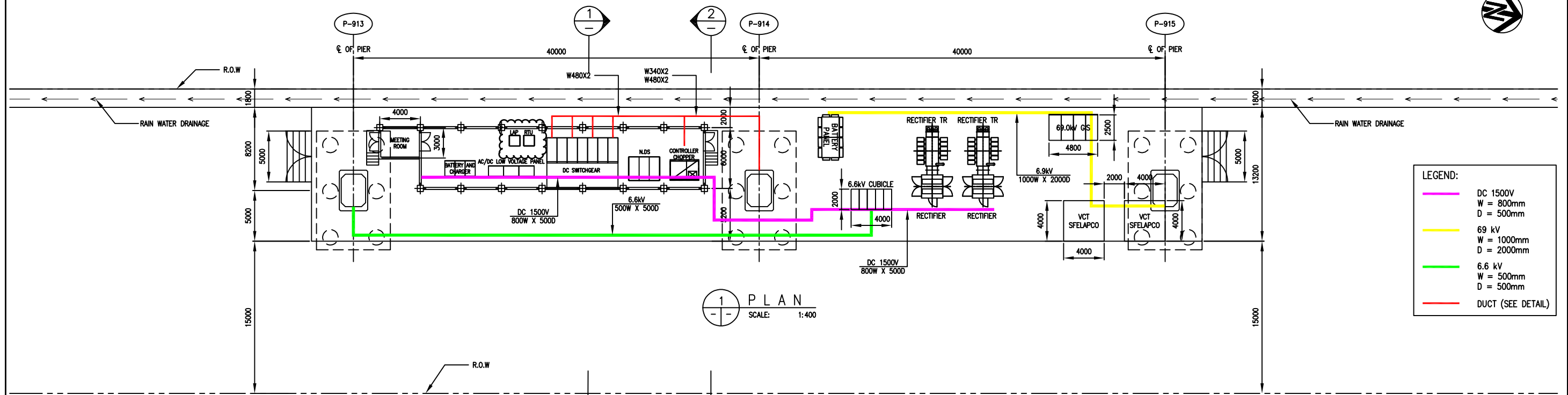
JAPAN INTERNATIONAL CONSULTANTS FOR TRANSPORTATION CO.,LTD.
TONICHI ENGINEERING CONSULTANTS, INC.
Tokyo Metro Co.,Ltd.

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

Package CP NS-01 : Bidding Documents

SUBSTATION LAYOUT
(SS No. S17)

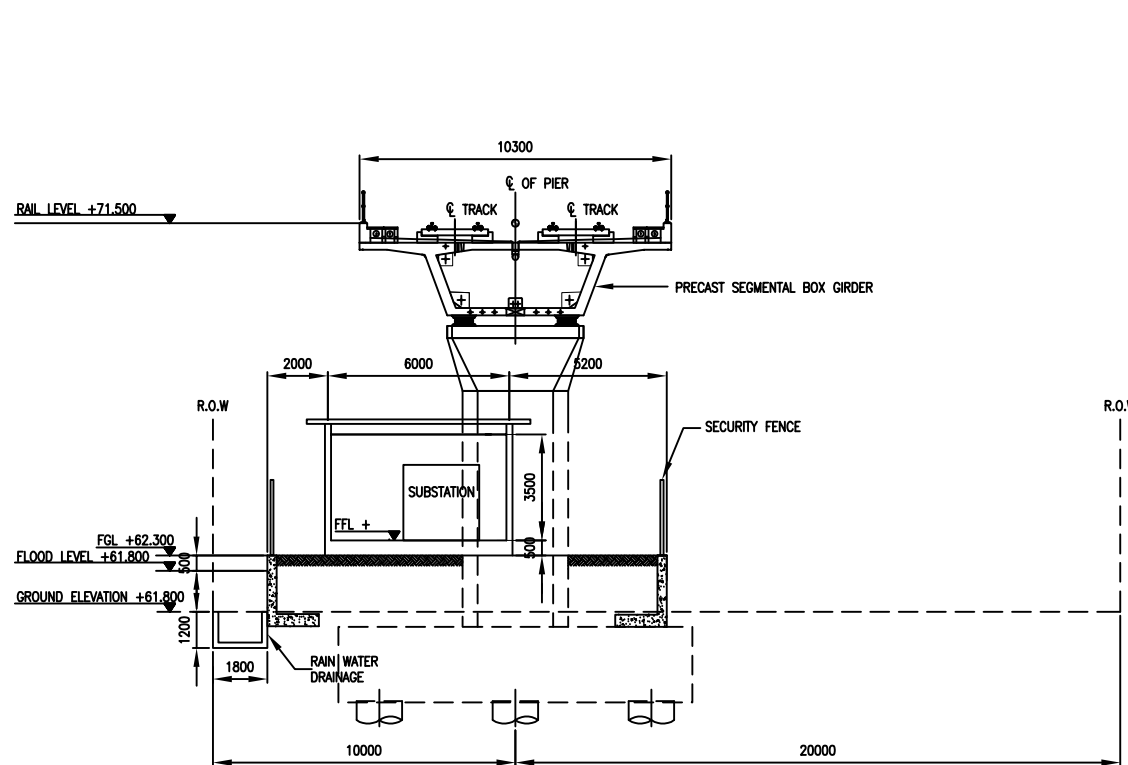
DATE	16 MAY 2019
SCALE	AS SHOWN
SHEET No.	25 OF 40
DRG No.	MCRP-DWG-A/S-PSS-2108
DRG S.	-
REV	02



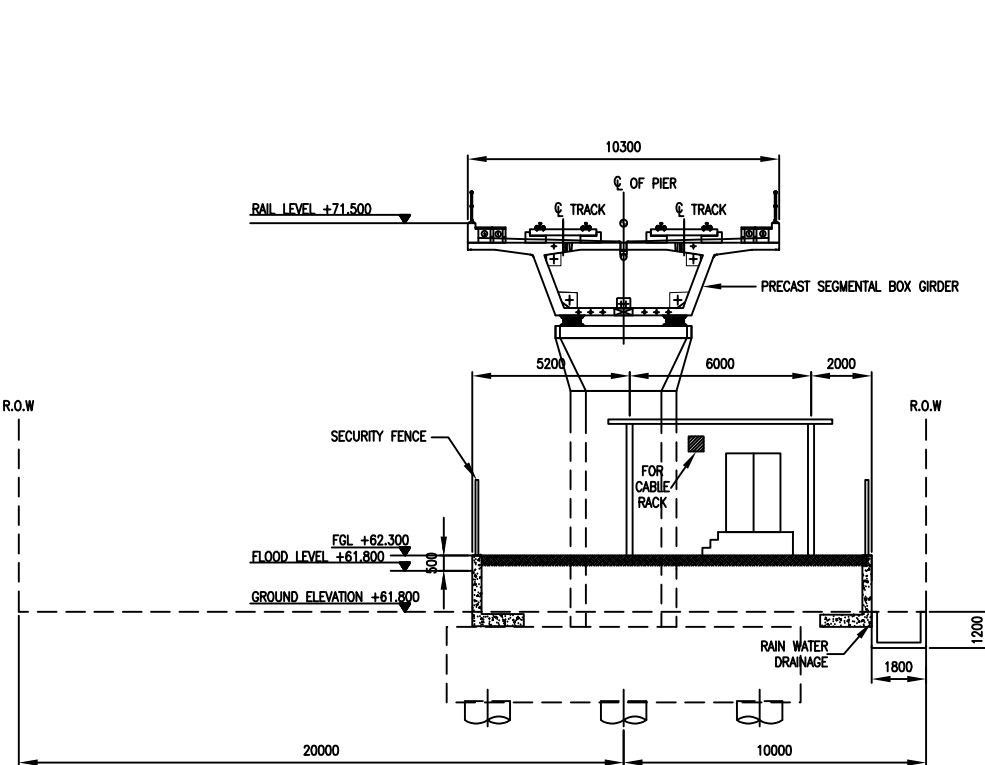
LEGEND:

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

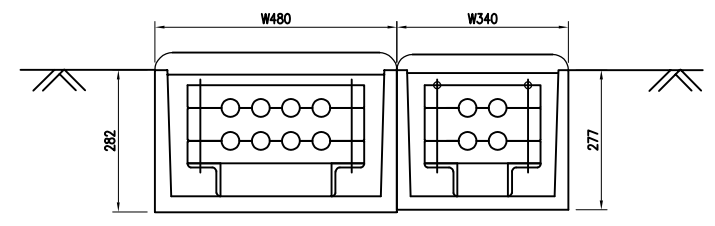
1 PLAN
SCALE: 1:400



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
02	21 JUN 2021	LOCAL ANNUNCIATOR PANEL ADDED

DEPARTMENT OF TRANSPORTATION (DOTr)
PHILIPPINE NATIONAL RAILWAYS

CONSULTANT
JICA DESIGN TEAM (JDT)

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

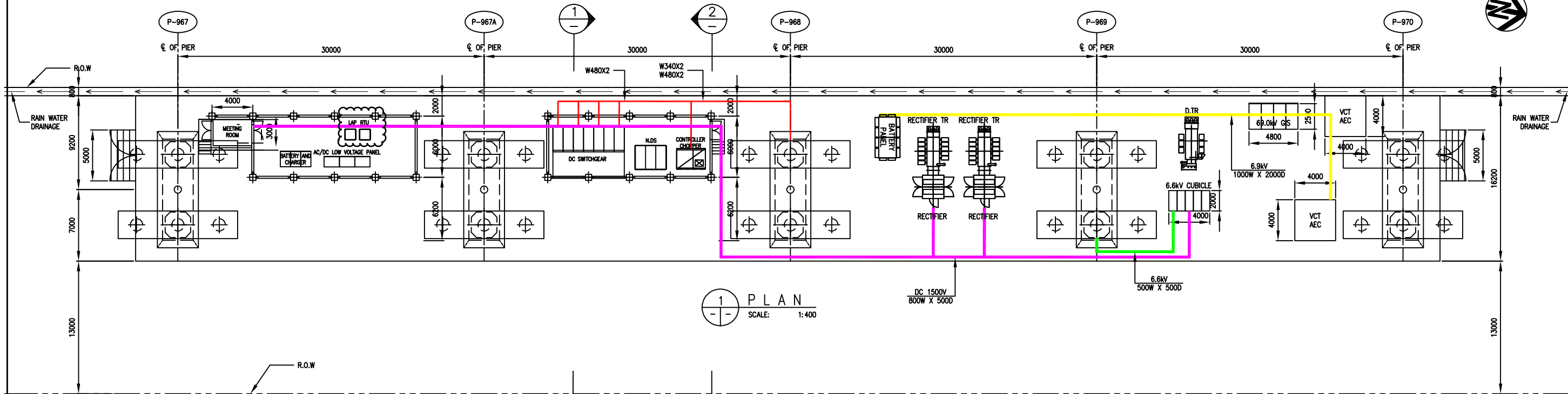
ORIENTAL CONSULTANTS GLOBAL CO.,LTD. | JAPAN INTERNATIONAL CONSULTANTS FOR TRANSPORTATION CO.,LTD.
KATAHIRA & ENGINEER INTERNATIONAL | TONICHI ENGINEERING CONSULTANTS, INC.
PACIFIC CONSULTANTS CO.,LTD. | Tokyo Metro Co.,Ltd.

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

Package CP NS-01 : Bidding Documents

SUBSTATION LAYOUT
(SS No. S18)

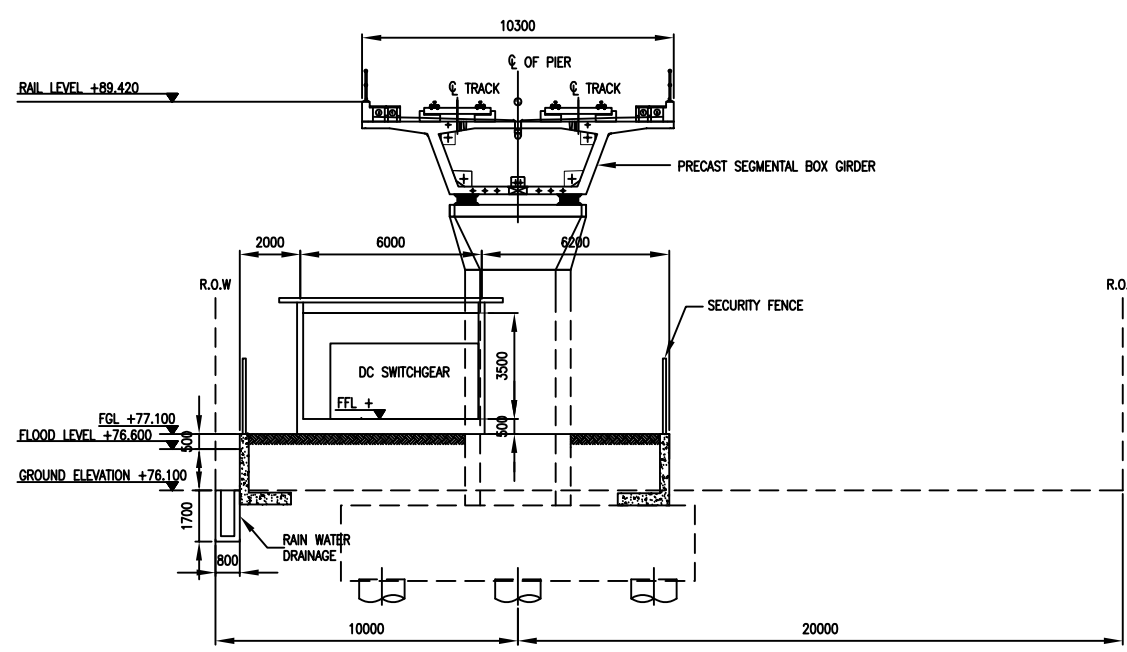
DATE	16 MAY 2019
SCALE	AS SHOWN
SHEET No.	26 OF 40
DRG No.	MCRP-DWG-A/S-PSS-2109
DRG S.	-
REV	02



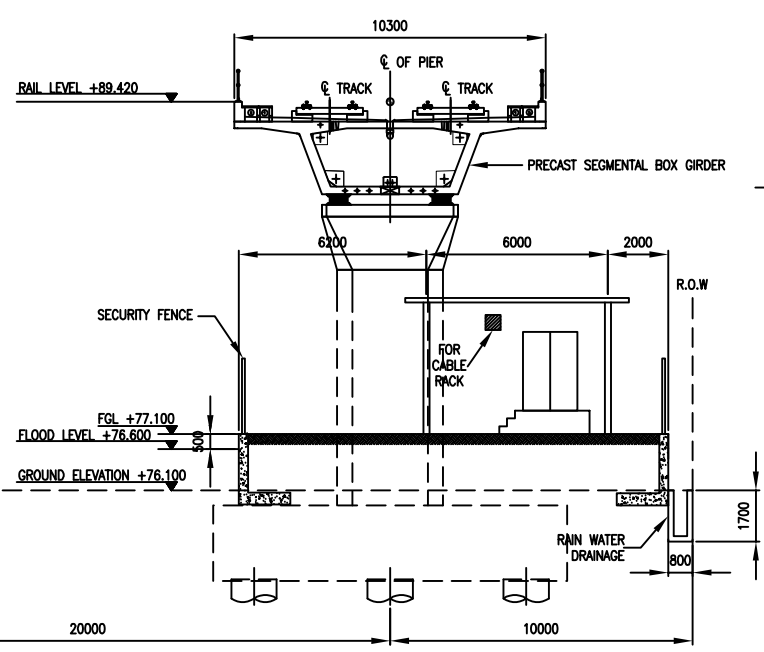
1 PLAN
SCALE: 1:400

LEGEND:

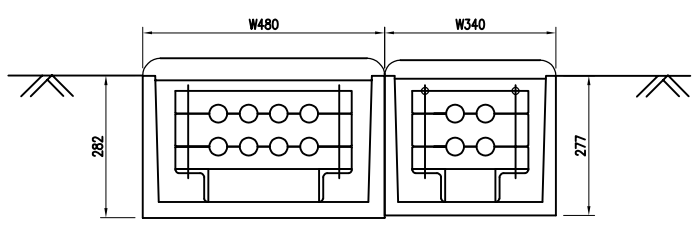
- DC 1500V
W = 800mm
D = 500mm
- 69 kV
W = 1000mm
D = 2000mm
- 6.6 kV
W = 500mm
D = 500mm
- DUCT (SEE DETAIL)



2 SECTION-1
SCALE: 1:250



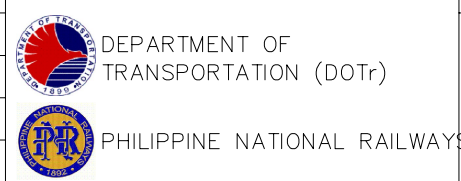
3 SECTION-2
SCALE: 1:250



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
02	21 JUN 2021	LOCAL ANNUNCIATOR PANEL ADDED



CONSULTANT		
TITLE	JDT	SMEC
DESIGNER	M.OGKUBO	-
CHECK	T.MATSUMOTO	-
TEAM LEADER	T.ISHIZUKA	-
P. MANAGER	N.KAWAI	-

JICA DESIGN TEAM (JDT)

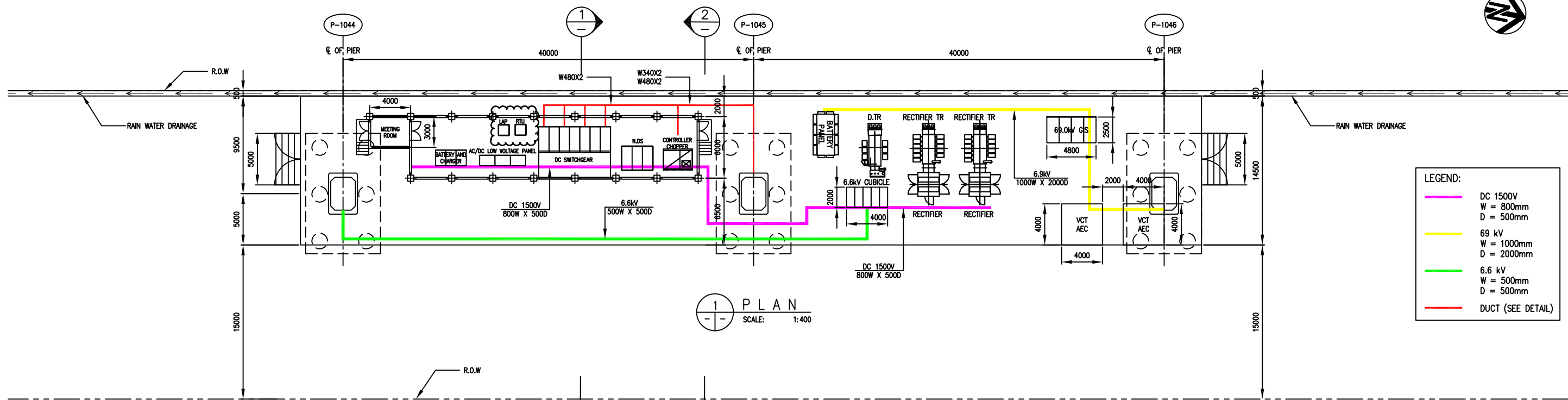
ORIENTAL CONSULTANTS GLOBAL CO.,LTD. | JAPAN INTERNATIONAL CONSULTANTS FOR TRANSPORTATION CO.,LTD.

KATAHIRA & ENGINEER INTERNATIONAL | TONICHI ENGINEERING CONSULTANTS, INC.

PACIFIC CONSULTANTS CO.,LTD. | Tokyo Metro Co.,Ltd.

MALOLOS - CLARK RAILWAY PROJECT (MCRP) NORTH SOUTH RAILWAY PROJECT-SOUTH (NSRP-SOUTH)	
Package CP NS-01 : Bidding Documents	
SUBSTATION LAYOUT (SS No. S19)	

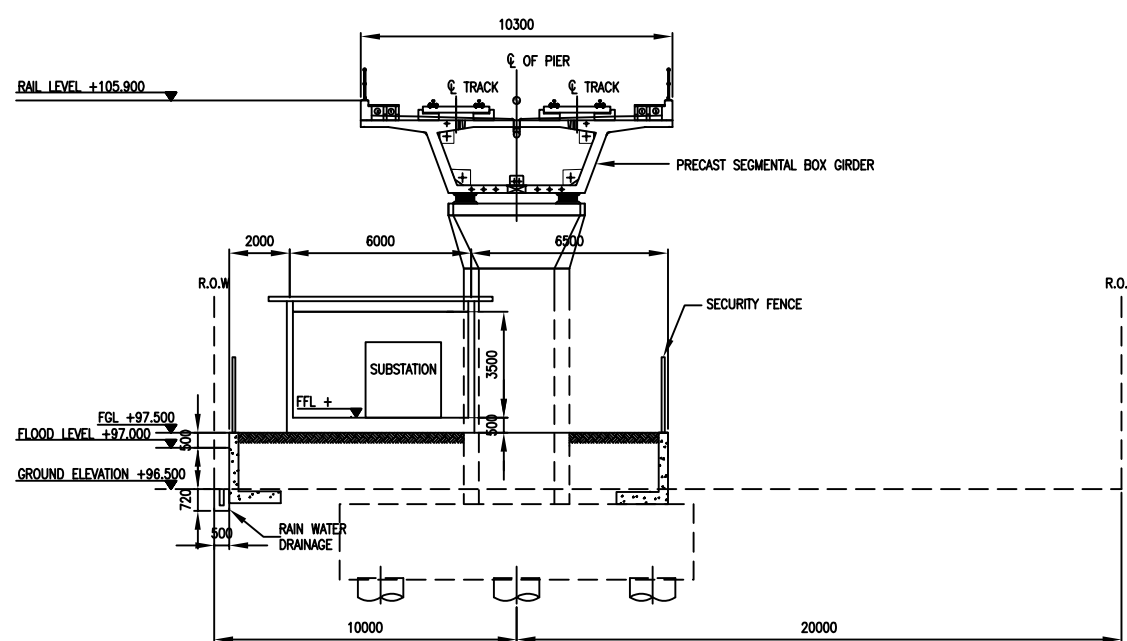
DATE	16 MAY 2019
SCALE	AS SHOWN
SHEET No.	27 OF 40
DRG No.	MCRP-DWG-A/S-PSS-2110
DRG S.	-
REV	02



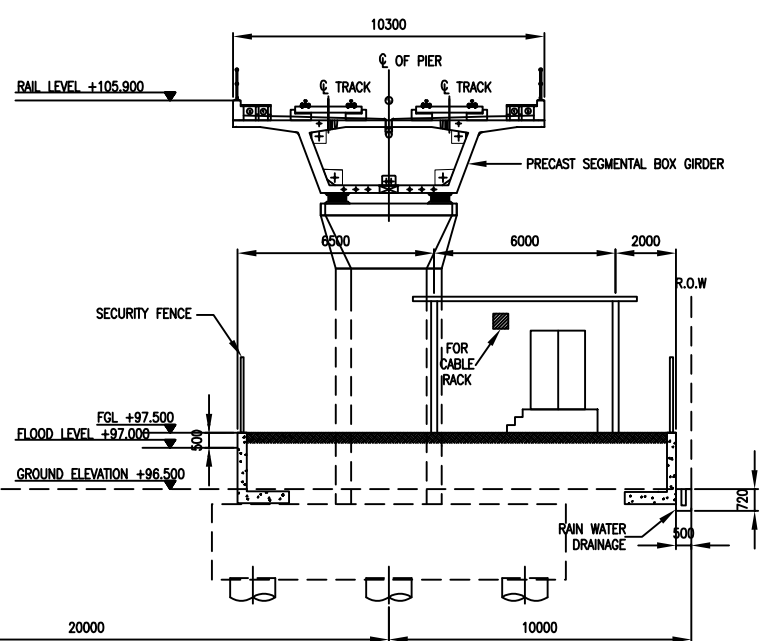
LEGEND:

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

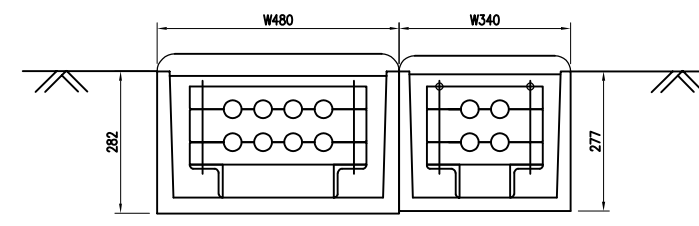
1 PLAN
SCALE: 1:400



2 SECTION-1
SCALE: 1:250



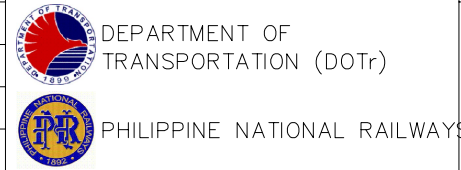
3 SECTION-2
SCALE: 1:250



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
02	21 JUN 2021	LOCAL ANNUNCIATOR PANEL ADDED



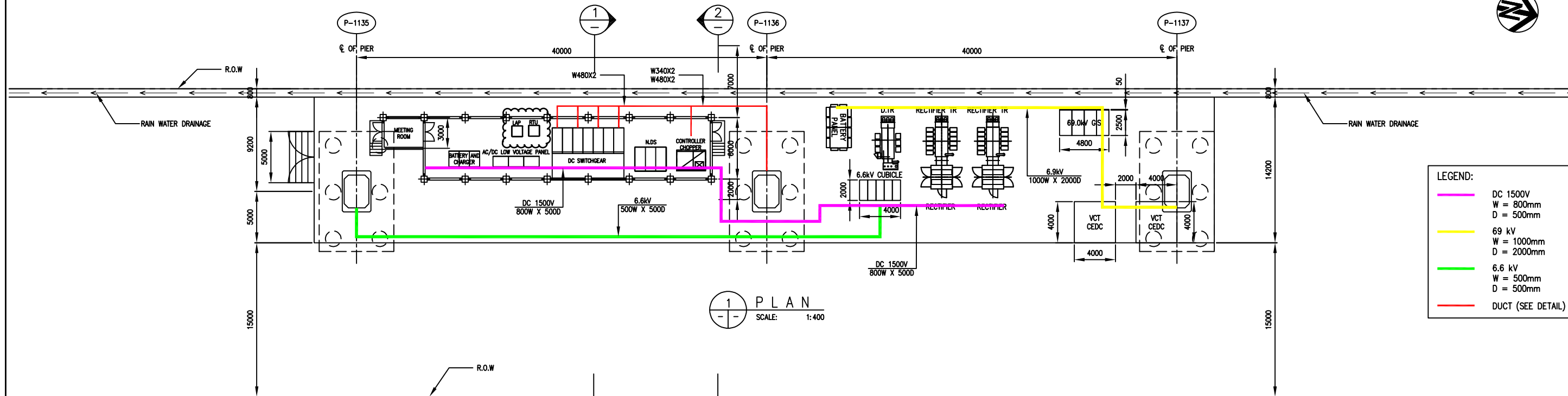
CONSULTANT		
TITLE	JDT	SMEC
DESIGNER	M.OGKUBO	-
CHECK	T.MATSUMOTO	-
TEAM LEADER	T.ISHIZUKA	-
P. MANAGER	N.KAWAI	-

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

Package CP NS-01 : Bidding Documents

SUBSTATION LAYOUT
(SS No. S20)

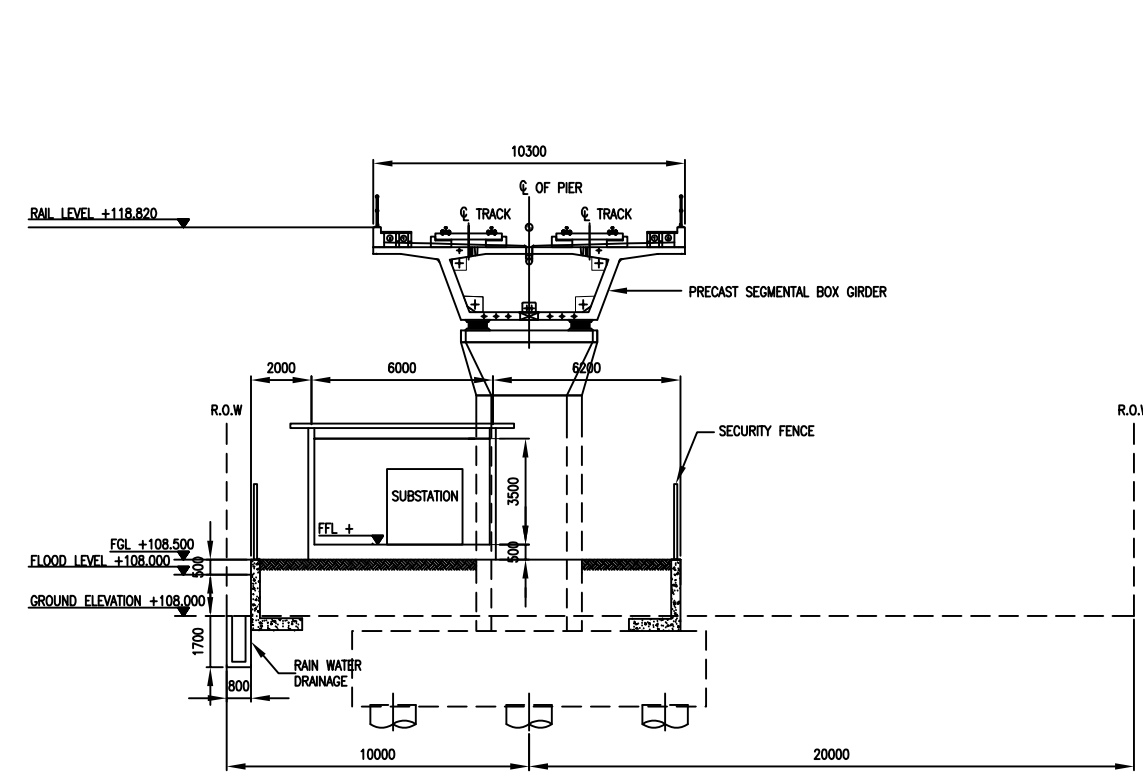
DATE	16 MAY 2019
SCALE	AS SHOWN
SHEET No.	28 OF 40
DRG No.	MCRP-DWG-C/A-PSS-2111
DRG S.	-
REV	02



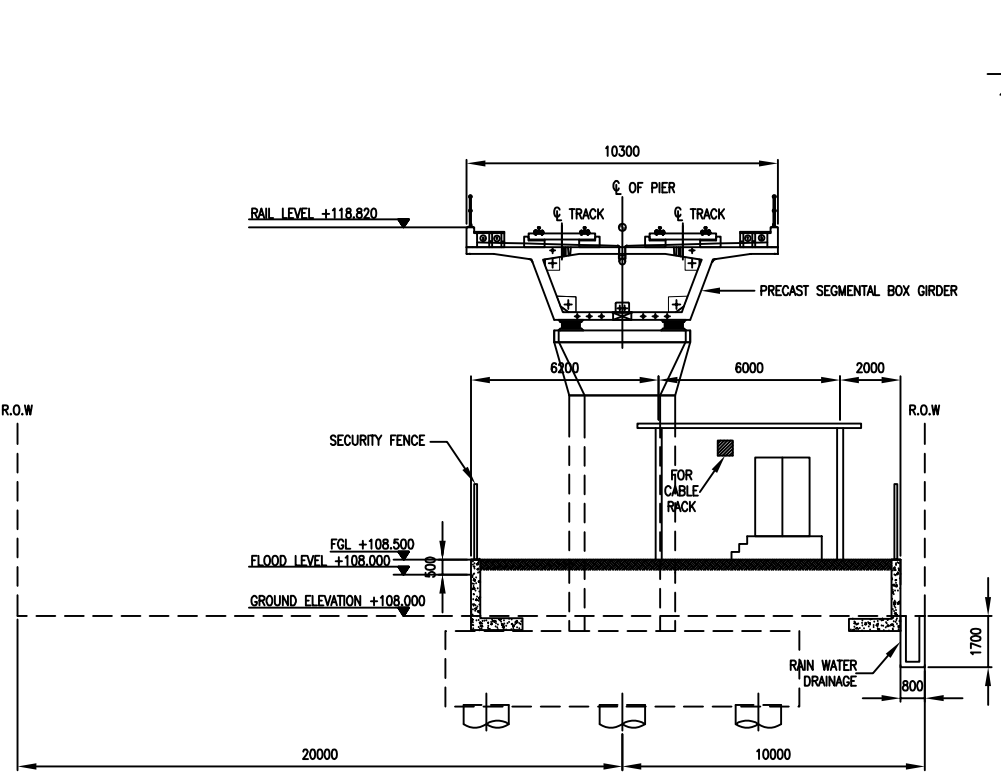
LEGEND:

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

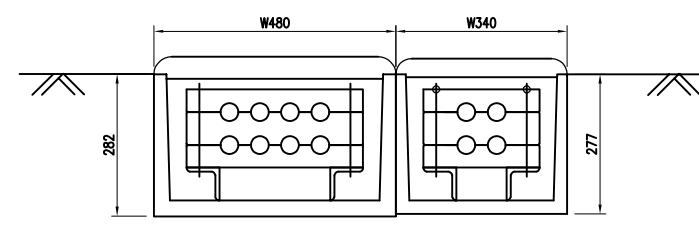
1 PLAN
SCALE: 1:400



2 SECTION-1
SCALE: 1:250



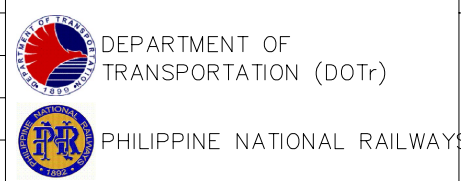
3 SECTION-2
SCALE: 1:250



4 DUCT DETAIL
SCALE: 1:15

FOR REFERENCE

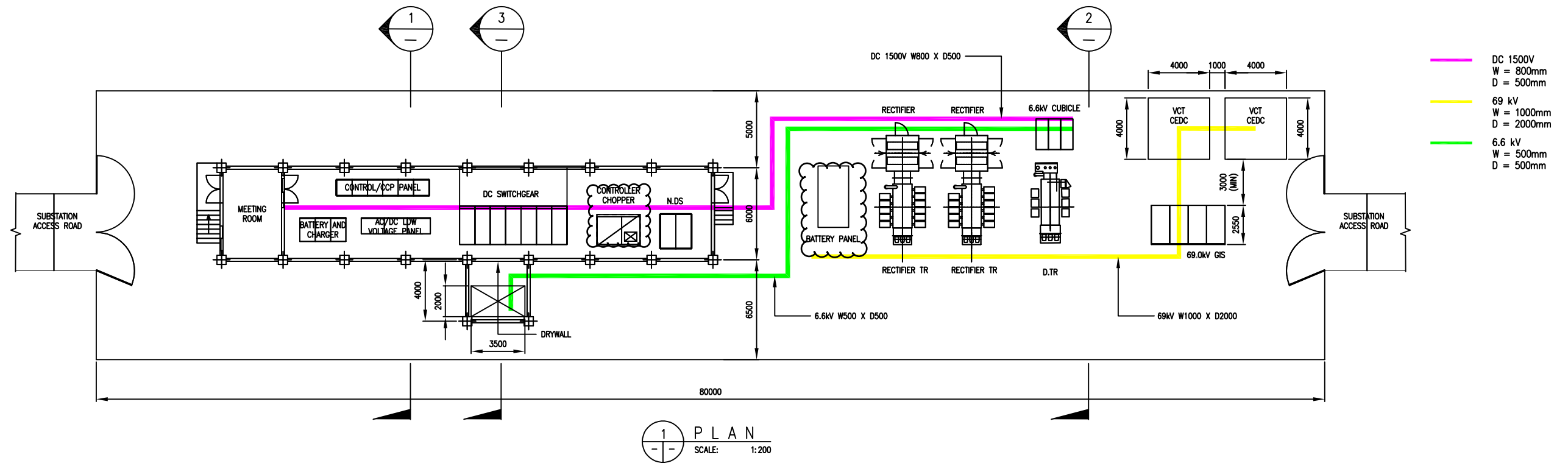
VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE
01	09 JUN 2021	RESISTOR CHANGED TO BATTERY POST
02	21 JUN 2021	LOCAL ANNUNCIATOR PANEL ADDED



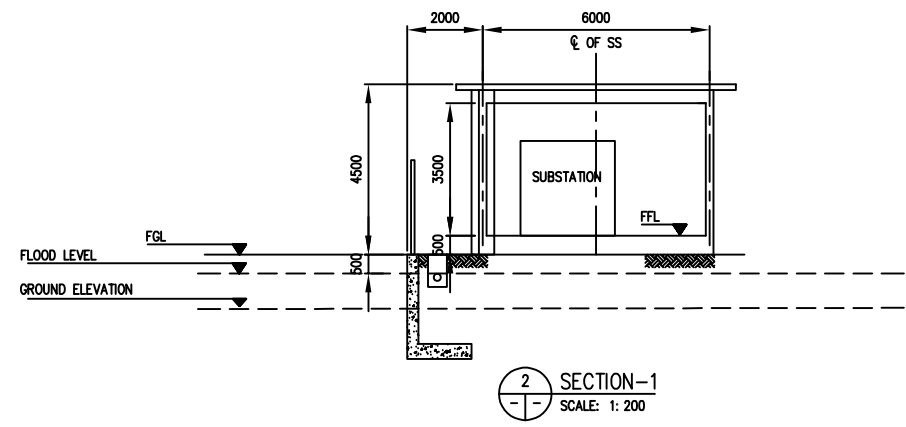
CONSULTANT		
TITLE	JDT	SMEC
DESIGNER	M.OGIKUBO	-
CHECK	T.MATSUMOTO	-
TEAM LEADER	T.ISHIZUKA	-
P. MANAGER	N.KAWAI	-

MALOLOS - CLARK RAILWAY PROJECT (MCRP) NORTH SOUTH RAILWAY PROJECT-SOUTH (NSRP-SOUTH)
Package CP NS-01 : Bidding Documents
SUBSTATION LAYOUT (SS No. S21)

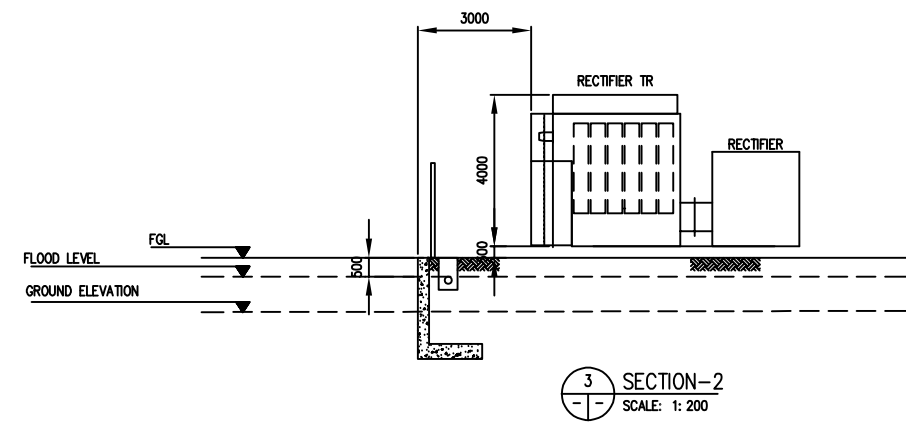
DATE	16 MAY 2019
SCALE	AS SHOWN
SHEET No.	29 OF 40
DRG No.	MCRP-DWG-C/C-PSS-2112
DRG S.	-
REV	02



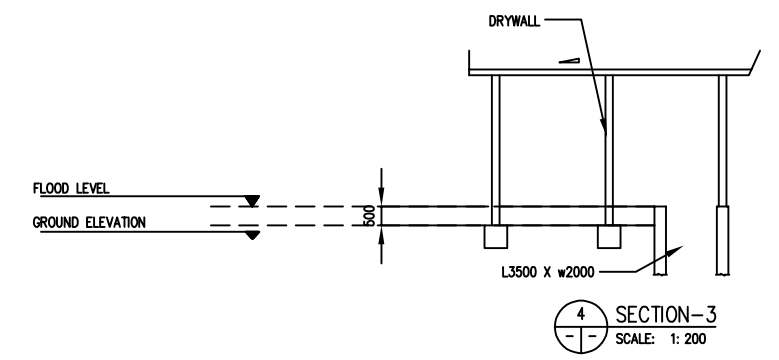
1 PLAN SCALE: 1:200



2 SECTION-1 SCALE: 1:200



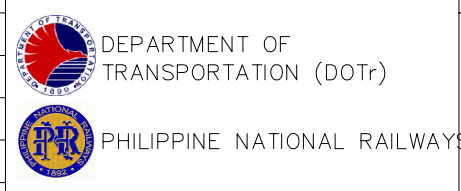
3 SECTION-2 SCALE: 1:200



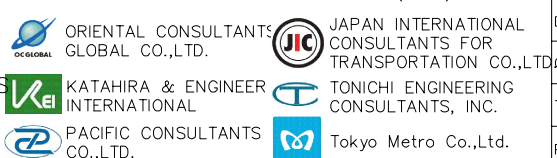
4 SECTION-3 SCALE: 1:200

FOR REFERENCE

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

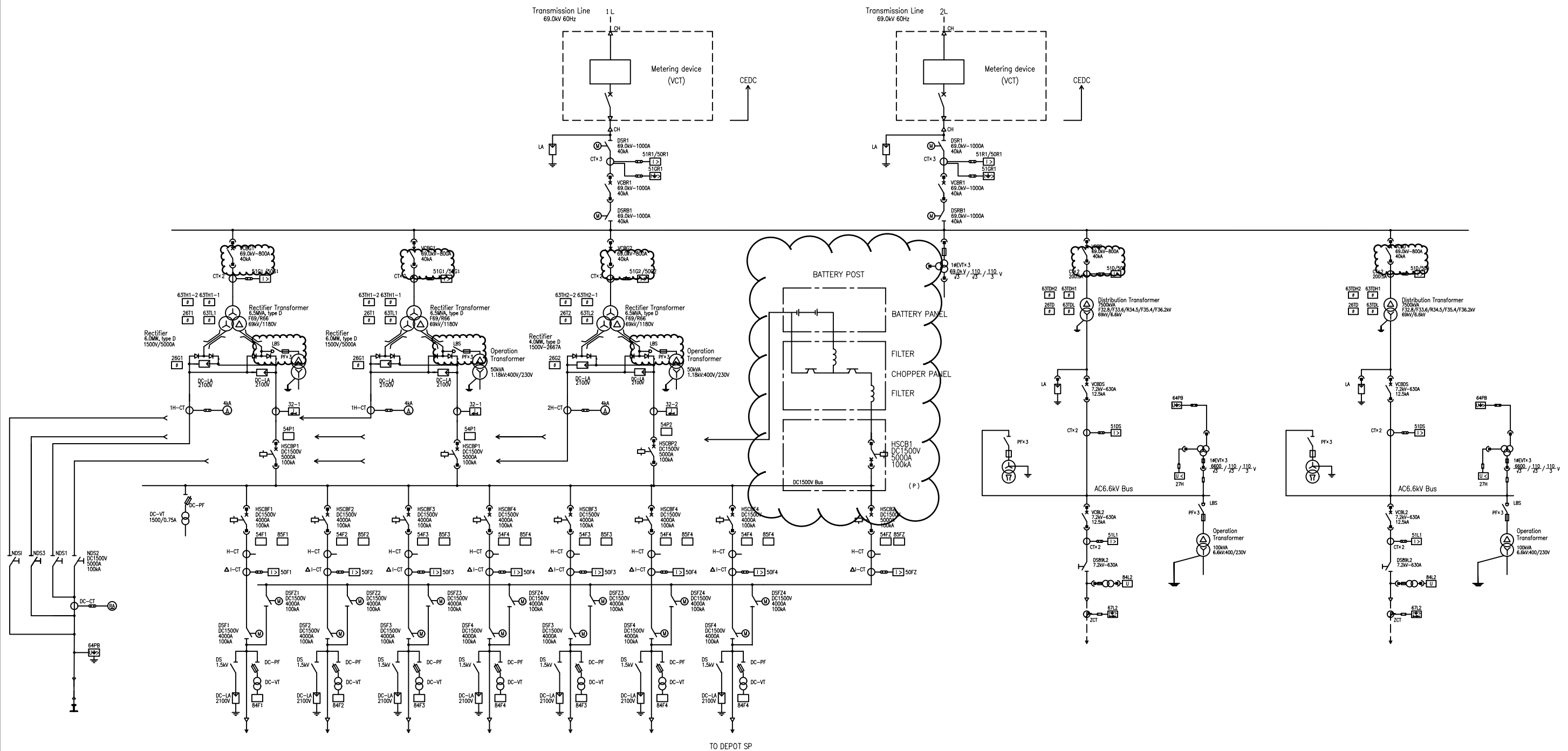


CONSULTANT		
TITLE	JDT	SMEC
DESIGNER	M.OGIKUBO	-
CHECK	T.MATSUMOTO	-
TEAM LEADER	T.ISHIZUKA	-
P. MANAGER	N.KAWAI	-



MALOLOS - CLARK RAILWAY PROJECT (MCRP) NORTH SOUTH RAILWAY PROJECT-SOUTH (NSRP-SOUTH)	
Package CP NS-01 : Bidding Documents	
SUBSTATION LAYOUT (SS No. S22)	

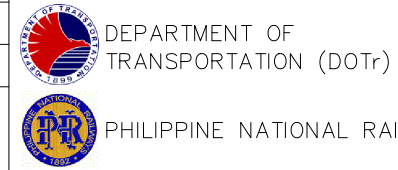
DATE	15 APRIL 2019
SCALE	AS SHOWN
SHEET No.	30 OF 40
DRG No.	MCRP-DWG-C/C-PSS-2113
DRG S.	-
REV	01

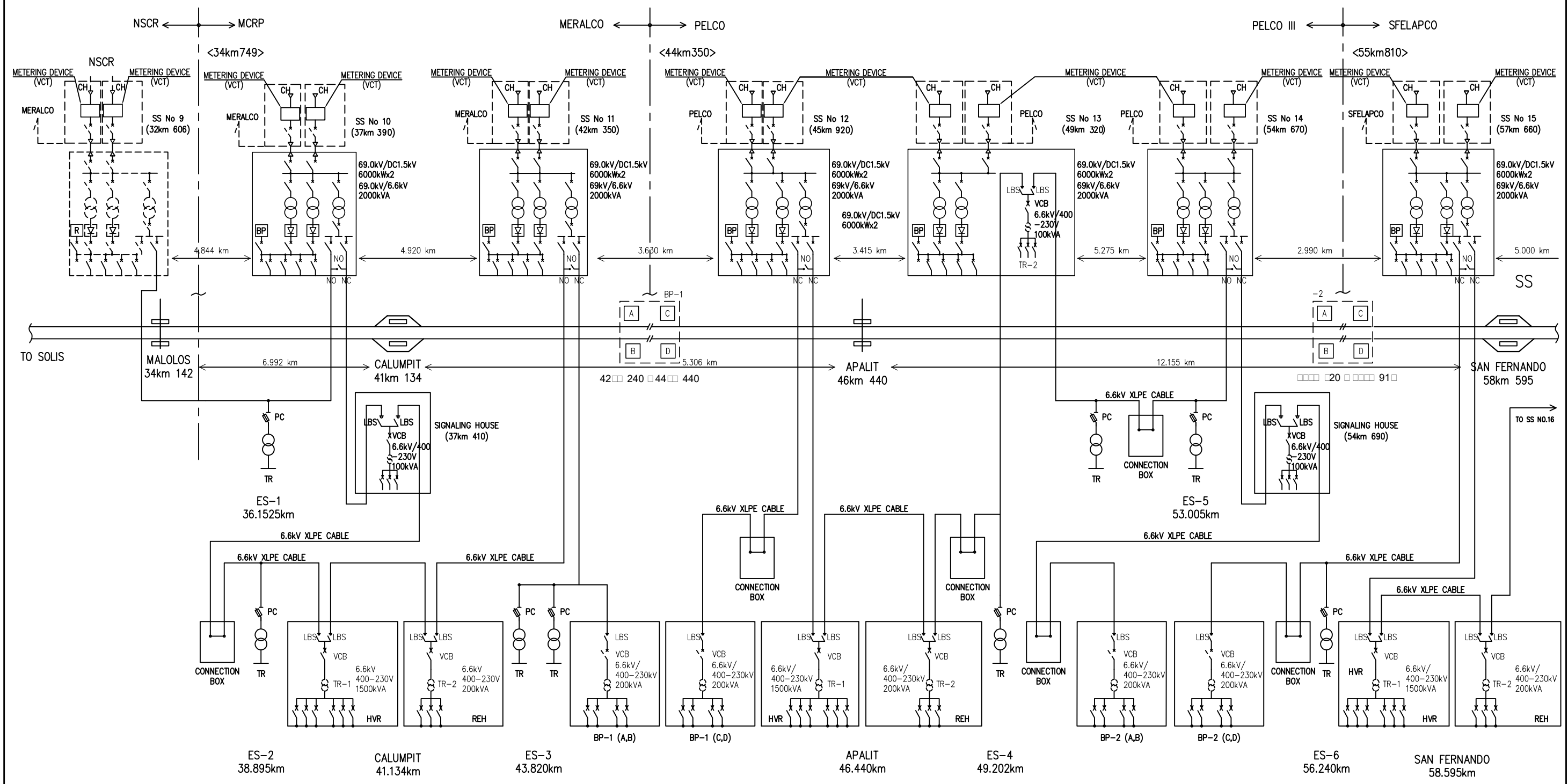


⊕ SUBSTATION CONNECTION (SS DEPOT)
SCALE: NTS

FOR REFERENCE

VERSIONS	DATE	DESCRIPTION	CONSULTANT			MALOLOS – CLARK RAILWAY PROJECT (MCRP) NORTH SOUTH RAILWAY PROJECT-SOUTH (NSRP-SOUTH)	DATE	
01	16 FEB 21	Demarcation with others revised		TITLE	JDT	SMEC	24 JUNE 2019	
02	02 MAR 21	Issued for reference		DESIGNER	M. OGIKUBO		SCALE	NONE
03	09 JUNE 21	69kV SG fault level changed Resistor changed with battery post Load break switch at 1.18kV Operation transformers		CHECK	T. MATSUMOTO		SHEET No.	33 OF 40
						Package CP NS-01 : Bidding Documents	DRG No.	MCRP-DWG-DEP-PSS-3001
						SUBSTATION CONNECTION (SS DEPOT)	DRG S.	-
							REV	03





FOR REFERENCE

- NOTE :
- SS : SUBSTATION
 - HVR : HIGH VOLTAGE RECEIVING ROOM
 - REH : RAILWAY ELECTRIC HOUSE
 - RER : RAILWAY ELECTRIC ROOM
 - : BOUNDARY
 - 6.6kV : 6.6kV XLPE CVT
 - A~D : BATTERY POST
 - PC : CUTOUT SWITCH WITH FUSE
- TR TRANSFORMER FOR COMMUNICATION SIGNALING
 TR-1 BUILDING TR
 TR-2 COMMUNICATION SIGNALING TR
 ES EMERGENCY STAIRCASE

VERSIONS	DATE	DESCRIPTION
01	10 NOV 2020	CABLE BET EEN SS NO 9 TO SS 10 ADDED
02	02 MAR 2021	ISSUED FOR REFERENCE
03	24 JUN 2021	RESISTOR CHANGED TO BP SS NO 10 TO SS NO 11 CHAINAGE REVISID

DEPARTMENT OF TRANSPORTATION (DOTr)
 PHILIPPINE NATIONAL RAILWAYS

CONSULTANT

JICA DESIGN TEAM (JDT)

ORIENTAL CONSULTANTS GLOBAL CO.,LTD.
 KATAHIRA & ENGINEERS INTERNATIONAL
 PACIFIC CONSULTANTS CO.,LTD.

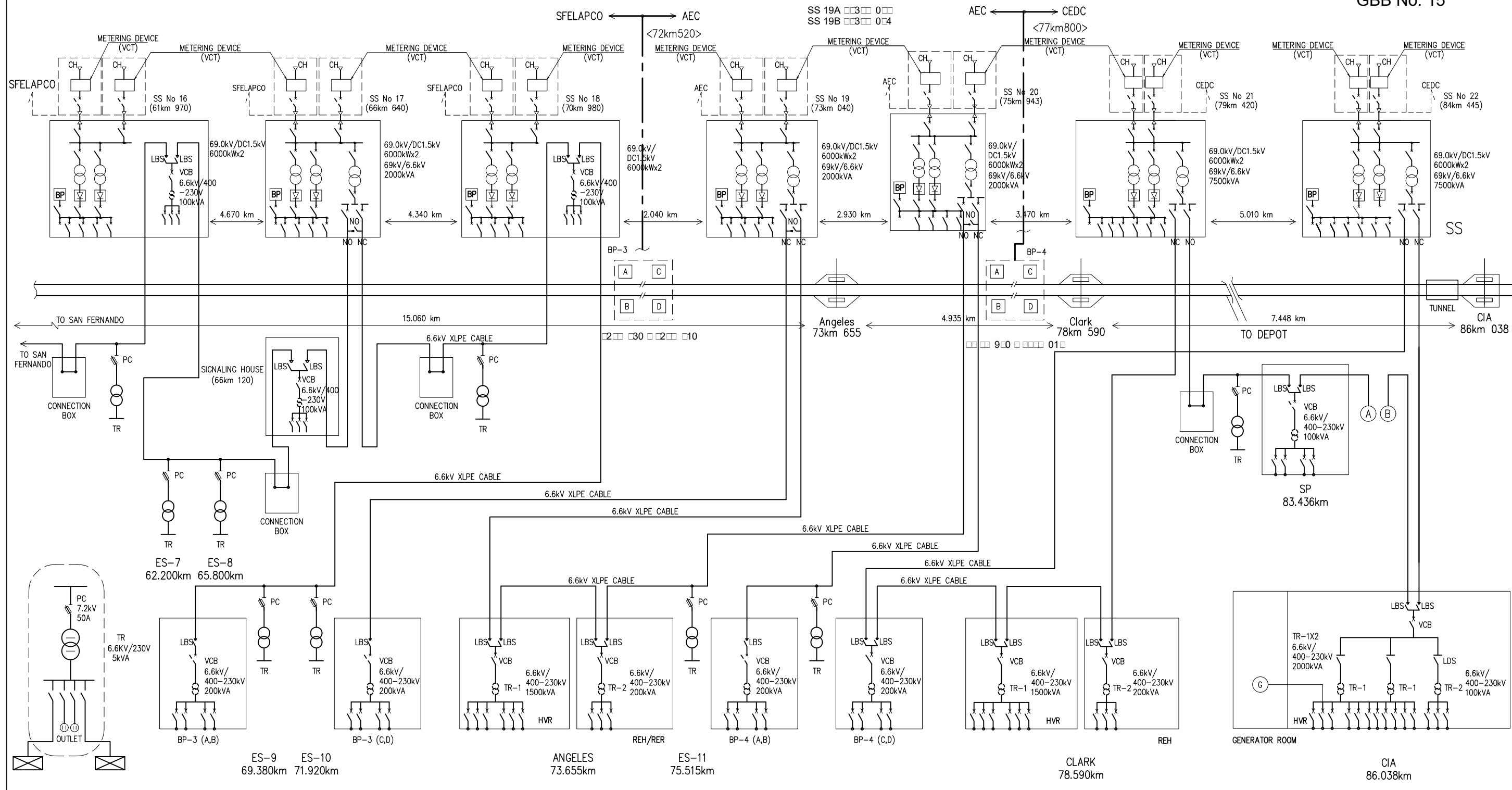
JAPAN INTERNATIONAL CONSULTANTS FOR TRANSPORTATION CO.,LTD.
 TONICHI ENGINEERING CONSULTANTS, INC.
 Tokyo Metro Co.,Ltd.

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

Package CP NS-01 : Bidding Documents

6.6kV POWER SUPPLY SCHEMATIC DIAGRAM
 1/2

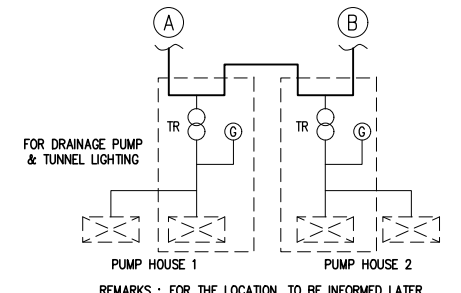
DATE	21 JUNE 2019
SCALE	NON SCALE
SHEET No.	3 OF 20
DRG No.	MCRP-DWG-PDS-0003
DRG S.	REV 03



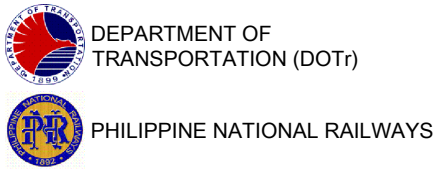
FOR REFERENCE

- NOTE :**
- SS : SUBSTATION
 - HVR : HIGH VOLTAGE RECEIVING ROOM
 - REH : RAILWAY ELECTRIC HOUSE
 - RER : RAILWAY ELECTRIC ROOM
 - BOUNDARY
 - 6.6kV XLPE CVT
 - BATTERY POST
 - PC : CUTOUT SWITCH WITH FUSE

- TR TRANSFORMER FOR COMMUNICATION SIGNALING
- TR-1 BUILDING TR
- TR-2 COMMUNICATION SIGNALING TR
- ES EMERGENCY STAIRCASE



VERSIONS	DATE	DESCRIPTION
00	02 MAR 2021	ISSUED FOR REFERENCE
01	24 JUN 2021	RESISTOR CHANGED TO BP □ SS NO.17 TO SS NO.22 CHAINAGE RE-USED



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.	

MALOLOS - CLARK RAILWAY PROJECT (MCRP) NORTH SOUTH RAILWAY PROJECT-SOUTH (NSRP-SOUTH)		
Package CP NS-01 : Bidding Documents		
6.6kV POWER SUPPLY SCHEMATIC DIAGRAM 2/2		

DATE	21 JUNE 2019
SCALE	NONE
SHEET No.	4 OF 20
DRG No.	MCRP-DWG-PDS-0004
DRG S.	REV 01