



General Bid Bulletin No. 18
23 July 2021

IFB No. 21-031-4

**THE MALOLOS-CLARK RAILWAY PROJECT AND
THE NORTH SOUTH RAILWAY PROJECT-SOUTH LINE (COMMUTER)
PACKAGE CP NS-03: ROLLING STOCK-LIMITED EXPRESS TRAINSETS**

This General Bid Bulletin is issued to amend/clarify certain provisions in the Bidding Documents for the abovementioned project. Please refer to the attached Annexes of this General Bid Bulletin duly approved by the end-user and co-implementer for details:

1. **Annex "A"** –Answers to Queries from Prospective Bidders including clarifications to the Bidding Documents;
2. **Annex "B"**– Revisions to the Bidding Documents; and
3. **Annex "B – 1"** – Revised pages/amendments and final form as revised/amended.

All other portions of the Bidding Documents affected by these revisions, amendments and/or clarifications shall be made to conform to the same.

Revisions/amendments/clarifications made herein shall be considered an integral part of the Bidding Documents for this project.

For your information and guidance.

For the Bids and Awards Committee IV:

SIGNATURE REDACTED

JOSEPH CONRAD D. DUEÑAS
Chairperson

Annex A

PACKAGE CP NS-03: ROLLING STOCK - LIMITED EXPRESS TRAINSETS
General Bid Bulletin No. 18
Annex A

Item No.	Volume Section No. Page No. Clause No. / Title Reference Text	Clarification Request	Proposed Revised Text (if any)	Response
1.	Volume II of III Part 2 - Employer's Requirements Appendix C GBB13 – No.16 GBB13 - Annex B	<p>The client has confirmed several times that the Appendix-C represents the kinematic gauge and additionally has proposed a formula for widening as well (GBB7 No.27).</p> <p>Also, in GBB 13 the requirement of the carbody width of 2,950mm has been erased and this critical characteristic of the train has been left to tenderer's decision.</p> <p>As a consequence of this, if the Appendix C is considered as the kinematic gauge, plus the gauge widening formula, <u>the preliminary values show that the width of the carbody is going to be significantly reduced</u> and this will make a a direct and a critical impact on the train solution at different levels such as; passenger capacity, carbody width, carbody geometry (sharpened carbody, side wall kink), accessibility, bogie solution, interior distribution, and main equipment. Since train will be much smaller, there will appear a gap between train and platform</p>	N/A	Please see Annex B. Appendix C is now defined as Static Gauge.

		<p>as well. Furthermore, <u>this last clarification is not consistent with the reference train presented in the ERT, Appendix B</u>, which shows a carbody width of 2,948 mm, distance between bogie center of 14,150mm and a carbody length of 20,000mm. Therefore, please reconfirm that Appendix C is not Kinematic Envelop, and data showed in the left side is Static gauge and on the right side is Construction gauge as it is written.</p>		
2.	Volume II of III Part 2 - Employer's Requirements Appendix B	<p>The train for reference in Appendix B has an approx. carbody width of 2,950mm, distance between bogie center of 14,150mm and a carbody length of 20,000mm. Therefore, we assume there is a discrepancy between Appendix B and C if Appendix C is kinematic envelop. Please reconsider once again that Appendix C is static gauge and construction gauge, not kinematic envelop.</p>	N/A	Appendixes are only indicative information; as responded in GBB No. 5 dated 28 April 2021. Please see the response provided on item 1 at the above.
3.	Volume II of III Part 2 - Employer's Requirements Appendix C	<p>The trains to be offered for this tender and those of the CP 03 Contract (NSCR - North South Commuter Railway Malolos-Tutuban) will run on some common lines. This last contract was signed by DOTr with the contractor on the 16th July 2019 (almost 2 years ago) and therefore we kindly ask the Employer to provide us with the static and kinematic gauge and</p>	N/A	The static and kinematic gauge and the dimensions of trains under CP 03 Contractor can only be obtained by the Contractor through interface during the project implementation.

		<p>the dimensions of those trains under CP 03 Contract.</p> <p>The objective is to adopt the same gauge assumptions for the train to be proposed (carbody width, carbody height, wheelbase, distance between bogie center, carbody length,...).</p>		
4.	<p>Volume II of III Part 2 - Employer's Requirements ERT-171 Appendix C</p>	<p>In No.16 of GBB 13, the client replied and stated that Appendix "C" as the Kinematic Envelope of the train.</p> <p>The gauge represented in the left side has a half-width of 1500mm. Besides, the train half-width has 1.475m (2.950m/2), according to clause 1.6.2.1 of ERT.</p> <p>The distance between bogies (13,8m) and the car length is also defined in the ERT.</p> <p>In nominal position, without considering movements and clearances, the horizontal gap is only 25 mm between the carbody and the gauge.</p> <p>In addition, GBB7-No.27, the client states and additional gauge overthrow in curved section of 23100/R. It seems that this value would have to be much more, in order to avoid interferences between the gauge and the train, if we consider the physical characteristics defined in the ERT.</p> <p>According to the usual method of calculation (EN, UIC) of kinematic gauge, there are mainly 4 parameters to take into account:</p> <p>-Geometric displacement</p>	N/A	<p>Please see Annex B. Appendix C is now defined as Static Gauge.</p>

		<p>-Clearance between wheelset and track -Transverse clearance wheelset and body (1 and 2ry suspension) -Quasi-static displacement The combination of these 4 mandatory parameters, make it impossible for the train to enter into the defined gauge. As evidence of it, for a 400meters of curve, the following values are represented: -Gauge overthrow (23100/R) : 57,5 mm -Geometric displacement (train)- exterior: 57,5 mm -Geometric displacement (train) - interior: 61,5 mm Considering that in nominal position we've only 25 mm of horizontal gap, applying only the 1st parameter (geometric displacement), the remaining horizontal gap is about 21 or 25 mm (interior and exterior side respectively). With 2nd parameter, a reference value, based on EN standard is 27.5mm. Therefore, only with these 2 parameters, the train has interferences with the gauge. And the other parameters more intrinsic of the dynamic behaviour of the train have not yet been applied.</p> <p>If the tenderer considers the rest of the parameters (mandatory in a kinematic calculation), the train is out of the gauge. Therefore, we kindly ask to clarify this aspect.</p>		
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5.	<p>Volume II/III - Part 2 Section VI ERT Chapter 1.21 Clauses - 1.21.2 74/355 (ERT-29) System Requirements - Rolling Stock Gauge</p>	<p>The rolling stock gauge defined in the Appendix C shall be referred as the Kinematic Envelope of the train.</p> <p>The Bidder would like to ask the Employer's reconsideration to accept our interpretation that Rolling Stock Gauge specified in Appendix C of ERT is static gauge. This is in line with requirement of NS02 commuter car train and enable the Bidder to maximize train dimensions.</p> <p>The kinematic envelope of the vehicle, including all possible lateral and vertical movements, will be calculated according EN 15273-2 and UIC 505-1 method to ensure that it will not interfere with the "construction gauge" of drawing MCPR-DWG-GEN-TK-0020.</p> <p>Please confirm.</p>	<p>The rolling stock gauge defined in the Appendix C shall be referred as the Kinematic <u>Static</u> Envelope of the train.</p>	<p>Please see Annex B.</p>
6.	<p>Volume II/III - Part 2 Section VI ERT Chapter 7.1 Clause 7.1.5 205/355 (ERT-60) Doors and Door Control - Passenger Side Entrance Doors, Gangway Doors and Saloon Separation Doors</p>	<p>The Rolling Stock shall be a high-floor design, with level boarding from platforms. Wheelchair and mobility-impaired boarding shall not require the use of bridging or lifting devices. The horizontal distance of the passenger door thresholds shall be 1,475 +/- 25 mm from the track center.</p> <p>The Bidder would request the Employer to accept additional flexibility on the horizontal distance of the passenger door</p>	<p>The Rolling Stock shall be a high-floor design, with level boarding from platforms. Wheelchair and mobility-impaired boarding shall not require the use of bridging or lifting devices. The horizontal distance of the passenger door thresholds shall be 1,475 +/- 25 <u>35</u> mm from the track center.</p>	<p>Please see Annex B.</p>

		thresholds from track center specified in ERT 7.1.5. Considering provided construction gauge and the Bidder's initial calculation, the Bidder would request revision of requirement to 1,475 +/- 35 mm.		
7.	GBB13 – Annex B – Attachment 2 Drawing	In order to obtain the greatest possible compatibility between the trains of the existing fleet, we would need to know what type of couplings these fleets have. According to the GBB13 designs we believe they are of the Tight coupler or Tomlinson type. Could you please confirm this?	N/A	The coupler shall be a tight coupler type. Details shall be obtained by the Contactor through Interface during project implementation.
8.	Volume II/III - Part 2 Section VI ERT Chapter 5.12 Clause 5.12.7 195/355 (ERT-50) Drivers Cab Windshield	After revision made by GBB10 5.12.7 Windshields shall be provided with external electric wiper/washer units and defogger unit. The driver shall be able to control the active Cab windshield wipers, washers and defogger via the active Driver's Desk. A fan defogger shall not be acceptable. This system shall have no adverse effect on the windshield including overheating in direct sunlight. A rain sensor of proven quality shall be provided and integrated with the wiper unit for detection of rain. Signal from sensor should also be fed to TMS for control of propulsion and braking under wet conditions to avoid wheel slip.	Windshields shall be provided with external electric wiper/washer units and defogger unit. The driver shall be able to control the active Cab windshield wipers, washers and defogger via the active Driver's Desk. A fan defogger can be proposed shall not be acceptable. This system shall have no adverse effect on the windshield including overheating in direct sunlight.	Please see Annex B.
	GBB15 17/55 Attachment A Item 25	(The Bidder's request for clarification) For an optimized and efficiency defogging function the Bidder request the possibility to use fan blowers near to the windshield. The use of a fan blowers do not have an influence on the driver's comfort. (The Employer's clarification) This requirement was updated in General Bid Bulletin No. 10 25 May 2021		

		The Bidder request the possibility to use fan blowers in order to assure an efficiency defogging function. Therefore, please modify the requirement.		
9.	Volume II/III - Part 2 Section VI ERT Chapter 9.2 Clause 9.2.2 217/355 (ERT-72) Braking System - Friction Brakes	The brake pad shall be designed and manufactured not only with extremely small changing characteristics with respect to water, lubricating oil, fade, pressing pressure, speed and so on, but also with suppression of occurrence of spark caused by friction. The Contractor shall submit these bench test data and obtain statement of No Objection from the Engineer.	N/A	Please see Annex B.
	GBB15 21/55 Attachment A Item 30	(The Bidder's request for clarification) The Bidder will deliver a state-of-the-art brake pad related to the mentioned aspects water, lubricating oil, fade, pressing pressure, speed. (The Employer's clarification) Bidder request is rejected. Please explain the meaning of "extremely small" and "and so on".		
10.	Volume II/III - Part 2 Section VI ERT Chapter 20.2 Clause 20.2.1.3 270/355 (ERT-125) Inspection, Testing, and Commissioning - General Testing Requirements	The Contractor shall responsible to provide sufficient train drivers for all the testing and commissioning activities until handing over.	N/A	Bidder assumption is not correct. Prior to the issuance of train taking over, the liability of the train shall be under the Contractor. Therefore, the Contractor shall provide the train drivers during the testing and commissioning.

	<p>GBB15 41/55 Attachment A Item 66</p>	<p>(The Bidder's request for clarification) For the testing and commissioning activities until handing over the service operator is normally responsible for the train drives. The Bidder ask to change the requirement accordingly.</p> <p>(The Employer's clarification) Bidder request is rejected.</p> <p>The Bidder understand that the contractor is responsible to provide the train drivers. The Bidder assume, that the contractor can hire train drivers of the operator for the testing and commissioning activities. Please confirm.</p>		
11.	<p>Volume II/III - Part 2 Section VI ERT Chapter 8.1 Clause 8.1.5 212/355 (ERT-67) Ventilation and Air Conditioning - General</p>	<p>One outside unit of air conditioning system shall be mounted on the roof of carbody. The unit weight shall be below 800kg. The Bidder request to modify the weight limitation of the air conditioning system. (Note, the Bidder still complies to 315t of Trainset weight). The air conditioning system will be developed in order to fulfil the different requirements present in this tender and optimized for the tropical environmental condition in Manila.</p>	<p>One outside unit of air conditioning system shall be mounted on the roof of carbody. The unit weight shall be below <u>1000 kg</u> 800kg.</p>	<p>Bidder request for amendment is rejected. However, please refer to the updated clause 8.1 in Annex B.</p>
12.	<p>Volume II/III - Part 2 Section VI ERT Chapter 5.5 Clause 5.5.1</p>	<p>The vehicle ceiling shall present an aesthetically pleasing smooth service, and shall incorporate lighting fixtures, conditioned air outlet grilles, public address speakers, etc. The ceiling panels</p>	<p>The vehicle ceiling shall present an aesthetically pleasing smooth service, and shall incorporate lighting fixtures, conditioned air</p>	<p>Please see Annex B.</p>

	192/355 (ERT-47) Car Interior - Ceiling	and fixtures shall not vibrate, rattle or squeak during normal service conditions. Panels shall comply with fire regulations DIN 5510-2. The Bidder ask the Employer to accept EN standard alternatively.	outlet grilles, public address speakers, etc. The ceiling panels and fixtures shall not vibrate, rattle or squeak during normal service conditions. Panels shall comply with fire regulations DIN 5510-2 or EN45545.	
13.	Volume II/III - Part 2 Section VI ERT Chapter 8.2 Clauses - 8.2.6 - 8.2.7 212/355 (ERT-67) and 213/355 (ERT-68) Ventilation and Air-Conditioning - Ventilation System	Air filters shall be washable/re-useable and shall be well supported to prevent passing air from dislodging them shall the filters become saturated. They shall seal well at all edges. The filters shall be easily replaced but shall be sized not to require replacement at intervals less than 3500 hours of operation. In order to reduce the frequency of replacement of the filter, the roll filter shall be used. The roll filter is that the furnace material is wound around the core, and when the set time has elapsed, a new furnace material portion is automatically set. Setting time of the winding is able to be changed arbitrarily by maintenance people. The length of the roll filter shall be determined with the reviewed of the Engineer. From the hygienic point of view roll filters are inferior compared to other state of the art solutions. Moreover, roll filters needs additional components, more installation space and have higher life cycle costs. Therefore, the Bidder strongly suggest	<u>Alternatively to the requirement 8.2.6.</u> In order to reduce the frequency of replacement of the filter, the roll filter <u>can optionally</u> shall be used. The roll filter is that the furnace material is wound around the core, and when the set time has elapsed, a new furnace material portion is automatically set. Setting time of the winding is able to be changed arbitrarily by maintenance people. The length of the roll filter shall be determined with the reviewed of the Engineer.	Please see Annex B.

		<p>the use of washable filters or one-way filters.</p> <p>The Bidder require to change the requirement accordingly</p>		
14.	<p>Volume II/III - Part 2 Section VI ERT Chapter 5.19 Clauses - 5.19.2.4 - 5.19.2.5 - 5.19.2.6 - 5.19.2.7 200/355 (ERT-55) Car Interior - Cab Controls of Driver's Cab</p>	<p>The Master Controller shall be locked/unlocked by the Driver's key and Reversing Switch.</p> <p>When the driver's key is in the ON position and Reversing Switch is in the forward or reverse position, the Master Controller shall be unlocked.</p> <p>The driver's key shall itself be captive when The Master Controller is not in the predetermined Emergency position.</p> <p>The driver's key shall itself be captive when The Reversing Switch is not in the predetermined OFF(Neutral) position.</p> <p>The Bidder intends to integrate state of the art railway equipment's for this purpose.</p> <p>Please accept an electrical interlocking of Driver Key and Master Controller alternatively, as it is proven technology.</p>	<p>The Master Controller shall be <u>interlocked</u> locked/unlocked by the Driver's key and Reversing Switch.</p> <p>When the driver's key is in the ON position and Reversing Switch is in the forward or reverse position, the Master Controller shall be <u>released</u> unlocked.</p> <p>The driver's key shall <u>be removable</u> itself be captive when The Master Controller is not in the predetermined Emergency position. <u>The Master Controller will be interlocked electrically.</u></p> <p>The driver's key shall <u>be removable</u> itself be captive when The Reversing Switch is not in the predetermined OFF(Neutral) position. <u>The Reversing Switch will be interlocked electrically.</u></p>	Please see Annex B.

15.	<p>Volume II/III - Part 2 Section VI ERT Chapter 2.3 Clause 2.3.2.4 177/355 (ERT-32) Carbody - Structural Requirements</p>	<p>After revisions made by GBB15;</p> <p>2.3.2.4 The carbody shell shall be designed and tested to ensure that under W2 loading conditions negative camber shall never occur. The Contractor shall evaluate and submit camber values at W0, W1 and W2 loading for engineer review. positive camber exists between bogie centers. The Contractor shall ensure, and must demonstrate by test, that all doors operate freely under all carbody loading conditions and will not disengage from their guide ways under the lateral loading conditions exerted by crush-loaded passengers.</p> <p>Aluminium carbodies designed with extruded double skinned profiles are usually built with zero camber. Under load a small amount of negative chamber will occur in the sense of an elastic deformation.</p> <p>The Bidder assumes, that with the sentence "under W2 loading conditions negative camber shall never occur" the intention is to say: no permanent (plastic) deflection (deformation) shall never occur. Please confirm.</p>	N/A	<p>The requirement of no negative camber is due to avoid car sag which would degrade the performance of the train; under up to the W2 loading condition. We notes that a small amount of negative camber upon under load therefore, please refer to Annex B for the updated requirement on clause 2.3.2.4</p>
16.	<p>Volume I/III - Part 1 – Bidding Procedures Section III. Evaluation and Qualification Criteria Chapter 3.2 Item 4 55/160 (EQC-14) Form EQU: Equipment</p>	<p>Item nos. 3 to 9 – available at the manufacturer’s facility</p> <p>It is quite common arrangement the EMU manufacturer outsources part of test activity and uses facility outside of its plant especially item 3 - Body Loading Test Facility. With this, please remove this provision or at least confirm that item 3 is not subject to this requirement.</p>	N/A	<p>Bidder request is rejected.</p> <p>Bidder may refer to form EQU on adequate information to be provided in the bid submission against the proposed major plant and equipment. For item 3-9, the <i>available at the manufacturer’s facility</i> does not limit the source of the plant and equipment to be</p>

				either owned, rented, leased or specially manufactured.
17.	GBB4 Attachment B ERT-7 1.6.1.3	The limited express train formation and equipment arrangement architecture shall be finalised during design stage. Any time and cost implication to the changes of train formation and equipment arrangement architecture from the bid submission to the given notice of no objection at final design, shall be borne by the Contractor and no contract variation shall be provided by the Employer.	N/A	Changes of the equipment arrangement from the proposed at bid to the prior of final design completion which would due to the Contractor's obligation to demonstrate compliance to the contract requirement i.e. train performance, quality, interface, integration, maintainability etc. shall not be subjected to a contract variation. Please refer to JICA GC item 1.1.6 - "Variation" means any change to the Employer's Requirements or the Works, which is instructed or approved as a variation under Clause 13 [Variations and Adjustments].
	GBB15 Attachment A (6/55) No.9	(The Bidder's request for clarification) Special wishes not related to the Contractor's contract are connected to a change order and will not be a Contractor time and cost implication. (The Employer's clarification) Bidder request is rejected. In respect of ERT1.6.1.3, the Bidder would like to ask the Employer's confirmation that changes of train formation and equipment arrangement shall be subject to variation in case these changes makes revision of Employer's requirement.		
18.	Volume II/III - Part 2 Section VI ERT Chapter 14.5 Clauses 14.5.1-14.5.2	All isolating switches and Circuit breakers necessary for vehicle intervention shall be placed inside the driver's cab for easy access and intervention.	All isolating switches and Circuit breakers necessary for vehicle <u>revenue line fault</u> intervention shall be placed inside the driver's cab for	Please see Annex B. (14.5.1 (6))

	236/355 (ERT-91) Auxiliary Electrical systems - Circuit Breaker Panels and Isolating Switches		easy access and intervention.	
	GBB8 24/47 Attachment A No.35	(The Bidder's request for clarification) Some switches and circuit breakers may be distributed outside the driver's cab. Therefore, the Bidder propose to modify the requirement. (The Employer's clarification) Bidder request is rejected. Clause 14.5.2 stated that circuit breakers and switches necessary for vehicle revenue line fault intervention shall be located inside the drivers' cab. From Bidder's understanding, revenue line fault intervention shall be located inside the driver's cab. Please change the requirement accordingly:		
19.	Volume II/III - Part 2 Section VI ERT Chapter 16.5 Clause 16.5.7 247/355 (ERT-102) Communication System - External Destination Sign System	The design of the destination sign shall allow manual override in the case of a defect in the electronics system.	N/A	Bidder understanding is not correct. The destination sign shall be programmable from a dedicated PIS monitor in the driver's cab. Therefore, in case there were an electronics system faulty whereby the destination sign can't be set using the PIS monitor, the destination sign
	GBB1536/55 Attachment A Item 56	(The Bidder's request for clarification)		

		<p>Please clarify the meaning of the requirement.</p> <p>(The Employer's clarification) The destination sign equipment shall have a manual display set up in case of failure set up using PIS screen.</p> <p>From Bidder understanding, the use of a manual exterior plate with the three destinations can be used. Please confirm.</p>		shall have a local set up features available.
20.	<p>Volume II/III - Part 2 Section VI ERT Chapter 4.1 Clauses: - 4.1.1 - 4.1.2 - 4.1.14 188 + 189/355 (ERT-43 and ERT-44)Automatic coupler - Coupler head</p>	<p>The end cars in each train shall be fitted with an automatic coupler. The coupler shall be placed in a readily accessible position under and from either side of the end vehicle. The position (right side or left side) of parts operated shall be consistent for all end vehicle. It shall be possible to connect with other commuter train of North-South Commuter Railway (NSCR), North-South Railway Project-South, MMSP Line (NSRP-South) without any adapter during train rescue or -hauling.</p> <p>The automatic coupler shall be able to couple with other types of rail vehicle with, if necessary, an adaptor. The adaptor, if required, shall be provided by the rolling stock supply Contractor.</p> <p>The coupler shall follow the coupler type for Commuter Trainset (CP NS-02) for interoperability capability.</p>	N/A	<p>Clause 4.1.2 is the requirement for coupling with other rail vehicle i.e. maintenance vehicles etc. The limited express train shall be connectable with NSCR and MMSP train.</p> <p>When using an adapter, strength calculation shall be performed during detailed design stage with great care and submit for engineer review.</p>

	<p>GBB137/26 Attachment A Item 4</p>	<p>(The Bidder's request for clarification) The Bidder would like the Employer to accept the connection to the commuter car coupler head using a coupler adapter, as allowed by requirement 4.1.2 The use of an adaptor is a very common method used in many countries. Moreover, only NS-03 package requires an EN compliant coupler. Furthermore, without seeing the design of coupler proposed by commuter car contractors, it is quite difficult to propose same type coupler. The coupler has a direct influence on the crash energy management system (CMS) an other aspects of the vehicle concept.</p> <p>This is an essential information that need to be received during the tender phase.</p> <p>(The Employer's clarification) Please refer to Annex B – Attachment 2 to for couplers information.</p> <p>From Bidder's understanding, a coupler head identical the Commuter Trainset (CP NS-02) shall be used. However, based on the Bidder's investigation there is no supplier who can supply same type of coupler head, also compliant with the EN crash standards (energy absorptions characteristics). Therefore, the Bidder requests to accept the connection to the commuter car coupler head by using a coupler adapter, as allowed by requirement 4.1.2.</p>		
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21.	<p>Volume II/III - Part 2 Section VI ERT Chapter 3.10 Clause 3.10.1 186/355 (ERT-41) Bogie - Bogie-to-Carbody Clearance</p>	<p>Under all conditions of movement between the bogies and the carbody, including fully inflated and deflated air spring conditions, there shall basically exist a minimum clearance of 50 mm between bogie-mounted and carbody-mounted equipment. This shall include any end of the vehicle having fully inflated air springs, with the opposite end having deflated air springs.</p> <p><i>Under all conditions of movement between the bogies and the carbody the minimal existing clearance is 50 mm whereas with deflated air springs condition the minimal clearance is 25 mm. Such minimal clearance of 25mm has successfully proven in a large number of similar vehicles.</i></p> <p><i>The 50mm (instead of 25mm) minimum gap clearance requirement is not providing an advantage to the Employer, but creates substantial constraints in respect of bogie and carbody design.</i></p>	<p>Under all conditions of movement between the bogies and the carbody, including fully inflated and deflated air spring conditions, there shall basically exist a minimum clearance of <u>25 mm</u> 50 mm between bogie-mounted and carbody-mounted equipment. This shall include any end of the vehicle having fully inflated air springs, with the opposite end having deflated air springs.</p>	Please see Annex B.
22.	<p>Volume II/III - Part 2 Section VI ERT Chapter 16.9 Clause 16.9.2 248/355 (ERT-103) Communication System - Train Radio System</p>	<p>The Train Radio System for the Rolling Stock shall be designed and supplied by the CP NS-01 Contractor for the CP NS-03 Contractor to install on the Rolling Stock. The CP NS-01 Contractor shall provide installation for the first Train Radio System installation on-site. The second trainset shall be installed by CP NS-03 Contractor and supervised by CP</p>	N/A	<p>The installation shall be done at the Rolling Stock manufacturing site.</p>

		<p>NS-01 Contractor. The remaining trainsets radio system shall be installed by CP NS-03.</p> <p>The Bidder assumes that the installation on-site will be done on the Contractor site. Please confirm.</p>		
23.	<p>Volume II/III - Part 2 Section VI ERT Chapter 21.2 Clauses - 21.2.3 - 21.2.8 278/355 (ERT-133) and 279/355 (ERT-134) Material and Workmanship - Fasteners</p>	<p>All hardware used shall be of the same grade and shall be at least one grade higher than the stress limit required. Exceptions may only be permitted after review and consent by the Engineer.</p> <p>Locking washers or other devices to prevent loosening of fasteners shall be used.</p> <p>Please confirm that bolting connections dimensioned according to DIN 25201 and VDI 2230 are accepted. Both standards are widely used in Europe and are successfully proven.</p>	N/A	Confirmed
24.	<p>Volume II/III - Part 2 Section VI ERT Chapter 21.2 Clauses 21.2.9279/355 (ERT-134) Material and Workmanship - Fasteners</p>	<p>For equipment suspended from the underframe, the load of the equipment on each bolt shall not the clamp load of the bolt. Set screws shall not be used. Where practical, load on the bolts shall be no greater that that exerted when the bolt is tightened to its recommended torque. When practical loads shall be on structural cross beams etc. Huck bolts can be used according to their strength specification.</p>	N/A	Confirmed

		Please confirm that bolting connections dimensioned according to DIN 25201 and VDI 2230 are accepted. Both standards are widely used in Europe and are successfully proven.		
25.	Volume II/III - Part 2 Section VI ERT Chapter 21.4 Clauses 21.4.1.3 279/355 (ERT-134) Material and Workmanship - Electrical Components	Only ring tongue terminals shall be used, except as specifically reviewed and commented by the Engineer. The Bidder request to allow the use of Railway state of the art terminals. Such terminals are state of the art and proven in many thousand EMU trainsets all over Europe.	Railway state of the art Only ring tongue terminals shall be used, except as specifically reviewed and commented by the Engineer.	Bidder request to revise is rejected. Please see Annex B.
26.	Volume II/III - Part 2 Section VI ERT Chapter 1.11 Clauses 1.11.4. 6159/355 (ERT-14) System Requirements - Train performance	In case of coupling inoperable train and rescue train, emergency brake circuit shall be connected between these two trains by emergency electric coupler. These two trains emergency brake shall be controlled at the same demand synchronously from both train's operator cabs. Intercom between these trains, buzzer and any other circuit required for rescue operation shall be connected by emergency electric coupler. The specifications for rescue operation and emergency electric coupler shall be considered coupling other project trains in interoperability section and shall be reviewed by the Engineer. For rescue operation no electrical connection is required. The trainset is switched off and brake command is done via the pneumatic coupling. The Bidder	In case of coupling inoperable train and rescue train, emergency brake circuit shall be connected between these two trains by emergency pneumatic electric coupler . These two trains emergency brake shall be controlled at the same demand synchronously from both train's operator cabs. Intercom between these trains, buzzer and any other circuit required for rescue operation shall be connected by emergency electric coupler. The specifications for rescue operation and emergency electric pneumatic coupler	Bidder request to change the requirement is rejected. Please see Annex B for the updated requirement on clause 1.11.4.6.

		request to change the requirements accordingly. (Note, in GBB15 electrical coupling requirement under ERT4.1.4 has been deleted already)	shall be considered coupling other project trains in interoperability section and shall be reviewed by the Engineer.	
27.	Volume II/III - Part 2 Section VI ERT Chapter 2.8 Clauses 2.8.1.6 Chapter 3.8 Clauses 3.8.5 179/355 (ERT-34) and 186/355 (ERT-40) Carbody - Equipment Mounting Bogie - Miscellaneous Bogie-Mounted Equipment	The Contractor shall ensure that all fasteners are of the same material when attaching components to the carbody and be of the same grade appropriate to the load and position. All fasteners of the same material used to attach components to the bogie shall be of the same grade. Please confirm that bolting connections dimensioned according to DIN 25201 and VDI 2230 are accepted. Both standards are widely used in Europe and are successfully proven for Railway rolling stock	N/A	Confirmed
28.	Volume II/III - Part 2 Section VI ERT Chapter 4.1 Clauses: - 4.1.5 - 4.1.6 - 4.1.7 188 + 189/355 (ERT-43 and ERT-44)Automatic coupler - Coupler head	In both leading cars, an electrical connecting plug which is necessary for relief operation by connecting train-sets shall be equipped. Also, an emergency connection cable that connects this electrical connection plug shall be equipped. By using this connecting cable, required functions such as brake command, broadcasting, buzzer etc. shall operate properly. Length and diagram of cable shall be also consistent with other commuter trains of NSCR, NSPR-South,	N/A	Please see Annex B on updated 4.1.1 & 4.1.4. Clause 4.1.4 is the requirement for coupling between LE train with an LE train and with the identical coupler head NSCR commuter train, whilst clause 4.1.2 is the requirement for coupling of LE train with other

		<p>MMSP. The position of this plug shall be consistent with other commuter trains of NSCR, NSRP-South, MMSP particularly length of cable shall be determined in consideration of the severest deviations during coupled with other train. Basically, utilization of adapter shall not be acceptable.</p> <p>The Contractor shall provide the required cabinet for housing the emergency connection cable on the train. Alternatively, the Contractor shall provide proper mechanism for retaining the emergency connection cable when it is not in used.</p> <p>All electrical connections shall be made to terminal blocks in junction boxes compliant with IP 65, via jumper cables, using quick connect/disconnect couplings securely locked with wire.</p> <p>For rescue operation no electrical connection is required. The trainset is switched off and brake command is done via the pneumatic coupling. The Bidder request to change the requirements accordingly. (Note, in GBB15 electrical coupling requirement under ERT4.1.4 has been deleted already)</p> <p>Nevertheless, the Bidder request to receive the electrical as well as signal and software interfaces of all other trainsets</p>		<p>rail type vehicle i.e. locomotive, shunter etc.</p> <p>The electrical as well as signal and software interfaces of all other trainsets and locomotives present on the future line shall be obtained by the Contractor through Interface during the project implementation.</p>
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		and locomotives present on the future line for the a further evaluation of the requirement compliancy.		
29.	Volume II/III - Part 2 Section VI ERT Chapter 1.21 Clauses 1.21.9 175/355 (ERT-30) Rolling Stock Gauge	The Contractor shall provide the automatic extended platform gap filler in the event of the platform gap between the carbody and the platform to address person with disability access and the risk of passenger trap in between the gap.	N/A	Please see response provided on item 1 and Annex B.
	Volume II/III - Part 2 Section VI ERT Chapter 7.1 Clauses 7.1.5 205/355 (ERT-60) Doors and Door Control	<p>The Rolling Stock shall be a high-floor design, with level boarding from platforms. Wheelchair and mobility-impaired boarding shall not require the use of bridging or lifting devices. The horizontal distance of the passenger door thresholds shall be 1,475 +/- 25mm from the track center.</p> <p>(Note: The Bidder made request for revision of this requirement to followings – have not yet responded by the Employer) The Rolling Stock shall be a high-floor design, with level boarding from platforms. Wheelchair and mobility-impaired boarding shall not require the use of bridging or lifting devices. The horizontal distance of the passenger door thresholds shall be 1,475 +/- 3525mm from the track center.</p> <p>The Bidder ask the Employer's confirmation that as long as the Bidder</p>		

		complies to the minimum horizontal distance of the passenger door thresholds given by ERT 7.1.5 (i.e. 1,440mm), automatic extended platform gap filler will not be required.		
30.	GBB17GBB17Attachment A Item 25	<p>(The Bidder's request for clarification) Considering KD6 being 58 months, there is a very long period of 22 months between KD3 and KD6, where trains are mostly sitting idle. Also considering availability of testing facilities for FAT it would be very reasonable to permit more time for the FAT instead of having very limited time for the FAT and then afterwards the trains have to be stored for a very long time. We therefore kindly request to change the KD3 from 36 months to 45 months.</p> <p>(The Employer's clarification) Bidder request is rejected. Please refer to clause 20.4.2 on FAT requirement. KD6 is the TOC for all 7 trainset. KD3 applies only to 1st trainset.</p> <p>The Bidder would like to ask the Employer's reconsideration.</p> <p>Completion of FAI/FAT for 1st trainset on 36 months is still very earlier target with consideration of KD – 6 handover of whole 7 trainset.</p>	N/A	Please refer to Annex B.

		<p>In addition, the Bidder assume a possibility that part of Type Test requirement under ERT 20.4.2.2 such as Emergency Brake Distance and Service Brake Tests and Propulsion system test (mainly dynamic testing) shall be carried out in a test center which is outside of manufacture's facility, and it makes this requirement very challenging.</p> <p>With the above, the Bidder humbly request the Employer to revise KD3 requirement from 45months to 43months. And if it is not acceptable, please accept the Contractor to conduct dynamic testing of Type Test after KD3 – 36 months.</p>		
31.	General Condition Section VIII GC-61 14.7	<p>Payment of the amount due in each currency shall be made into the bank account, nominated by the Contractor, in the payment country (for this currency) specified in the Contract.</p> <p>We understand that the Contractor is able to receive the payment from the Employer at the bank account of unincorporated Joint Venture (JV) or of a member of JV, whichever the Contractor chooses.</p>	N/A	Bidder understanding is correct.
32.	Volume I Bidding Procedures Appendix 8 BF-28 Technical Bid (ii)	<p>Copy of receipt confirming payment for Bidding Documents</p> <p>We understand that at least one of the companies forming unincorporated JV has to purchase the Bidding Documents</p>	N/A	Bidder understanding is correct.

		for submission of this copy of receipt confirming payment for Bidding Documents. Please clarify our understanding is correct or not.		
33.	Volume 3 Part 3 Section VIII PC-20 (2)	With regard to (1) above, in case where the prime contractor is a joint venture, such joint venture will be eligible provided that the nationality of the lead partner is Japan, that the nationality of the other partners is Japan and/or the Republic of the Philippines and that the total share of work of Japanese partners in the joint venture is more than fifty percent (50%) of the contract amount We understand that unincorporated Joint Venture consisting of Japanese companies is eligible bidder for this contract package.	N/A	Bidder understanding is correct.
34.	Volume 3 Conditions of Contract and Contract Section IX Contract Forms Letter of Acceptance CF-3	This is to notify you that your Bid dated [insert date] for the execution of Contract Package CP NS-03: Rolling Stock – Limited Express Trainsets for Malolos– Clark Railway Project and North South Railway Project-South Line (Commuter) and [insert identification number, as given in the Contract Data] for <u>the Accepted Contract Amount of the equivalent of [insert amount in words and figures] [insert name of currency]</u> , as corrected and modified in accordance with the Instructions to Bidders, is hereby accepted by our Agency.	N/A	Please refer to the Part 3 – Conditions of Contract and Contract Forms, Section VII – General Conditions, article 1.1.4.1 for the definition of Accepted Contract Amount. Please note that the any arithmetical errors shall be rectified, as being described in the Part I Bidding Procedures, ITB 36 and ITB 36.2.

		<p>We would like to clarify the definition of the “Accepted Contract Amount”</p> <p>Our understanding is that the Accepted Contract Amount is same as the total price submitted in LETTER OF PRICE BID(Volume 1 SectionIV BF-31) clause (c) and the calculation formula is as follows</p> <p>The Accepted Contract Amount =(A)+(B) *excluding any discount</p> <p>A: Local Currency with VAT and Provisional Sums B: Foreign Currency without VAT and with Provisional Sums</p> <p>Please confirm if above calculation method is correct.</p>		
35.	<p>GBB No.11 Page 1 of 58 Item No.1</p>	<p>(Clarification Request) In order to save the cost of issuing required bonds, we would like to issue Bid security, Advance payment security, Performance security and Retention security from Japanese bank(s) being “advised” by a reputable bank or financial institution located and authorized to do business in the Republic of the Philippines</p> <p>(Response)</p>	<p>The contractor may obtain such Performance Security from foreign bank, subject to the Performance Security being “advised” by a reputable bank or financial institution consented to by the Employer, located and authorized to do business in the Republic of the Philippines</p>	<p>Bidder request to change the requirement is rejected.</p> <p>The bid conditions shall prevail, reference to Particular Conditions Part B - Specific Provisions, item 4.2, second paragraph, The Contractor may obtain such a Performance Security from a foreign bank, subject to the Performance Security being</p>

		<p>The bidder's understanding is correct. The bidder shall abide to the requirement stipulated in the Part 1 Bidding Procedures and Part 3 Conditions of Contract and Contract Forms.</p>		<p>"confirmed" by a reputable bank or financial institution consented to by the Employer, located and authorized to do business in the Republic of the Philippines.</p>
<p>Page 16 of 17 Item No.22</p>		<p>The Contractor may obtain such a Performance Security from a foreign bank, subject to the Performance Security being "confirmed" by a reputable bank or financial institution consented to by the Employer, located and authorized to do business in the Republic of the Philippines.</p> <p>According to the GBB No.11 Item No. 1, as for the bond issued by a Japanese bank, it is our understanding that there is no problem in using an advising bank rather than a confirming bank as a bank on the Philippine side.</p> <p>However, according to GBB No.11 PC-14, Contractor is required to use a confirming bank if Contractor prepares Performance security issued by a Japanese bank.</p> <p>In order to save the cost of issuing required bond including Performance Security, we would like a Performance Security from a Japanese bank being "advised" by an advising bank in Philippines also to be accepted.</p>		

36.	<p>GBB No.13 Page 8 of 9 Item 14.1 Contract Price</p>	<p>Add the following paragraphs after the existing second paragraph; “Notwithstanding the provision of subparagraph (b); (1) The Government of the Republic of the Philippines shall, by itself or through its executing agency, assume:</p> <p>i. all duties and related fiscal charges imposed in the Republic of the Philippines on the Japanese companies operating as suppliers and contractors with respect to the import and re-export of their own materials and equipment needed for the implementation of the Project; and</p> <p>ii. all fiscal, levies and taxes imposed in the Republic of the Philippines on the Japanese companies operating as suppliers and contractors with respect to the payment carried out for and the income accruing from the supply of products and/or services required for the implementation of the Project; and</p> <p>(2) The government of the Republic of the Philippines shall assume the value added tax to the Japanese Contractor in accordance with the Law of the Country.</p> <p>(3) In connection with such tax assumption, the Government of the Republic of the Philippines or its executing agency shall be responsible for the liquidation or settlement of such fiscal</p>	N/A	<p>Please refer to Part 3 – Conditions of Contract and Contract Forms, Section VIII. Particular Conditions, Appendix 1: Eligible Source Countries of Japanese ODA Loans, Article 3, for the detail in regards to Eligible Nationality and Japanese Company.</p>
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		levies, duties, taxes and other similar charges Please confirm that “Japanese companies operating” mentioned in PC-19 14.1 include a subsidiary in Philippines, which is 100% owned by Japanese company.		
37.	GBB 2 - Annex A - Item 38 GBB 2 - Annex A - Item 38 Volume II of III, Part 2 – Employer’s Requirements ERG-8218.1.1	Is it possible to use an alternative tool? The Bidder proposes to use Doors (IBM) instead. The Contractor shall use ComplyPro software to manage the requirements and supply a total of three (3) licenses for the Engineer and Employer. All the cost associated to the software usage and maintenance (including the licenses supplied to the Engineer and Employer) shall be under Contractor own cost. The licenses shall be maintained until the issuance of the Performance Certificate for the final trainset. The Contractor shall appoint a suitably qualified and competent persons to carry out requirements management. As indicated in GBB2 Item 38, several Bidders use DOORS software for requirement management, which is a widely employed and a reference software in the railway market. Therefore, the Bidder kindly requests the allowance of DOORS for the benefits of the project. On the other side, ComplyPro software is not a reference for the Railway Industry.	N/A	Bidder request to change the requirement is rejected. The database has been established by the Employer for CP NS-03. 1.The contractor shall purchase the license for both Employer and Contractor to access the established database and shall be responsible to maintain the database. The established processes in Complypro and the requirement management plan will be provided to the successful Bidder. 2.The process and established database in the ComplyPro will list all requirements in the ERG and ERT. The contractor shall later provide the compliance statement and the evidence for requirement

		<p>In case, ComplyPro software is requested for the management of all the requirements and in order to assess the needed solution, the Bidder needs to have further information about the way DOTr would use ComplyPro. Specially, the following information is requested:</p> <p>1. Could you please explain which is the process to be followed in ComplyPro?</p> <p>2. Regarding the requirement management with ComplyPro, how are the following topics managed?</p> <ul style="list-style-type: none"> - Requirements' Attributes - Interfaces - Documentation management <p>3. How the Contractor's databases will be linked with other Contractors' databases?</p>		<p>demonstration. Interface module will be available in ComplyPro for the interface requirement and ComplyPro is linked to Aconex for the tracking of requirement demonstration evidence.</p> <p>3.The contractor don't have to develop the database. The database will be developed by the Employer. Contractor's database is linked to other Contractors's database by the Employer.</p>
38.	<p>Volume I of III Part 1 - Bidding Procedures Grand Summary – Box (DL) and Note 3)</p> <p>GBB 17 Annex A No.4</p>	<p>Note 3) The Value Added Tax (VAT) for the Foreign Currency portion shall be converted to the Local Currency according to ITB 37.1 and added to the VAT for the Local Currency portion.</p> <p>Reference to the RMC No. 8-2017, the Japanese Contractor shall file the VAT. VAT will not be taken into consideration during price evaluation. VAT is to be add in on as a direct amount at the rate of 12% (in accordance with the Laws of the Republic of the Philippines) on the total local</p>	N/A	<p>(1) According to the RMC No. 8-2017, the Japanese Contractor shall bill and pass the VAT to the executing agency, thus the Value Added Tax (VAT) for the Foreign Currency portion shall be converted to the Local Currency according to ITB 37.1 and added to the VAT for the Local Currency portion.</p>

		<p>currency (PHP) amount where foreign currency will be converted to the local currency amount before the VAT is added in.</p> <p>As per Note 3 of Grand Summary, the Value Added Tax (VAT) for the Foreign Currency portion shall be converted to the Local Currency according to ITB 37.1 and added to the VAT for the Local Currency portion has to be included in box DL.</p> <p>Also, in GBB 17, it is said foreign currency will be converted to the local currency amount and VAT will be added to the whole contract amount.</p> <p>Please, confirm that:</p> <p>(1)The reason why VAT will be applied to foreign currency portion as well. We understand that VAT will be added only to invoice of local portion.</p> <p>(2)in case of being awarded, the VAT of the Foreign Currency included in box DL denominated in PHP will not be a fixed price amount but would rather be adjusted on each invoice by applying the corresponding exchange rate established in the Philippines Law to the Foreign Currency amount to be invoiced and then the applicable VAT rate.</p>		<p>(2) Please refer to the Section VII General Conditions, Article 14.15 for the Currencies of Payment, item (b) : "other payments to the Employer by the Contractor shall be made in the currency in which the sum was expended by the Employer, or in such currency as may be agreed by both Parties;"</p>
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39.	<p>Volume III Particular Conditions - Part A (Contract Data) PC-6 14.9 Relevant Percentage Weighting for Release of Retention for each Section</p>	<p>For the purposes of this Sub-Clause: (i) the word 'Section' shall be deemed to refer to the elements of work identified in 'Table 1 – Key Dates' shown in Attachment 1 hereto, and (ii) the relevant percentage for each such Key Date ('Section') shall be as follows:</p> <table border="1"> <thead> <tr> <th>Section</th> <th>Element of Work</th> <th>Percentage Weighting</th> </tr> </thead> <tbody> <tr> <td>KD 6</td> <td>Delivery of 7 trainsets (1-7) and completion of testing and commissioning thereof plus handing over.</td> <td>70%</td> </tr> <tr> <td>KD 8</td> <td>Completion of Trial Operation support and the whole of the Works.</td> <td>20%</td> </tr> <tr> <td>Defects Notification Period</td> <td>Completion of Defects Liability for the last trainsets</td> <td>10%</td> </tr> </tbody> </table> <p>For the purposes of this Sub-Clause: (i) the word 'Section' shall be deemed to refer to the elements of work identified in 'Table 1 – Key Dates' shown in Attachment 1 hereto, and (ii) the relevant percentage for each such Key Date ('Section') shall be as follows:</p> <p>General Condition 14.9, at last paragraph states;</p>	Section	Element of Work	Percentage Weighting	KD 6	Delivery of 7 trainsets (1-7) and completion of testing and commissioning thereof plus handing over.	70%	KD 8	Completion of Trial Operation support and the whole of the Works.	20%	Defects Notification Period	Completion of Defects Liability for the last trainsets	10%	N/A	<p>If the Performance Security is in the form of a demand guarantee, and the amount guaranteed under it when the Taking-Over Certificate is issued is more than half of the Retention Money, then the Retention Money guarantee will not be required.</p> <p>Reference to the Section VII General Conditions, Article 14.9, last paragraph: "If the Performance Security required under Sub-Clause 4.2 is in the form of a demand guarantee, and the amount guaranteed under it when the Taking-Over Certificate is issued is more than half of the Retention Money, then the Retention Money guarantee will not be required. If the amount guaranteed under the Performance Security when the Taking-Over Certificate is issued is less than half of the Retention Money, the Retention Money guarantee will only be required for the difference between half of the Retention Money and the amount guaranteed under the Performance Security.</p>
Section	Element of Work	Percentage Weighting														
KD 6	Delivery of 7 trainsets (1-7) and completion of testing and commissioning thereof plus handing over.	70%														
KD 8	Completion of Trial Operation support and the whole of the Works.	20%														
Defects Notification Period	Completion of Defects Liability for the last trainsets	10%														

		<p>“If the Performance Security required under Sub- Clause 4.2 is in the form of demand guarantee, and the amount guaranteed under it when the Taking-Over Certificate is issued is more than half of the Retention Money, then the Retention Money guarantee will not be required. If the amount guaranteed under the Performance Security when the Taking-Over Certificate is issued is less than half of the Retention Money, the Retention Money guarantee will only be required for the difference between half of the Retention Money and the amount guaranteed under the Performance Security.”</p> <p>Please confirm that Retention Bond is not required under this Contract.</p> <p>According to PC 14.3(c), limit of Retention Money is 5% of Accepted Contract Amount.</p> <p>As per PC 14.9, such 5% of 70% will be returned and paid at KD6, 20% will be returned and paid at KD8, and 10% will be returned and paid at the end of DNP period to the Contractor.</p> <p>Since Performance Bond Amount (10% of Contract Amount) will not be reduced until the end of DNP Period for KD6, such 10% amount will always be less than the amount guaranteed under Performance</p>		
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		Bond at the time of Taking- Over Certificate is issued, so we understand that the Retention Money guarantee will not be required in this Contract.		
40.	Volume III. Part 3 – Conditions of Contract and Contract Forms Section VIII – Particular Conditions PC-8 ATTACHMENT 1 SUMMARY OF KEY DATES	<p>(2) Achieving a Key Date for an element of work means that, <u>before</u> the expiry of the number of months relevant to the element in question (as specified in “Table 1 – Key Dates” below), all works related to that element have been completed to the satisfaction of the Engineer. The number of months shown in Table 1 against a Key Date and its specific element of work signifies the <u>maximum</u> duration in months from the Commencement Date within which the identified element must be completed.</p> <p>After analysing Note 2 of ATTACHMENT 1 - SUMMARY OF KEY DATES, it is clearly defined that KDs are all “maximum” dates and that Contractor can complete all works related to any of those KDs to the satisfaction of the Engineer “before” the “maximum” date required for each KD. Please, confirm.</p> <p>Additionally, Bidder would like to confirm as well that in case Contractor achieves earlier than any of the maximum KDs, it will be paid according to the related milestones defined in the Price Schedules submitted within the Price Bid as well. Please, confirm.</p>	N/A	(1) Confirmed. (2) Confirmed.

Annex B

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ITEM NO.	REFERENCE/CLAUSE/ SECTION	REVISIONS / AMENDMENTS
Volume II Part II – Employer’s Requirement		
1	ERT-29 1.21	<p>Updated Clause 1.21.2:</p> <p>The rolling stock gauge defined in the Appendix C shall be referred as the Static Envelope of the train.</p> <p>Updated Clause 1.21.3:</p> <p>The Contractor shall require to submit a Rolling Stock Gauge report during the design stage to include the following but not limited to:</p> <ol style="list-style-type: none"> 1) To proposed Kinematic, Envelop of the Limited Express Train 2) The Kinematic Envelop calculation for normal operation and worst-case scenario 3) To propose ideal platform gap which address the operational needs, safety and PWD. <p>Updated Clause 1.21.4:</p> <p>The Limited Express train will have to pass the station at 160km/h. Thus, the report for rolling stock gauge shall include the above-mentioned station passing speed and later to be validated through testing.</p> <p>Deleted Clause 1.21.5, 1.21.8 & 1.21.9</p>

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ITEM NO.	REFERENCE/CLAUSE/ SECTION	REVISIONS / AMENDMENTS
2	ERT-60 7.1.5	<p>Updated clause 7.1.5:</p> <p>The Rolling Stock shall be a high-floor design, with level boarding from platforms. Wheelchair and mobility-impaired boarding shall not require the use of bridging or lifting devices. The horizontal distance of the passenger door thresholds shall be 1,475 +/- 25 mm from the track center unless otherwise proposed by the Contractor subject to the review by the engineer</p>
3	ERT-50 5.12.7	<p>Updated clause 5.12.7:</p> <p>Windshields shall be provided with external electric wiper/washer units and defogger unit. The driver shall be able to control the active Cab windshield wipers, washers and defogger via the active Driver's Desk.</p>
4	ERT-72 9.2.2	<p>Updated clause 9.2.2:</p> <p>The brake pads shall be an asbestos-free friction material or otherwise proposed by the Contractor, which has shown stable friction characteristics under a wide range of temperatures, humidity, and surface speed conditions. The friction material shall be compatible with the friction ring of the brake disc, and with consideration to Coefficient of Friction (COF) linearity, nominal performance, wear, noise, etc. The brake pad shall have a proven service history in railway operation.</p>

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ITEM NO.	REFERENCE/CLAUSE/ SECTION	REVISIONS / AMENDMENTS
5	ERT-67 8.1	<p>Updated clause 8.1.1:</p> <p>Each car shall be provided with two units of ventilation and air-conditioning (VAC) system complete with relative humidity control. The air-conditioning units (ACU) shall be controlled independently such that if there is a failure in one unit, the other units shall continue to operate normally. All system components must be service-proven, and must be tested to demonstrate compliance with the requirements of this ERT.</p> <p>Updated clause 8.1.2:</p> <p>The Contractor shall submit a complete design of the air handling and diffusing system along with air flow and velocity calculation for the Engineer to review. Upon installation on the car, the complete air supply/diffusing system shall be measured and balanced and the air flow and velocity confirmed. Air-balancing on each car shall be performed by a qualified VAC technician. Measurements shall be conducted in accordance with American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) requirements or equivalent.</p> <p>Deleted 8.1.5 & 8.1.6.</p>
6	ERT-47 5.5	<p>Updated clause 5.5:</p> <p>The vehicle ceiling shall present an aesthetically pleasing smooth service, and shall incorporate lighting fixtures, conditioned air outlet grilles, public address speakers, etc. The ceiling panels and fixtures shall not vibrate, rattle or squeak during normal service</p>

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		conditions. Panels shall comply with fire regulations DIN 5510-2 or any equivalent standard which shall be reviewed and given notice of no objection by the Engineer.
7	ERT-68 8.2.7	Updated clause 8.2.7: In order to reduce the frequency of replacement of the filter, the roll filter can be used unless otherwise proposed by the Contractor. Fitter details shall be presented during design stage which shall not limited to the filter element materials data sheet, drawings, lifecycle cost analysis etc. for engineer review.
8	ERT-55 5.19.4-7	Updated clause 5.19.4: The Master Controller shall be interlocked by the Driver's key. Updated clause 5.19.5: When the driver's key is in the ON position and Reversing Switch is in the forward or reverse position, the Master Controller shall be released. Updated clause 5.19.6: The driver's key shall be removable when The Master Controller is not in the predetermined Emergency position. The Master Controller will be interlocked electrically or mechanically. Updated clause 5.19.7:

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		The driver's key shall be removable when The Reversing Switch is not in the predetermined OFF(Neutral) position. The Reversing Switch will be interlocked electrically or mechanically.
9	ERT-32 2.3.2.4	Updated clause 2.3.2.4: The carbody shell shall be designed and tested to ensure that under W2 loading conditions negative camber shall never occur between bogie center line. The Contractor shall evaluate and submit camber values at W0, W1 and W2 loading for engineer review. The Contractor shall ensure, and must demonstrate by test, that all doors operate freely under all carbody loading conditions and will not disengage from their guide ways under the lateral loading conditions exerted by crush-loaded passengers.
10	ERT-91 14.5.1 (6)	Updated clause 14.5.1 (6): All isolating switches and Circuit breakers necessary for vehicle revenue line fault intervention shall be placed inside the driver's cab for easy access and intervention.
11	ERT-41 3.10.1	Updated clause 3.10.1: Under all conditions of movement between the bogies and the carbody, including fully inflated and deflated air spring conditions, there shall basically exist a clearance and accessibility between bogie-mounted and carbody-mounted equipment. This shall include

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		any end of the vehicle having fully inflated air springs, with the opposite end having deflated air springs.
12	ERT-134 21.4.1	Added clause 21.4.1.4: Alternative forms of terminals will be considered where appropriate.
13	ERT-14 1.11.4.6	Updated clause 1.11.4.6: In case of coupling inoperable train and rescue train with identical coupling head, the emergency brake circuit shall be connected between these two trains by emergency electric coupler. These two trains emergency brake shall be controlled at the same demand synchronously from both train's operator cabs. Intercom between these trains, buzzer and any other circuit required for rescue operation shall be connected by emergency electric coupler. The specifications for rescue operation shall consider coupling of Limited Express train with other project trains in interoperability section or other rail type vehicle which shall be proposed by the Contractor and reviewed by the Engineer.
14	ERT-43 4.1	Updated clause 4.1.1: The end cars in each train shall be fitted with an automatic coupler. The coupler shall be placed in a readily accessible position under and from either side of the end vehicle. The position (right side or left side) of parts operated shall be consistent for all end vehicle. It shall be possible to connect with other commuter train of North-South Commuter Railway (NSCR), MCRP- and NSRP-South during train rescue or hauling.

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ITEM NO.	REFERENCE/CLAUSE/ SECTION	REVISIONS / AMENDMENTS
		<p>Updated clause 4.1.4:</p> <p>The automatic coupler shall, in conjunction with the draft-gear automatically effect mechanical, electrical and pneumatic coupling for two (2) Limited Express Train or identically coupling head. It shall also permit separation of units either by manually from the track side and/or remotely from the cab.</p>

Volume III Part III - Conditions of Contract and Contract Forms

15	PC-8 Attachment 1	<p>Updated Attachment 1 - SUMMARY OF KEY DATES:</p> <table border="1"> <thead> <tr> <th colspan="3">TABLE 1 – KEY DATES</th> </tr> <tr> <th>Key Date</th> <th>Element of Work</th> <th>No. of Months</th> </tr> </thead> <tbody> <tr> <td>KD 1</td> <td>Achievement: Completing Final Design Review.</td> <td>25 months</td> </tr> <tr> <td>KD 2</td> <td>Achievement: Deliver the Mock Up to the site</td> <td>24 months</td> </tr> <tr> <td>KD 3</td> <td>Achievement: Completing FAI and FAT on the 1st trainset</td> <td>40 months</td> </tr> <tr> <td>KD 4</td> <td> Achievement: Supply and delivery of the following Rolling Stock equipment for training purposes to the CP NS-01 Contractor at the North Depot (for Training Center Facility): <ul style="list-style-type: none"> - Equipment for driving simulator, - Pantograph, and </td> <td>42 months</td> </tr> </tbody> </table>	TABLE 1 – KEY DATES			Key Date	Element of Work	No. of Months	KD 1	Achievement: Completing Final Design Review.	25 months	KD 2	Achievement: Deliver the Mock Up to the site	24 months	KD 3	Achievement: Completing FAI and FAT on the 1st trainset	40 months	KD 4	Achievement: Supply and delivery of the following Rolling Stock equipment for training purposes to the CP NS-01 Contractor at the North Depot (for Training Center Facility): <ul style="list-style-type: none"> - Equipment for driving simulator, - Pantograph, and 	42 months
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PACKAGE CP NS-03: ROLLING STOCK - LIMITED EXPRESS TRAINSETS
General Bid Bulletin No. 18
Annex B

ITEM NO.	REFERENCE/CLAUSE/ SECTION	REVISIONS / AMENDMENTS			
			- Bogie assembly for motor car including traction motor, gearbox and coupling.		
		KD 5	Achievement: Completion of training and delivery of Operation and Maintenance Manual.	55 months	
		KD 6	Achievement: Issuance of taking over certificate on all 7 trainsets	57 months	
		KD 7	Achievement: Delivery of all spare parts, consumables, special tools and jigs, plus as-built drawings.	55 months	
		KD 8	Achievement: Completion of Trial Operation support and the whole of the Works.	58 months	

Annex B – Attachment 1

4	DIN 5510-2 Fire test to railway components
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1.19 Under-Floor Wheel Re-profiling Lathe Interface

1.19.1 The Contractor shall make all the necessary arrangement and interfaces work with the CP NS-01 Contractor, for the interface of rolling stock bogie and the Under-Floor Wheel Re-profiling Lathe machine. The Wheel Re-profiling shall able to be carried out efficiently without decoupling the train or train component parts dismantle.

1.20 Design life

1.20.1 Rolling stocks for MCRP, NSCR and NSRP-S shall be designed based on design life as shown below.

- 1) Body / Bogie / Coupler/ Cables : Gearboxes, Traction motors, over 30 years
- 2) Propulsion System, Power conversion element, filter capacitor: over 20 years
- 3) General electrical parts: over 12 years
- 4) Some special parts: about 8 years

~~5) Wheels 2 million km~~

~~6)5) Air reservoirs 30 years~~

1.20.2 If any electric parts with a design life shorter than 12 years are proposed, the Contractor shall submit proposals for the Engineer to review and obtain the statement of No Objection.

1.21 Rolling Stock Gauge

1.21.1 The design of the train shall comply with the Rolling Stock and Construction Gauge drawing (MCRP-DWG-GEN-TK-0020) in Appendix C of ERT.

1.21.2 The rolling stock gauge defined in the Appendix C shall be referred as the ~~Kinematic Static~~ Envelope of the train.

~~1.21.3 The design of the train and its suspension shall ensure that the specified Kinematic Envelope will not be exceeded. The Contractor shall require to submit a Rolling Stock Gauge report during the design stage to include the following but not limited to:~~

- ~~1) To proposed Kinematic, Envelop of the Limited Express Train~~
- ~~2) The Kinematic Envelop calculation for normal operation and worst-case scenario~~
- ~~3) To propose ideal platform gap which address the operational needs, safety and PWD.~~

~~1.21.4 The Limited Express train will have to pass the station at 160km/h. Thus, the report for rolling stock gauge shall include the above-mentioned station passing speed and later to be validated through testing.~~

~~1.21.3~~

~~1.21.4~~ ~~1.21.5~~ The Kinematic Envelope is the maximum envelope for any part of the train not to exceed during normal and abnormal operations, taking into account all possible

displacement due to dynamic movements of the train in relation to the track center line resulting from the operation, train and track maintenance tolerances, and failure conditions including a deflated air bag. Any Kinematic Envelope exceedances under any operating condition shall be submitted to the Engineer for review.

~~1.21.5 The Contractor shall submit the design calculation to show the train design will comply with the Rolling Stock Gauge. All the calculation shall be based on the most adverse construction and maintenance tolerance of the train and the track plus any one of the following abnormal condition:~~

- ~~1) Maximum wind velocity of 115 km/h;~~
- ~~2) One secondary suspension airbag deflated; or~~
- ~~3) One primary suspension spring collapsed.~~

1.21.6 The door thresholds shall not be lower than the nominal platform surface under any loading conditions with secondary suspension performing normally.

1.21.7 In order to maintain sufficient passing clearance between the train and the Construction Gauge on the curved tracks, the Contractor shall provide clearance calculation to confirm that the car center and car end overhang do not exceed the Construction Gauge on curves.

~~1.21.8 The Contractor shall submit the propose static gauge of the train for Engineer review.~~

~~1.21.9 The Contractor shall provide the automatic extended platform gap filler in the event of the platform gap between the carbody and the platform to address person with disability access and the risk of passenger trap in between the gap.~~

2 Carbody

2.1 General

2.1.1 The Contractor shall ensure the design of each type of carbody shell to be as identical as possible, and to be designed to withstand the rigors of the Manila railroad environment for a period of 30 years, without major overhaul or rehabilitation.

2.1.2 The carbody shall be as smooth in appearance as possible, with no untoward protrusions in evidence.

2.1.3 The Train design shall incorporate design features, which guarantee a high level of safety for the passengers and Train Crew.

2.1.4 The carbody design shall incorporate a function of anti-climbing on both ends of all cars to prevent one car from climbing over another in the event of a collision.

2.1.5 The carbody, including doors and windows, shall be watertight under all operating conditions, including passage through a train washing facility. Water deflecting gutters shall be installed on the roof along the entire side of the vehicle and over the end doors and provided with suitable down spouts. The gutter shall be continuous to ensure controlled drainage at the corners of the vehicle. The gutter design shall ensure water will not spill over the gutter onto the carbody side or onto the platform when the Rolling Stock consist is braking or accelerating into station. Water drain shall not directly fall/splash to under body equipment. Rainwater downspout shall be extended just appropriate to allow water to drain down without causing splash to the under-floor equipment.

2.1.6 Danger of happening overturn shall be calculated as wheel unloading rate according to Japanese standard or any other international equivalent standard, the result shall be submitted for review by the Engineer. Provisions for calculation such as wind speed, cant

	intelligibility by speech transmission index
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International Union of Railway Standards (UIC)	
1.	UIC541- 05 Ed. 2 (2005) -Brakes - Specifications for the construction of various brake parts - wheel slide protection device.
2.	UIC 566 LOADINGS OF COACH BODIES AND THEIR COMPONENTS

Other Standards	
1	Japan Rolling Stock Industrial Standard (JRIS) – Japan
2	Technical Regulatory Standards on Japanese Railways of Ministry of Land Infrastructure, Transport and Tourism (MLIT)
3	Philippine National Standards (PNS) – Philippines
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- 1.21.4 The Limited Express train will have to pass the station at 160km/h. Thus, the report for rolling stock gauge shall include the above-mentioned station passing speed and later to be validated through testing.
- 1.21.5 The Kinematic Envelope is the maximum envelope for any part of the train not to exceed during normal and abnormal operations, taking into account all possible displacement due to dynamic movements of the train in relation to the track center line resulting from the operation, train and track maintenance tolerances, and failure conditions including a deflated air bag. Any Kinematic Envelope exceedances under any operating condition shall be submitted to the Engineer for review.
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7 Doors and Door Control

7.1 Passenger Side Entrance Doors, Gangway Doors and Saloon Separation Doors

- 7.1.1 The side entrance door operator design and functionality shall be based on a "fail-safe" principle and high standards of safety and security for passengers. Design, safety and testing of the passenger doors shall be compliant with MLIT Article 74 or other equivalent standards.
- 7.1.2 Two (2) electrically operated doors shall be provided on each side of every car. All doorways shall have a clear opening of 900 mm, as minimum, (1300mm is preferred as this allows 2 streams of passengers to alight/board simultaneously see TCRP report 13) and a clear height of 1850 mm.
- 7.1.3 The number of the doors and their dimensions shall allow the complete evacuation within three minutes by passengers in emergency. An emergency exit shall be able to be opened by a passenger from inside the train. All external passenger doors shall be equipped with emergency opening devices allowing them to be used as emergency exits
- 7.1.4 Side door number is two for each side, and position of the door must adjust to PSD door position. When express train stop at station, train door shall be inside the width of the PSD door, considering the accuracy of stopping ± 350 mm by ATO (Automatic Train Operation). The Contractor shall Interface with the PSD NS-01 Contractor on the requirement of door positioning between the Rolling Stock and PSD in accordance with section 7.8 of the ERT. The doors shall be ~~the sliding pocket bi-parting or single leaf plug-in sliding doors~~ or single leaf pocket sliding doors, constructed to prevent hands/finger pinning at the pocket section during operation. An airtight structure is preferred. If airtight structure is adopted, the mechanical door system must be fit to this system. The proposed door type shall be a proven solution to the constructability with the platform door under CP NS-01 contract, the maintainability, the safety and the performance of the rolling stock.
- 7.1.5 The Rolling Stock shall be a high-floor design, with level boarding from platforms. Wheelchair and mobility-impaired boarding shall not require the use of bridging or lifting devices. The horizontal distance of the passenger door thresholds shall be 1,475 +/- 25 mm from the track center unless otherwise proposed by the Contractor subject to the review by the engineer.
- 7.1.6 Doors shall be vibration free and sufficiently insulated against heat and sound transmission. Exterior and Interior surfaces of the door leaves shall be finished to match the adjacent surfaces of the car. The doors shall be free from dimples, warping, spot welding depression and any other blemish.
- 7.1.7 The closed-door leaves shall be capable of withstanding loads imposed by passengers leaning on them under crush loading conditions. The doors shall be designed and tested such that the door leaves sustain such pressure with no permanent deformation. The Contractor shall submit test procedure and results based on best international practices.
- 7.1.8 It shall be extremely improbable for a door to detached from the car under any operating conditions, including heavy side load from standing passengers or sudden pressure transients.
- 7.1.9 No single defect or failure of any part of any door system shall produce a situation capable of causing injury to the passenger and the employer personnel etc.
- 7.1.10 Door guides and supports shall be mounted within the section of doorway protected by the door seals and shall not allow ingress of dirt, debris, or any other foreign matter likely

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- 7.1.9 No single defect or failure of any part of any door system shall produce a situation capable of causing injury to the passenger and the employer personnel etc.
- 7.1.10 Door guides and supports shall be mounted within the section of doorway protected by the door seals and shall not allow ingress of dirt, debris, or any other foreign matter likely to result in excessive wear or incorrect operation of the door equipment.

- 5.11.7 The body-side and door windows shall be designed to minimize solar gain and provide a level of thermal insulation consistent with the requirements of the air conditioning system.
- 5.11.8 Glazing shall be readily removed and replaced without remove the interior linings.
- 5.11.9 Contractor shall provide related repair procedure.
- 5.11.10 Each window, including glazing shall have sufficient strength when tested in accordance with JIS R 3213 or other equivalent standards.
- 5.11.11 All side windows shall transmit less than 7% of the incident ultraviolet radiation. Body side and door glazing shall be capable of rejecting 50% to 80% solar energy with visible light transmission of 40% to 55%.
- 5.11.12 Glazing of windows, on body-side and doors, shall resist to an act of vandalism. The windows shall be high enough to prevent accidental breakage.
- 5.11.13 Window seals shall be designed to prevent ingress of water to the inside of walls. The sealing material shall be so selected that it lasts at least the mid-life interval overhauls of carbody.
- 5.11.14 Door windows shall have a window similar to the windows provided in the carbody as far as possible in respect of solar gain, thermal insulation, replacement criteria, strength, resistance to pressure, and the transmission of light, and solar heat gain.
- 5.11.15 Door windows single glazed with toughened/tempered glass shall be replaceable without removal of the door leaf.
- 5.11.16 Curtains or blinds preventing sunshine shall be equipped for all windows.
- 5.12 Drivers Cab Windshield**
- 5.12.1 The Cab front windshield shall be of tempered safety glass meeting the requirements of JIS R 3213 or other equivalent standards.
- 5.12.2 Windscreens shall have sufficient strength to resist penetration as per the requirements of UIC 651 or equivalent standard.
- 5.12.3 The Cab windshield shall be bonded directly to the Carbody window frame. The design shall ensure that, in the event of breakage, sufficient visibility is maintained to operate the train safely for the remainder service.
- 5.12.4 Windshield shall be replaceable within a four (4)-hour period. Glue and sealant will be of a type to cure to a level sufficient for the unit to re-enter Revenue Service 8 hours after the completion of the installation of the windshield.
- 5.12.5 A sun visor shall be installed to provide protection from direct and reflected sunlight over as large an area as possible.
- 5.12.6 The windshield design shall minimize glare and reflections, including any internal reflection from the TMS screen, gauges and controls.
- 5.12.7 Windshields shall be provided with external electric wiper/washer units and defogger unit. The driver shall be able to control the active Cab windshield wipers, washers and defogger via the active Driver’s Desk. ~~A fan defogger shall not be acceptable. This system shall have no adverse effect on the windshield including overheating in direct sunlight. A rain sensor of proven quality shall be provided and integrated with the wiper unit for detection of rain. Signal from sensor should also be fed to TMS for control of~~

~~propulsion and braking under wet conditions to avoid wheel slip.~~

- 5.12.8 The windshield wipers, washers and defogger equipment shall not impair the Driver’s line of sight. The windshield wipers shall include adjustable speeds of operation with intermittent function and “park” position. At least 80% of the width and 60% of the height of the windshield shall be swept over a complete cycle. Design of the windshield wipers shall not be in conflict with the automatic train wash equipment. (better to “park” at the windscreen lower edge)
- 5.12.9 The washer unit shall be provided with at least 10 liters of water reservoir, with visual water level gauge, located for easy filling from ground level outside the car.
- 5.12.10 The Driver’s Cab side windows shall be capable of being opened and positioned so the Driver can view the length of the Train. An open window shall maintain its set position at all times that the Train is in motion. Driver’s Cab windows shall also meet applicable requirements of Sub-Clause 5.11 of this ERT.

5.13 Signs and Decals

- 5.13.1 The following signs, as a minimum, shall be provided in both Filipino and English languages.
- 5.13.2 All decals shall be vandal and graffiti resistant and shall be edge-sealed. The artwork shall be submitted to the Engineer for review and comments prior to manufacturing. The number and location of the decals and the materials used shall be agreed by the Engineer and be included in the Mock-Up.
 - 5.13.2.1 Decals for, but not limited to the following shall be installed inside the passenger Saloon.
 - 1) No Smoking decals;
 - 2) System route maps (including places of interests);
 - 3) Door warning notices;
 - 4) Elderly/disabled seats;
 - 5) Emergency notices;
 - 6) Carbody Number;
 - 7) “No Littering” Notices;
 - 8) Hold to Handrail/Hand Grip Notices; and
 - 9) Fire Extinguisher Marker.
 - 10) Wheelchair space
 - 11) End door leaf
 - 12) Emergency exit

5.14 Vehicle Exterior

- 5.14.1 The Contractor shall produce three (3) distinctive conceptual design proposal with artistic impressions, 3D, virtual concept and conceptual livery layout to realize the design requirement as below:
 - 1) The carbody exterior shall aesthetically pleasing and stylish, conveying an image of

level of thermal insulation consistent with the requirements of the air conditioning system.

- 5.11.8 Glazing shall be readily removed and replaced without remove the interior linings.
- 5.11.9 Contractor shall provide related repair procedure.
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- 5.12.5 A sun visor shall be installed to provide protection from direct and reflected sunlight over as large an area as possible.
- 5.12.6 The windshield design shall minimize glare and reflections, including any internal reflection from the TMS screen, gauges and controls.
- 5.12.7 Windshields shall be provided with external electric wiper/washer units and defogger unit. The driver shall be able to control the active Cab windshield wipers, washers and defogger via the active Driver’s Desk.
- 5.12.8 The windshield wipers, washers and defogger equipment shall not impair the Driver’s line of sight. The windshield wipers shall include adjustable speeds of operation with intermittent function and “park” position. At least 80% of the width and 60% of the height

- 9.1.9 For service brake, the loaded braking ratio shall be 70% or more or according to EN standards. For the security brake, the empty brake ratio shall be 70% or more or according to EN standards. The rolling stock shall comply with all relevant requirements in Japanese Ministerial Ordinance, MLIT Chapter 8, Article 69 (Brake unit related) or other equivalent standards.
- 9.1.10 In addition, the above, the balance of deceleration of regenerative and pneumatic shall be finally adjusted considering ATO station stop accuracy. Interface between BCU and ETCS or Running and stopping assistant system about service brake step (via TMS control transmission) shall be at least 31 steps.
- 9.1.11 Several sensors shall be incorporated to brake system. Sensors shall be equipped to each brake cylinders and each air suspensions, as a minimum. These data detected by sensors shall be transmitted to Brake control unit, and shall be utilized for control of propulsion, brake and ATO and etc.
- 9.1.12 The calculation for emergency braking distances under dry and wet conditions shall be submitted during design phase for the Engineer review.
- 9.1.13 Braking distances for normal service braking with electric brake blending shall also be submitted during the design phase for the Engineer review.

9.2 **Friction Brakes**

- 9.2.1 All axles shall be equipped with a split type ventilated brake disc unless the lifetime of the disc brake exceeds the lifetime of the wheels. ~~and b~~Braking torque shall be applied to the disc by the air operated brake cylinder operating the caliper containing the brake pads equipped with tread cleaning and keeping proper condition of the pad. Each axle of motor mounted cars shall be equipped with the disk brake on wheel with tread cleaning.
- 9.2.2 The brake pads shall be an asbestos-free friction material or otherwise proposed by the Contractor, which has shown stable friction characteristics under a wide range of temperatures, humidity, and surface speed conditions. The friction material shall be compatible with the friction ring of the brake disc, and with consideration to Coefficient of Friction (COF) linearity, nominal performance, wear, noise, etc. The brake pad shall have a proven service history in railway operation.~~The brake pad shall be designed and manufactured not only with extremely small changing characteristics with respect to water, lubricating oil, fade, pressing pressure, speed and so on, but also with suppression of occurrence of spark caused by friction. The Contractor shall submit these bench test data and obtain statement of No Objection from the Engineer.~~
- 9.2.3 The friction brakes shall be fully capable of performing all braking duties, without the assistance of the electric brakes. The brake pads shall be retained by the brake actuator calipers or brake cylinder and shall be of the composite type. The pads shall not contain any asbestos or other cancer inducing materials, and the Contractor shall provide the Engineer with full details of the material composition for the health hazards assessment.
- 9.2.4 The parking brakes shall be with spring- applied park brake function, through air release brake actuators, and shall be capable of holding 10 cars train-set in W2 (7t payload) loading condition on a 3.5% grade under all track conditions indefinitely. Parking brakes shall be installed in each leading car and more cars if needed to meet the above performance requirement.
- 9.2.5 The parking brakes shall be applied in the event of loss of the main compressed air supply. The parking brakes shall be capable of release from within the cab when the compressed

- 9.1.9 For service brake, the loaded braking ratio shall be 70% or more or according to EN standards. For the security brake, the empty brake ratio shall be 70% or more or according to EN standards. The rolling stock shall comply with all relevant requirements in Japanese Ministerial Ordinance, MLIT Chapter 8, Article 69 (Brake unit related) or other equivalent standards.
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- 9.1.11 Several sensors shall be incorporated to brake system. Sensors shall be equipped to each brake cylinders and each air suspensions, as a minimum. These data detected by sensors shall be transmitted to Brake control unit, and shall be utilized for control of propulsion, brake and ATO and etc.
- 9.1.12 The calculation for emergency braking distances under dry and wet conditions shall be submitted during design phase for the Engineer review.
- 9.1.13 Braking distances for normal service braking with electric brake blending shall also be submitted during the design phase for the Engineer review.

9.2 Friction Brakes

- 9.2.1 All axles shall be equipped with a split type ventilated brake disc unless the lifetime of the disc brake exceeds the lifetime of the wheels. Braking torque shall be applied to the disc by the air operated brake cylinder operating the caliper containing the brake pads equipped with tread cleaning and keeping proper condition of the pad. Each axle of motor mounted cars shall be equipped with the disk brake on wheel with tread cleaning.
- 9.2.2 The brake pads shall be an asbestos-free friction material or otherwise proposed by the Contractor, which has shown stable friction characteristics under a wide range of temperatures, humidity, and surface speed conditions. The friction material shall be compatible with the friction ring of the brake disc, and with consideration to Coefficient of Friction (COF) linearity, nominal performance, wear, noise, etc. The brake pad shall have a proven service history in railway operation.
- 9.2.3 The friction brakes shall be fully capable of performing all braking duties, without the assistance of the electric brakes. The brake pads shall be retained by the brake actuator calipers or brake cylinder and shall be of the composite type. The pads shall not contain any asbestos or other cancer inducing materials, and the Contractor shall provide the Engineer with full details of the material composition for the health hazards assessment.
- 9.2.4 The parking brakes shall be with spring- applied park brake function, through air release brake actuators, and shall be capable of holding 10 cars train-set in W2 (7t payload) loading condition on a 3.5% grade under all track conditions indefinitely. Parking brakes shall be installed in each leading car and more cars if needed to meet the above performance requirement.
- 9.2.5 The parking brakes shall be applied in the event of loss of the main compressed air supply. The parking brakes shall be capable of release from within the cab when the compressed air supply is present. With no compressed air supply available, it shall be possible to release individual parking brake actuators manually from track level. Application of parking brakes shall also be controllable from the cab.
- 9.2.6 The design shall be such that the parking brakes will take effect prior to fade off of service

8 Ventilation and Air-Conditioning

8.1 General

~~8.1.1 Each vehicle shall be provided with Ventilation and Air-Conditioning (VAC) system complete with relative humidity control. All system components shall be service proven, and shall be tested to demonstrate compliance with the requirements of this ERT. Testing shall also be performed to determine the carbody heat transfer coefficient. Each car shall be provided with two units of ventilation and air-conditioning (VAC) system complete with relative humidity control. The air-conditioning units (ACU) shall be controlled independently such that if there is a failure in one unit, the other units shall continue to operate normally. All system components must be service-proven, and must be tested to demonstrate compliance with the requirements of this ERT.~~

~~8.1.2 The Contractor shall submit a complete design of the air handling and diffusing system along with air flow and velocity calculation. Qualified testing of VAC system’s air balancing shall be required to verify values. Upon installation on the vehicle, the complete air supply/diffusing system shall be measured and balanced and the air flow and velocity confirmed. The Contractor shall submit a complete design of the air handling and diffusing system along with air flow and velocity calculation for the Engineer to review. Upon installation on the car, the complete air supply/diffusing system shall be measured and balanced and the air flow and velocity confirmed. Air-balancing on each car shall be performed by a qualified VAC technician. Measurements shall be conducted in accordance with American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) requirements or equivalent.~~

8.1.3 The Contractor shall provide test and service equipment necessary for the maintenance and repair of the Ventilation and Air-Conditioning units. This shall include but not limited to off-board test bench, refrigerant recovery/recycling equipment and portable vacuum pump.

8.1.4 If air-conditioning stops to operate by any ~~serious~~minor failure i.e. Communication or link error etc., switch shall be installed to allow the driver to be able to reset from the driver’s cab.

~~8.1.5 One outside unit of air conditioning system shall be mounted on the roof of carbody. The unit weight shall be below 800kg.~~

~~8.1.6 In case the compressors don’t operate normally by serious failure, the operation of the other compressors shall not be affected by the failed compressor.~~

~~8.1.7~~8.1.5 Diffuser shall be incorporated individually to window seats or be arranged in consideration with the window seat side distribution for cleaning and maintenance accessibility.

8.2 Ventilation System

8.2.1 Blower fans supplied as part of the overhead evaporator units shall be capable to provide vehicle ventilation. Fresh air shall enter the vehicle through screened openings in the roof on each side, pass-through stainless-steel ducts (sloped downwards to drain), and pass through a filter into a plenum chamber adjacent to each overhead evaporator unit. The design shall prevent blown rain from entering the plenum and leaking into the vehicle interior.

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- 8.2.2 It shall be possible to change by TMS monitor whether function of entering ambience air is valid. Validity shall be changed as to section (tunnel/outside) as a minimum.
- 8.2.3 Re-circulated air shall be drawn through grilles in the ceiling and mix with the fresh air. This air mixture shall then pass through another filter into the evaporator unit, from where the blower shall force the air through the evaporator coils into the main air ducts.
- 8.2.4 Means shall be provided to adjust the volumes of fresh and re-circulated air. Approx. 1100 m³/h of fresh air per vehicle shall be provided when VAC system is operated.
- 8.2.5 The main air distribution duct shall be manufactured from anodized aluminum or the material that is enough service-proven and shall be constructed to ensure that the exiting air velocity is constant along its length. Ceiling panels may act as the lower side of the duct, provided adequately sealed.
- 8.2.6 Air filters shall be washable/re-useable and shall be well supported to prevent passing air from dislodging them shall the filters become saturated. They shall seal well at all edges.

be the enough service-proven:

- 1) Slip resistance of 0.75 dry and 0.62 wet in accordance with JRIS J0745 or other equivalent standards,
- 2) Hardness of Shore A Hardness 85-90,
- 3) Resistance to chemicals in accordance with JIS A 1454 (or other equivalent standards) with noticeable variation, and
- 4) Tensile strength in accordance with JIS K6251 (or other equivalent standards) - 7.3MPa;

The Contractor can propose alternative to the above requirement value for the Engineer review.

- 5.4.11 The entire floor construction shall be required to comply with the fire safety requirement as per clause 21.8 of this ERT.
- 5.4.12 All floor penetrations (for piping, conduit, etc.) shall be suitably sealed against the elements, and be required to comply with the fire safety requirement as per clause 21.8 of this ERT.

5.5 Ceiling

~~5.5.1~~—The vehicle ceiling shall present an aesthetically pleasing smooth service, and shall incorporate lighting fixtures, conditioned air outlet grilles, public address speakers, etc. The ceiling panels and fixtures shall not vibrate, rattle or squeak during normal service conditions. Panels shall comply with fire regulations DIN 5510-2 or any equivalent standard which shall be reviewed and given notice of no objection by the Engineer.—

5.6 Entrance Room

- 5.6.1 At the end of passenger saloon, a vestibule shall be provided for the purpose of separating the door area from the passenger accommodation and keeping cooled air in the saloon. Between saloon and vestibule the partition with door shall be provided. That door shall be automatically opened and closed by floor based or button or sensor. Passenger get on and get off the train through vestibule.
- 5.6.2 Alternate arrangement can be suggested by the Contractor looking into optimum space utilization and carrying capacity in rush hours and will be subject to review and comments by the Engineer.

5.7 Passenger Seats

- 5.7.1 The Contractor shall propose a cross seating arrangement. Same needs to be submitted for Engineer’s review and comments.
- 5.7.2 All seats with limited reclining function shall be automatically/manually changeable the direction with locking system and installed ~~to the floor by one stand in~~ to order to facilitate cleaning of floors and storage of Passengers’ belongings underneath.
- 5.7.3 The seats shall be ergonomically designed and the materials to be used in the seat design shall be soft type with moquette, ~~water-repellent~~ waterproof, fire and vandal resistant. Fire

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- 8.2.3 Re-circulated air shall be drawn through grilles in the ceiling and mix with the fresh air. This air mixture shall then pass through another filter into the evaporator unit, from where the blower shall force the air through the evaporator coils into the main air ducts.
- 8.2.4 Means shall be provided to adjust the volumes of fresh and re-circulated air. Approx. 1100 m³/h of fresh air per vehicle shall be provided when VAC system is operated.
- 8.2.5 The main air distribution duct shall be manufactured from anodized aluminum or the material that is enough service-proven and shall be constructed to ensure that the exiting air velocity is constant along its length. Ceiling panels may act as the lower side of the duct, provided adequately sealed.
- 8.2.6 Air filters shall be washable/re-useable and shall be well supported to prevent passing air from dislodging them shall the filters become saturated. They shall seal well at all edges. The filters shall be easily replaced but shall be sized not to require replacement at intervals less than 3500 hours of operation.
- 8.2.7 In order to reduce the frequency of replacement of the filter, the roll filter ~~can~~ shall be used unless otherwise proposed by the Contractor. The roll filter is that the furnace material is wound around the core, and when the set time has elapsed, a new furnace material portion is automatically set. Setting time of the winding is able to be changed arbitrarily by maintenance people. The length of the roll filter shall be determined with the reviewed of the Engineer. Filter details shall be presented during design stage which shall not limited to the filter element materials data sheet, drawings, lifecycle cost analysis etc. for engineer review.
- ~~8.2.8~~ ~~Openings shall be closed automatically when running through tunnel to prevent pressure variation, and open automatically after running through tunnel. For above, information of position from TMS shall be used.~~
- ~~8.2.9~~ 8.2.8 Active-ventilation system actuated by the battery supply shall be necessary, according to the requirements of the Japanese Ministerial Ordinance, MLIT Chapter 8, Section 4, Article 73 (Structure of Saloon) or other equivalent standards. Active ventilation system shall be operated at least one (1) hour by the battery supply.
- ~~8.2.10~~ 8.2.9 The entire ventilation system shall be submitted to the Engineer for review and comments.

8.3 Cooling System

- 8.3.1 The air conditioning system shall be thermostatically controlled and shall be service-proven and shall automatically maintain the specified interior temperature conditions. Relative humidity in the vehicle shall not exceed 60% under stabilized conditions. The capacity of air conditioning system shall be calculated considering the maximum number of passengers compared the demand forecast and W2 load condition.
- 8.3.2 The calculated capacity shall be reviewed by the Engineer.
- 8.3.3 In order to lower the center of gravity, the weight of one outside unit should be as light as possible. And the Contractor should carry out the lighter weight as much as possible, for example using aluminum and selecting most adequate compressor, etc.
- 8.3.4 Air flow over the evaporator coils shall be sufficiently low to prevent any moisture in the air from entering the main air supply duct, but in no case shall exceed 2.5 m/s. Evaporator coils shall preferably be manufactured from copper, and shall have copper fins, however,

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- 8.3.4 Air flow over the evaporator coils shall be sufficiently low to prevent any moisture in the air from entering the main air supply duct, but in no case shall exceed 2.5 m/s. Evaporator coils shall preferably be manufactured from copper, and shall have copper fins, however, aluminum elements is also acceptable provided they are sufficiently protected from the elements. A condensate pan shall be provided beneath the evaporator coil. The pan shall be made from stainless steel with suitable drain lines and shall realize easy cleaning. The condensate drain lines shall be insulated to prevent condensation.
- 8.3.5 The refrigerant used shall be environmentally friendly such as R407C or equivalent the use of refrigerant containing fluorocarbons is not allowed.
- 8.3.6 Because of preventing trouble of moisture and water, connectors in outside units shall be waterproof type.
- 8.3.7 The evaporator unit shall include all required components, such as the liquid line solenoid valve, modulating solenoid valve, thermal expansion valves, liquid line strainer, liquid line sight glass/moisture indicator, etc. Appropriate gauge ports for troubleshooting shall be provided.
- 8.3.8 Blowers shall be direct driven by the motor, which shall be powered by the 440 Vac auxiliary power supply system.
- 8.3.9 The compressor-condenser unit shall be heavy duty transportation grade, service-proven combined hermetic compressor/condensing unit. The compressor motor shall be powered by the 440 VAC auxiliary power supply system. Cylinder unloaders shall be easily adjusted and shall provide at least two stages of unloading for a total of not less than two-thirds unloading per one compressor.

- 10) Windshield Washer/Wiper Cluster, with wiper speed control (High Speed, Low Speed, Intermittent-ininitely variable),
- 11) Vigilance Alarm Buzzer,
- 12) Loud Speakers,
- 13) On board ATP Buzzer,
- 14) Fault Buzzers,
- 15) Miscellaneous Switches. (Horn, headlight (high/low beam), and
- 16) Gauges/voltmeter - such as speedometer, line voltage, Brake Cylinder pressure, main reservoir pressure, etc.

17) Monitors for PSD operation

17) Speedometer

5.19.2 Master Controller

5.19.2.1 The master controller shall control accelerating and braking in several steps adjustable or stepless adjustable, linear manner. In case of a several steps adjustable, the master controller features will at minimum as follows;- as follows:

	Handle Position	Function
1.	Vertically upright	OFF position
2.	Forward from the vertical position until the handle reaches its end position with a spring return device.	Propulsion, with acceleration increasing according 4 steps with handle movement.
3.	Backwards from the vertical position until the handle engages a a spring loaded detent.	Normal Braking, with the effort increasing according to 7 steps with handle movement.
4.	Backwards from the spring loaded detent in 3, until the handle reaches its end position.	Emergency braking.

In case of a stepless adjustable linear manner, the master controller features will at minimum:

- a. Coasting / neutral position: The centre position is notched. Traction is not applied;
- b. Traction: Push lever forwards 0...100% of the path proportionally sets desired tractive effort;
- c. Braking: Pull lever backward, 0...100% of the path proportionally sets the braking effort;
- d. Emergency brake: Notched to prevent accidental triggering by the driver.

5.19.2.2 The Master Controller shall be ergonomically designed to minimize unnecessary physical strain and fatigue to the driver.

5.19.2.3 The Master Controller shall have a control system for keeping the constant speed in case of powering.

5.19.2.4 The Master Controller shall be interlocked locked/unlocked by the Driver’s key, and Reversing Switch.

- 5.19.2.5 When the driver’s key is in the ON position and Reversing Switch is in the forward or reverse position, the Master Controller shall be ~~released,unlocked~~.
- 5.19.2.6 The driver’s key shall ~~be removable itself be captive~~ when The Master Controller is not in the predetermined Emergency position. The Master Controller will be interlocked electrically or mechanically.
- 5.19.2.7 The driver’s key shall ~~be removable itself be captive~~ when The Reversing Switch is not in the predetermined OFF(Neutral) position. The Reversing Switch will be interlocked electrically or mechanically.
- 5.19.2.8 Only one cab of 2 cabs on a trainset shall be able to be activated at any time.

5.19.3 Reversing Switch

5.19.3.1 The Reversing Switch has three (3) positions, as follows.

	Reversing Switch Position	Direction of the train
1.	Vertically upright	OFF position
2.	Forward from the vertical position	Forward
3.	Backwards from the vertical position	Reverse

- 5.19.3.2 When the Driver’s key is in the ON position and The Master Controller is in the predetermined Emergency position, the Reversing Switch shall be unlocked.
- 5.19.3.3 The Driver’s key can be removed when Master Controller is in Emergency position and the Reversing Switch is in OFF(Neutral) position.

5.19.4 Driver’s Vigilance System

- 5.19.4.1 The Master Controller handle or its vicinity shall incorporate a button which shall be pressed and released on a regular, predetermined basis, to prevent the application of emergency braking.
- 5.19.4.2 The feature shall be coordinated such that either action prevents brake application.
 - 1) If within a certain period of time there is no master controller operation by the driver, the alarm sounds.
 - 2) Within 5 seconds after the alarm sounds, if there is no operation of the confirmation button, or no master controller operation, emergency brake is operated.
- 5.19.4.3 The idling time limit for alarm shall be able to be adjusted by the maintainer. (=/- 50% only)

5.19.5 ATP Mode

- 5.19.5.1 The ATP mode shall be locked by the Driver’s key and a sealed switch for ATP cut-out shall be provided.
- 5.19.5.2 The train shall be designed to make provision for an additional on-board signaling system.
- 5.19.5.3 Details of the signaling system will be provided by the CP NS-01 Contractor during the interface meeting as described in ERT Clause 17.

5.19.2 Master Controller

5.19.2.1 The master controller shall control accelerating and braking in several steps adjustable or stepless adjustable, linear manner. In case of a several steps adjustable, the master controller features will at minimum as follows:

	Handle Position	Function
1.	Vertically upright	OFF position
2.	Forward from the vertical position until the handle reaches its end position with a spring return device.	Propulsion, with acceleration increasing according 4 steps with handle movement.
3.	Backwards from the vertical position until the handle engages a spring loaded detent.	Normal Braking, with the effort increasing according to 7 steps with handle movement.
4.	Backwards from the spring loaded detent in 3, until the handle reaches its end position.	Emergency braking.

In case of a stepless adjustable linear manner, the master controller features will at minimum:

- a. Coasting / neutral position: The centre position is notched. Traction is not applied;
 - b. Traction: Push lever forwards 0...100% of the path proportionally sets desired tractive effort;
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 - d. Emergency brake: Notched to prevent accidental triggering by the driver.
- 5.19.2.2 The Master Controller shall be ergonomically designed to minimize unnecessary physical strain and fatigue to the driver.
- 5.19.2.3 The Master Controller shall have a control system for keeping the constant speed in case of powering.
- 5.19.2.4 The Master Controller shall be interlocked by the Driver’s key.
- 5.19.2.5 When the driver’s key is in the ON position and Reversing Switch is in the forward or reverse position, the Master Controller shall be released.
- 5.19.2.6 The driver’s key shall be removable when The Master Controller is not in the predetermined Emergency position. The Master Controller will be interlocked electrically or mechanically.
- 5.19.2.7 The driver’s key shall be removable when The Reversing Switch is not in the predetermined OFF(Neutral) position. The Reversing Switch will be interlocked electrically or mechanically.
- 5.19.2.8 Only one cab of 2 cabs on a trainset shall be able to be activated at any time.

5.19.3 Reversing Switch

5.19.3.1 The Reversing Switch has three (3) positions, as follows.

- 2.3.2.3 The carbody shell shall be designed to withstand a minimum compressive load of 490kN and tensile end load of 350 kN applied through the draft gear attachment points, in combination with the most adverse vertical loading associated with the W2 loading conditions. For all load cases, all carbody members shall remain elastic, with no evidence of buckling.
- 2.3.2.4 The carbody shell shall be designed and tested to ensure that under W2 loading conditions negative camber shall never occur between bogie center line. The Contractor shall evaluate and submit camber values at W0, W1 and W2 loading for engineer review. ~~positive camber exists between bogie centers.~~ The Contractor shall ensure, and must demonstrate by test, that all doors operate freely under all carbody loading conditions and will not disengage from their guide ways under the lateral loading conditions exerted by crush-loaded passengers.
- 2.3.2.5 The Contractor shall also design and test the doorposts, the corner posts and the Driver’s cab end structure if it is applicable in accordance with the latest industry practices.
- 2.3.3 Airtight body structure
- 2.3.3.1 In the future, the new line between Clark station and New Clark City station will be open. The new line plan has some tunnel and maximum operation speed is 160km/h. Airtight structure is required for rolling stock body.
- 2.3.4 Gangway
- 2.3.4.1 Between the car, Gangway must be installed and airtight structure is recommended. At the end of the car, the automatic door shall be provided for shut down the outside noise. Car end door and gangway passage height shall be more than 1850mm and width more than 800mm. The gangway door design, material and its construction shall comply with the Fire Safety requirement as per clause 21.8 of this ERT.
- 2.4 **Crash Worthiness Requirements**
- 2.4.1 Condition of the crashworthiness design shall be head-to-head collision between two identical cab cars at tare weight, having the same mass at relative speed between them 25km/h on level and tangent track. The cab car shall absorb collision energy by providing a controlled deformation and collapse of areas of the vehicle which are unlikely to be occupied by Train Crew and passengers, to absorb collision energy and to reduce the deceleration on the Train Crew and passengers. This shall be validated by computer simulation such as Finite Element Method.
- 2.4.2 The Contractor shall submit the details of the design cases, together with the validation process to be adapted, to the Engineer for review and comments.
- 2.4.3 As an alternative, the Contractor shall propose the crash worthiness, in accordance to the Japanese Ministerial Ordinance, MLIT or EN 15227 C-II or equivalent, subject to the Engineer’s review.
- 2.4.32.4.4 In case the Japanese Ministerial Ordinance, Technical Regulatory Standards on Japanese Railways is applied, the cab car shall absorb the collision energy by providing a controlled deformation and collapse of areas of the vehicle which are unlikely to be occupied by the train crew and passengers, to absorb the collision energy and to reduce the deceleration on the train crew and passengers. This shall be validated by the computer simulation such as Finite Element Method (FEM).
- 2.4.42.4.5 The Contractor shall submit the details of the design cases, together with the validation process to be adapted, to the Engineer for review.

crashworthiness. The tensile force shall be reduced in the same ratio as the compressive force in UIC 566 or equivalent standard.

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- 2.4.2 The Contractor shall submit the details of the design cases, together with the validation process to be adapted, to the Engineer for review and comments.
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- 2.4.5 The Contractor shall submit the details of the design cases, together with the validation

- 14.2.7 The output of the LVPS shall be routed to the low voltage distribution panel/cabinet inside the car. The negative return current from each subsystem shall run individually to the Engineer’s reviewed insulated common point located in an enclosure under the car or inside of the car.
- 14.2.8 The entire Auxiliary Power Supply Equipment and controls shall be reviewed and commented by the Engineer.
- 14.2.9 If APS stops to operate by a serious failure, switch which can reset from the driver cab shall be installed.
- 14.3 **Redundant system**
- 14.3.1 ~~Two (2)~~ APSEs mounted on ~~train-set~~limited express train shall ~~perform~~have a parallel synchronous operation. If one ~~of two~~ performing parallel synchronous stops by trouble, the ~~others~~ APSE shall perform normally. Then, the signal of VAC degraded mode of operation shall be transmitted to VAC of the affected area through TMS.
- 14.4 **Maintenance Requirements**
- 14.4.1 No component in the APSE and the ACU except for cover packing, power supply unit (AVR), gate IF, contacts of LB shall require removal or replacement for at least 12 years.
- 14.4.2 Any fault in the APSE or the ACU shall be logged and into the Fault Indication System of the TMS and ACU. What is needed of any fault shall be enunciated in the Driver’s Cab. Logged fault into the TMS and ACU shall be stored and remain until certain number of faults. ACU shall have ordinary-speed and high-speed trace function. In high-speed trace function, logged fault related to the switching of element and behavior of instantaneous current and voltage etc. shall be required to be available for fault diagnostic analysis.
- 14.4.3 Means shall be provided to automatically discharge capacitors whose voltage might present a hazard to a maintenance worker opening any enclosure. Discharge time shall not be more than 5 minutes.
- 14.5 **Circuit Breaker Panels and Isolating Switches**
- 14.5.1 The following distribution panels shall be provided:
- 1) Low (100 Vdc) Voltage Circuit Breaker Panel;
 - 2) 220/440 V_{AC} Circuit Breaker Panel;
 - 3) All 220/440 V_{AC} circuit breakers shall be located in a separate enclosure, and shall individually protect the circuits;
 - 4) Panel for Auxiliary Power Supply Equipment;
 - 5) Spare Circuit Breakers for all panels and
 - 6) All isolating switches and Circuit breakers necessary for vehicle revenue line fault intervention shall be placed inside the driver’s cab for easy access and intervention.
- 14.5.2 All circuit breakers and switches necessary for vehicle revenue line fault intervention shall be located inside the drivers’ cab. The final list of circuit breakers and switches shall be subject to review by the Engineer. All circuit breaker panels shall be reviewed and commented by the Engineer. ~~Attention shall be paid that arrangement of the panels are coordinated in consideration with operations in MCRP, NSCR and NSRP-S.~~

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14.6 Emergency Power Supply

14.6.1 When battery capacity decreases, pantographs cannot be raised and APSE cannot operate because of lack of DC100V as control power voltage. Therefore, the Emergency Power Supply function, shown below, shall be equipped.

14.6.2 After pantograph raised by releasing the lock manually, it shall be able to take DC1500V power from overhead catenary and the power shall be converted to DC100V by Emergency Power Supply function. This is done at transformer level.

of Rolling Stock such as TMS and Brake system, propulsion and so on. Circuits of each speed sensors shall be separated. Speed sensors for devices of rolling stock shall be equipped to two axles at both leading cars. Wires or cables of speed and other sensors for device of Rolling Stock shall be equipped through 4 cars, and this information shall be utilized by various devices of Rolling Stock. Speed sensor for ATP shall be supplied, and details shall be determined by Signaling Contractor.

- 3.8.2 All resiliently mounted equipment on the bogie shall be designed to avoid resonance with all bogie suspension frequencies.
- 3.8.3 On board sensors shall not be installed near a rotating electrical equipment, to prevent distortion.
- 3.8.4 The Contractor shall supply lubrication free with minimum maintenance parts of subcomponents, however, for moving parts where lubrication is necessary, the Contractor shall supply low maintenance parts minimizing lubrication activities.
- 3.8.5 All fasteners of the same material used to attach components to the bogie shall be of the same grade.
- 3.8.6 All grounding shall be in accordance to the provision of Sub-Clause 1.16.4 of this ERT.

3.9 **Bogie-to-Carbody Connection**

- 3.9.1 The Contractor shall ensure that the bogies complete with the wheelsets are retained by the carbody when the carbody is lifted, and the bogie-to-carbody connection must also retain the bogies in the event of a collision.
- 3.9.2 Bogie/carbody connections shall be designed to avoid the transmission of noise and vibration.
- 3.9.3 It shall be physically impossible for connections to be mismatched.

3.10 **Bogie-to-Carbody Clearance**

- 3.10.1 Under all conditions of movement between the bogies and the carbody, including fully inflated and deflated air spring conditions, there shall basically exist a ~~minimum~~ clearance and accessibility of 50 mm between bogie-mounted and carbody-mounted equipment. This shall include any end of the vehicle having fully inflated air springs, with the opposite end having deflated air springs.

3.11 **Structural Requirements**

- 3.11.1 Unless otherwise specified, bogies and bogie-mounted equipment shall comply with the industry standard requirements. The Contractor is encouraged to indicate different load cases that would be more appropriate according to their past experiences; supporting data shall be submitted to the Engineer for consideration and comments.
- 3.11.2 A stress analysis of the entire bogie structure shall be performed using a Finite Element Method (FEM) to demonstrate that the bogie frame meets 30-year design life requirement for both proof and fatigue condition. Models of analysis shall be reproduced as close to real structure as possible, and analysis shall be able to grasp the tendency of places where high stress occurs. Attention shall be paid to characteristics of structure such as joint between materials have different stiffness, and condition of constraint such as positions supporting load. The Contractor shall reflect results of analysis to design and maintenance manuals.
- 3.11.3 Detailed The-model information, (number as well as type of elements, boundary

of Rolling Stock such as TMS and Brake system, propulsion and so on. Circuits of each speed sensors shall be separated. Speed sensors for devices of rolling stock shall be equipped to two axles at both leading cars. Wires or cables of speed and other sensors for device of Rolling Stock shall be equipped through 4 cars, and this information shall be utilized by various devices of Rolling Stock. Speed sensor for ATP shall be supplied, and details shall be determined by Signaling Contractor.

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- 3.11.3 Detailed model information, (number as well as type of elements, boundary conditions,

- 21.2.6 The threads of stainless-steel fasteners shall be suitably treated to prevent galling upon installation.
- 21.2.7 All wire ties used shall be of the weather-resistant (black) variety.
- 21.2.8 Locking washers or other devices to prevent loosening of fasteners shall be used.
- 21.2.9 For equipment suspended from the underframe, the load of the equipment on each bolt shall not be the clamp load of the bolt. Set screws shall not be used. Where practical, load on the bolts shall be no greater than that exerted when the bolt is tightened to its recommended torque. When practical loads shall be on structural cross beams etc. Huck bolts can be used according to their strength specification.

21.3 Parts

- 21.3.1 Components, plates, shields, or other parts, which may be removed for repair or maintained, shall be interchangeable with others identical item.
- 21.3.2 Non-maintained components shall be designed for a useful life of 30 years. If, during the warranty period, it is demonstrated that the extrapolated life of any component is less than 30 years, the component must be redesigned and replaced on every vehicle.
- 21.3.3 All parts shall be free from sharp edge and burrs that might injure persons or damage clothing.

21.4 Electrical Components

21.4.1 Terminals

- 21.4.1.1 Solderless terminals shall be submitted for the review of the Engineer and given the Statement of No Objection on equivalent and shall have sufficient current carrying capacity, de-rated to the anticipated maximum operating temperature.
- 21.4.1.2 The use of quick connect ("FASTON") terminals shall not be allowed, except subject to review by the Engineer. When allowed, quick connect terminals must be of brass or phosphor bronze.

21.4.1.3 Only ring tongue terminals shall be used, except as specifically reviewed and commented by the Engineer.

21.4.1.321.4.1.4 Alternative forms of terminals will be considered where appropriate.

21.4.2 Wire Insulation

21.4.2.1 Cables shall comply with EN standards or Japanese regulations/standards conform to EN50264 or other equivalent standards.

21.4.2.2 Unless otherwise specified, wire insulation shall be one of the following types, unless specifically reviewed and commented by the Engineer:

- 1) Ethylene Tetrafluoroethylene (ETFE) fluoropolymer having a continuous temperature rating of 150 °C,
- 2) Abrasion resistant, filled Tetrafluoroethylene (TFE) with a temperature rating of 260 °C
- 3) Cross-linked Polyolefin (XLPO),

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 - 3) Cross-linked Polyolefin (XLPO),

pressure, and these of c and d are defined from full pressure to 10% of BC pressure.

1.11.2.8 Brake slip/slide protection shall apply to all braking modes.

1.11.3 Performance Characteristics

1.11.3.1 Performance curves for traction and braking shall be established based on kN / metric ton versus speed for the W2 loading condition.

1.11.3.2 The corresponding traction motor characteristics, and the train mass, shall be considered in the Design Performance Curve as defined in JIS E ~~6102~~ 6102 or equivalent standard.

1.11.4 Degraded/Emergency Performance

1.11.4.1 The Contractor shall confirm by calculation and test that 8 cars train-set at the 7t/car loading condition, with the isolation of 25% motorised bogies propulsion system on one of the 6 motor car units totally inoperative is the limited express train is capable of completing continuous trip within the stipulated running time.

1.11.4.2 The Contractor shall confirm by calculation and test that 8 cars train-set at 7t/car loading condition, with the isolation of 50% motorised bogies propulsion system on two of the 6 motor car units totally inoperative is the limited express train is capable of completing one round trip including traversing the maximum gradient of the main line. However, reduction of acceleration and restriction of regenerative braking force may be accompanied.

1.11.4.3 The Contractor shall confirm by calculation and test that 8 cars train-set at 7t loading condition is capable of pushing/towing the 10 cars train-set of commuter train (5M5T) at 20t/car loading condition (537 ton) to the nearest station, including traversing the maximum main line gradient. If the healthy train cannot pushing or towing on the maximum main line gradient, the high acceleration mode shall be applied.

1.11.4.4 Similarly, the Contractor shall confirm by calculation and test that 8 cars train-set at W0 loading condition is capable of pushing/towing the 10 cars train-set of commuter train (5M5T) and limited express train at tare condition (337 ton), with an inoperative propulsion system, from the farthest terminal station back to Depot, including starting on the gradient of 3.5% upgrade. If the healthy train cannot push or tow on the 3.5% upgrade, the high acceleration mode shall be applied. This requirement is under the non-slip condition under Philippines natural environment condition, and the adhesion at this requirement does not need to be considered. The test can be conducted under the non-slip condition. Provision for 10 car trainsets shall be provided for future upgrade.

1.11.4.5 For the test at 7t/car written above, it is also permitted to convert from the results of empty tests and certain loaded tests.

1.11.4.6 In case of coupling inoperable train and rescue train with identical coupling head, the emergency brake circuit shall be connected between these two trains by emergency electric coupler. These two trains emergency brake shall be controlled at the same demand synchronously from both train’s operator cabs. Intercom between these trains, buzzer and any other circuit required for rescue operation shall be connected by emergency electric coupler. The specifications for rescue operation and emergency electric coupler shall be considered coupling of Limited Express train with other project trains in interoperability section or other rail type vehicle which shall be proposed by the Contractor and shall be reviewed by the Engineer.

1.11.5 Brake Performance at Stopping

1.11.5.1 The Contractor shall confirm by calculation and test that the friction brakes are capable of holding 8 cars train-sets in the 7t/car loading condition on a 3.5% grade. Also, the

loading condition, with the isolation of 25% motorised bogies the limited express train is capable of completing continuous trip within the stipulated running time.

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- 1.11.4.3 The Contractor shall confirm by calculation and test that 8 cars train-set at 7t loading condition is capable of pushing/towing the 10 cars train-set of commuter train (5M5T) at 20t/car loading condition (537 ton) to the nearest station, including traversing the maximum main line gradient. If the healthy train cannot pushing or towing on the maximum main line gradient, the high acceleration mode shall be applied.
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- 1.11.4.5 For the test at 7t/car written above, it is also permitted to convert from the results of empty tests and certain loaded tests.
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 - 1.11.5.2 In addition, brake performance tests shall be done as per ERT 1.11.1 and shall be submitted for Engineers review and comments.
 - 1.11.5.3 The Contractor shall confirm that any train with 20% defective parking brake the units will hold a train at W2 loading on the greatest gradient.
- 1.11.6 Performance Calculation
 - 1.11.6.1 The Contractor shall calculate train performance by simulation. Running curve with speed versus distance for both directions in powering and braking modes at W0 and W2 loading shall be provided as a simulation result.

4 Coupler and Draft Gear

4.1 General

- 4.1.1 The end cars in each train shall be fitted with an automatic coupler. The coupler shall be placed in a readily accessible position under and from either side of the end vehicle. The position (right side or left side) of parts operated shall be consistent for all end vehicle. It shall be possible to connect with other commuter train of North-South Commuter Railway (NSCR), ~~MCRP- and North-South Railway Project-South, MMSP Line (NSRP-South)~~ without any adapter during train rescue or -hauling.
- 4.1.2 The automatic coupler shall be able to couple with other types of rail vehicle with, if necessary, an adaptor. The adaptor, if required, shall be provided by the rolling stock supply Contractor.
- 4.1.3 The automatic coupler shall be able to connect a unit with the coupler of another unit on all curves in the depots and main line. The coupler height, measured from the center of the coupler to the top of rail, shall be within 880 mm +10/-15 mm.
- 4.1.4 The automatic coupler shall, in conjunction with the draft-gear automatically effect mechanical, electrical and pneumatic coupling for two (2) Limited Express Train or identically coupling head. It shall also permit separation of units either by manually from the track side and/or remotely from the cab.
- 4.1.5 In both leading cars, an electrical connecting plug which is necessary for relief operation by connecting train-sets shall be equipped. Also, an emergency connection cable that connects this electrical connection plug shall be equipped. By using this connecting cable, required functions such as brake command, broadcasting, buzzer etc. shall operate properly. Length and diagram of cable shall be also consistent with other commuter trains of NSCR, NSPR-South, MMSP. The position of this plug shall be consistent with other commuter trains of NSCR, NSRP-South, MMSP particularly length of cable shall be determined in consideration of the severest deviations during coupled with other train. Basically, utilization of adapter shall not be acceptable.
- 4.1.6 The Contractor shall provide the required cabinet for housing the emergency connection cable on the train. Alternatively, the Contractor shall provide proper mechanism for retaining the emergency connection cable when it is not in used.
- 4.1.7 All electrical connections shall be made to terminal blocks in junction boxes compliant with IP 65, via jumper cables, using quick connect/disconnect couplings securely locked with wire.
- 4.1.8 Cable hoses shall be made out of high quality, weather and abrasion resistant insulated rubber.
- 4.1.9 The connectors for each cable, if of the same size, shall be keyed differently to prevent misconnection, and shall be color coded to enable connectors to be easily distinguished.
- 4.1.10 In all cases, care shall be taken to ensure that strain relief is provided for all cables leaving the junction boxes, and that all cables are properly supported in suitable cleats, and that no chafing of the cabling takes place under all possible movements of the coupler.
- 4.1.11 The arrangement shall prevent damage from coupling with misaligned couplers, and shall minimize damage to the carbody wiring, should excessive tension be applied to the cables in the event of an accident.
- 4.1.12 The couplers shall be designed to prevent the coupler swinging transversely when it is not coupled.

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- 4.1.13 Couplers and draft gear shall be capable of withstanding all coupling, buffing and draft

ATTACHMENT 1

SUMMARY OF KEY DATES

- (1) The Employer requires the Contractor to complete certain elements of work by specific Key Dates (KD). Delay in achieving those Key Dates shall render the Contractor liable to pay Delay Damages (as set out in Part A, Contract Data, of the Particular Conditions).
- (2) Achieving a Key Date for an element of work means that, before the expiry of the number of months relevant to the element in question (as specified in “Table 1 – Key Dates” below), all works related to that element have been completed to the satisfaction of the Engineer. The number of months shown in Table 1 against a Key Date and its specific element of work signifies the maximum duration in months from the Commencement Date within which the identified element must be completed. The number of months shown in Table 1 will be converted into actual calendar dates after receipt by the Contractor of the Engineer’s notification of the Commencement Date for the Project.

TABLE 1 – KEY DATES		
Key Date	Element of Work	No. of Months
KD 1	Achievement: Completing Final Design Review.	18-2519 months
KD 2	Achievement: Deliver the Mock Up to the site	31-2414 months
KD 3	Achievement: Completing FAI and FAT on the 1st trainset	36-4043 months
KD 4	Achievement: Supply and delivery of the following Rolling Stock equipment for training purposes to the CP NS-01 Contractor at the North Depot (for Training Center Facility): <ul style="list-style-type: none"> - Equipment for driving simulator, - Pantograph, and - Bogie assembly for motor car including traction motor, gearbox and coupling. 	40-4248 months
KD 5	Achievement: Completion of training and delivery of Operation and Maintenance Manual.	48-5549 months
KD 6	Achievement: Delivery of 7 trainsets (1-7) and completion of testing and commissioning thereof plus handing over. Issuance of taking over certificate on all 7 trainsets	5746 months
KD 7	Achievement: Delivery of all spare parts, consumables, special tools and jigs, plus as-built drawings.	5549 months
KD 8	Achievement: Completion of Trial Operation support and the whole of the Works.	5853 months

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TABLE 1 – KEY DATES		
Key Date	Element of Work	No. of Months
KD 1	Achievement: Completing Final Design Review.	25 months
KD 2	Achievement: Deliver the Mock Up to the site	24 months
KD 3	Achievement: Completing FAI and FAT on the 1st trainset	40 months
KD 4	Achievement: Supply and delivery of the following Rolling Stock equipment for training purposes to the CP NS-01 Contractor at the North Depot (for Training Center Facility): <ul style="list-style-type: none"> - Equipment for driving simulator, - Pantograph, and - Bogie assembly for motor car including traction motor, gearbox and coupling. 	42 months
KD 5	Achievement: Completion of training and delivery of Operation and Maintenance Manual.	55 months
KD 6	Achievement: Issuance of taking over certificate on all 7 trainsets	57 months
KD 7	Achievement: Delivery of all spare parts, consumables, special tools and jigs, plus as-built drawings.	55 months
KD 8	Achievement: Completion of Trial Operation support and the whole of the Works.	58 months

- (3) The Contract Packages with which the Works will be required to interface are as shown below.
- The North South Commuter Railway Project (Malolos-Tutuban) (NSCR):
 - Package CP 01 Elevated Structures, 6 Stations and Depot