General Bid Bulletin No. 5
28 April 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. 5
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 Part 2 -Employer's Requirements Section V1. Technical Requirements ERT-6 1.6.1.2 Basic Train Formation	Typical vehicle configuration is shown in Appendix B. The Tenderer would like to confirm if the seat pitch shown in Appendix B (1020 mm) is for reference only and if alternative proposal would be acceptable. Please indicate the minimum pitch that would be acceptable and confirm that proposing an alternative seat pitch could be proposed without incurring into a material deviation of the Technical Bid.	-NA-	Appendix B - Typical Limited Express Train Layout is for the bidder reference only. Bidder shall state the compliance on clause 5.7 of ERT for passenger seat requirements. The seat pitch shall be design by the Contractor during project implementation to demonstrate compliance on clause 5.1.5 and other related clauses.
2	Volume II Part 2 -Employer's Requirements Section V1. Technical Requirements ERT-6 1.6.1.2	Typical vehicle configuration is shown in Appendix B.		Appendix B - Typical Limited Express Train Layout and B1- Door Position and Door Pitches are for the bidder reference and information only.

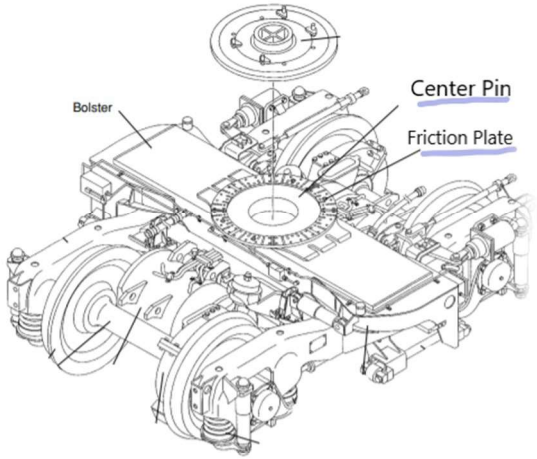
	Basic Train Formation ERT-7 1.6.2.1 Vehicle Physical Characteristics	---------- 1. Carbody Length (excluding coupler, overhang of leading car) 19,500 mm 2. Overall length (excluding overhang of leading car)? 20,000 mm		However, the cabin side overhang shall comply with clause 1.6.2 Vehicle Physical Characteristics.
	ERT-51 5.14.1 Vehicle Exterior	2) Aerodynamically efficient and futuristic including a streamlined designed nose cover for the front couplings; The Tenderer understands that in order to comply with requirement 5.14.1 the overhang of the leading car (cabin side) can be longer than those shown in Appendix B.1. *Can you please confirm that the cabin side overhang can be similar to the one shown in the Appendix B without incurring into a material*		

		deviation of the Technical Bid?		
3	Volume II Part 2 -Employer's Requirements Section V1. Technical Requirements ERT-7 1.6.2.1 Vehicle Physical Characteristics ERT-60 7.1.4 Passenger Side Entrance Doors, Gangway Doors and Saloon Separation Doors	The following physical characteristics indicate fundamental vehicle dimensions that should be given careful attention. 13. Passenger Doors Bi-parting plug-in sliding Doors The doors shall be the sliding pocket 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. *Based on the information presented in the Employer's Requirements document, it is not clear if plug-in sliding doors or pocket doors are requested.*	1.6.2.1 13 Passenger Doors Bi-parting sliding plug-in pocket Doors	The Employer requirement is to have Bi-parting plug-in sliding doors. Please refer to Annex B for the updated employer requirement on clause 7.1.4.

		Please confirm that sliding pocket doors are required as opening and closing time requested in the Employer's Requirements document can only be achieved with sliding pocket doors.		
4	Volume II Part 2 -Employer's Requirements Section V1. Technical Requirements ERT-10 1.10.1.2 Weight limits	A train consist of eight (8) car/vehicles shall have a passenger capacity of around minimum 800 passengers (seating plus standees). *For the standees capacity calculation, what passenger density should be considered?* *According to the operation type, please confirm that considering 4 pas/m2 passengers is appropriate*.	A train consist of eight (8) car/vehicles shall have a passenger capacity of around minimum 800 passengers (seating plus standees at 4pas/m2).	Please refer to General Bid Bulletin No. 2 31 March 2021; Annex A item 45.
5	Volume II Part 2 -Employer's Requirements Section V1. Technical Requirements ERT-29 1.19.1 Under-Floor Wheel Re-profiling Lathe Interface	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	-NA-	This requirement compliance demonstration shall be demonstrated during project implementation through interfacing requirement with CPNS 01 Contractor. If the Bidder inserts a check mark in the 'Partial Conformance' column of the compliance matrix, then it is required to give specific details of the area of non-

		carried out efficiently without decoupling the train or train component parts dismantle. *After analysing tender documents, Tenderer did not find necessary information regarding the under- floor wheel lathe available in the workshop and therefore it is not possible to confirm if any part needs to be removed for wheel re- profiling.* *Therefore, additional detailed drawings and information about the wheel lathe of the CP NS-01 Contractor is required to confirm the compliance of this requirement.*		conformance and explain the reasons for such non-conformance and why the Employer should favorably consider accepting such non-conformance without the Employer determining that the Bidder's Technical Bid is not substantially responsive to the Employer's Requirements.
6	Volume II Part 2 -Employer's Requirements Section V1. Technical Requirements ERT-29 1.20.1 Design life	5) Wheels 2 million km We checked that in the CP NS-02 contract for Commuter trains there is not a specific design life requirement for wheels.	Wheels 1 million km	Bidder proposed revised text is rejected. Please refer to Annex B of this GBB. .

		1.17 Design life 1.17.1 The Rolling Stock for MCRP&NSRP-South shall be designed on the basis of design life as shown below. a. Body / bogie / coupler : over 30 years b. Power conversion element, filter capacitor: over 25 years c. General electrical parts: over 12 years d. Some special parts: above 8 years 1.17.2 If electric parts with a design life shorter than 12 years are proposed, the Contractor shall submit proposals for the Engineer to review. The requested 2 million km design life for wheels is clearly over the market standards. Thus, please confirm whether to reduce it.		

7	Volume II Part 2 -Employer's Requirements Section V1. Technical Requirements ERT-36 3.1.13 Bogies	Slewing rings shall be provided with adequate number of standard grease fittings. If bolster-less connection is used, equipped with center pin and friction plates, the material and design of the friction plates shall not cause undue noise or any residual sound during start of traction and braking. The Contractor shall submit a detailed study of the friction plate properties and performance for review by the Engineer. *Could you please provide example of what do you mean with centre pin and friction plates?*	-NA-	The example of centre pin and friction plates is as follows:  Please refer to Annex B for the updated requirement on 3.1.13.
8	Volume II Part 2 -Employer's Requirements Section V1. Technical Requirements ERT-36 3.1.9 Bogies	The bogies shall be compatible with the under-floor wheel turning machine to be installed at Workshop without the need for removal of bogies or disassembly of any major parts from the bogie or the carbody or to add interfacing hardware.	-NA-	This requirement compliance demonstration shall be demonstrated during project implementation through interfacing requirement with CPNS 01 Contractor. If the Bidder inserts a check mark in the 'Partial Conformance' column of the compliance matrix, then it is required to give specific details of the area of non-

		After analysing tender documents, Tenderer did not find necessary information regarding the under- floor wheel lathe available in the workshop and therefore it is not possible to confirm if any part needs to be removed for wheel re- profiling. Therefore, additional detailed drawings and information about the wheel lathe of the CP NS-01 Contractor is required to confirm the compliance of this requirement.		conformance and explain the reasons for such non-conformance and why the Employer should favorably consider accepting such non-conformance without the Employer determining that the Bidder's Technical Bid is not substantially responsive to the Employer's Requirements.
9	Volume II Part 2 -Employer's Requirements Section V1. Technical Requirements ERT-39 3.4.3 Wheels, Wheel-Sets and Axles	Wheel width and profile shall be appropriate to the train and service patterns. *In order to be compatible with the existing vehicles and infrastructure crossings and switches. What is the wheel width of the trains already delivered?*	-NA-	The wheel width and profile shall be proposed by the Contractor during the project implementation. The width and profile shall be appropriate to the train and service pattern described in the tender general requirements.

10	Volume II Part 2 -Employer's Requirements Section V1. Technical Requirements ER-39 3.4.6 Wheels, Wheel-Sets and Axles	The Contractor shall submit comprehensive details of his wheel set design. The submission shall include, as a minimum, axle detail drawings, axle design calculations, wheel detail drawings, wheel design calculations and wheel set assembly drawings and procedures. *Could you please provide example of what do you mean with wheelset assembly procedures?*	-NA-	The wheelset assembly procedures include, but are not limited to, procedures for inspection, measurement and gauging of wheelset profiles.
11	Volume II Part 2 -Employer's Requirements Section V1. Technical Requirements ERT-43 4.1.1 Coupler and Draft Gear	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. *Please provide information about the coupler types installed on the different commuter trains of North-South*	-NA-	The employer is unable to provide the requested information by the bidder. The Contractor shall have to identify all interfaces requirement during project execution with reference to the Employer requirement set forth in this tender.

		Commuter Railway (NSCR), North-South Railway Project-South, MMSP Line (NSRP-South). Also, please give us the information about the existing couplers (type of head coupler, main dimensions of the head coupler, bar lengths, heights,).		
12	Volume II Part 2 -Employer's Requirements Section V1. Technical Requirements ERT-43 4.1.2 Coupler and Draft Gear	The 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. *Please provide information about the coupler types installed on other types of rail vehicles. Also, please give us the information about the existing couplers (type of head coupler, main dimensions of the head coupler, bar lengths, heights).*	-NA-	The other types of rail vehicle coupler will be identical with CP NS-02 commuter coupler. The employer is unable to provide the requested information by the bidder. The Contractor shall have to identify all interfaces requirement during project execution with reference to the Employer requirement set forth in this tender.
13	Volume II Part 2 -Employer's Requirements	In both leading cars, an electrical connecting plug which is necessary for relief	-NA-	The employer is unable to provide the requested information by the bidder. The Contractor shall have to identify all

	Section V1. Technical Requirements ERT-43 4.1.2 Coupler and Draft Gear	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.		interfaces requirement during project execution with reference to the Employer requirement set forth in this tender.

		Please clarify the information about the electrical connecting plug installed on other types of commuter trains of NSCR, NSRP- South, MMSP. Also, please give us the information about the type of electrical connection, location of the plug on the existing couplers.		
14	Volume II Part 2 -Employer's Requirements Section V1. Technical Requirements ERT-47 5.6.1 Entrance Room ERT-62 7.1.21 Passenger Side Entrance	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. Doors for saloon separation shall be provided at	-NA-	Confirmed. The separation door shall be automatic by floor based or button or sensor.

	Doors, Gangway Doors and Saloon Separation Doors	each vehicle. Separation doors shall open and close automatically when detecting passengers approaching. Suitable damping shall be necessary at the end of the open and close stroke. Stroke and dumping shall be adjusted automatically. It shall be necessary to detect and alarm trouble caused such as trapping passengers or baggage etc. *According to section 5.6.1, the vestibule doors shall be automatically opened by:* *•Floor based button, or* *•Button (open push button is inferred), or* *•Sensor* *But according to section 7.1.21, floor-based button and button opening methods are not valid.* *Please confirm if open push button located on the vestibule door partition walls is accepted and does*		

		not incur into a material deviation of the Technical Bid.		
15	Volume II Part 2 -Employer's Requirements Section V1. Technical Requirements ERT-47 5.7.1 Passenger Seats	The Contractor shall propose a cross seating arrangement. Same needs to be submitted for Engineer's review and comments. *For the seating arrangement, 2+2 transversal seating is required. Please confirm if longitudinal fixed seats nearby the vestibule are acceptable and if these seats would be considered as seating capacity. Please, also confirm whether longitudinal tip-up seats would be counted as seated capacity.* *Please confirm that longitudinal seats could be proposed without incurring into a material deviation of the Technical Bid.*	-NA-	Confirmed that the Contractor can proposed multiple type of passenger seat in order to meet the required passenger capacity. However, the final design during project implementation shall acquire notice of no objection by the engineer on car interior and seating layouts, optimizing on the space available for passengers and equipment ensuring weight balancing in each Car subject to maximum axle design load of 16,000 kg

16	Volume II Part 2 -Employer's Requirements Section V1. Technical Requirements ERT-49 5.10.1 Baggage/Luggage Space	Baggage space shall be provided in the car, and rack above the passenger seats that the lighter baggage can be put on, shall be provided in the passenger compartment. Baggage spaces for larger/heavier luggage shall be located at each end of the car within the passenger compartment. Please confirm that larger/heavier luggage can be located at each end of the car in the vestibule area and separated from the passenger compartment. Please confirm that this alternative location could be proposed without incurring into a material deviation of the Technical Bid.	Baggage space shall be provided in the car, and rack above the passenger seats that the lighter baggage can be put on, shall be provided in the passenger compartment. Baggage spaces for larger/heavier luggage shall be located at each end of the car ~~within the passenger compartment.~~	Bidder proposal is rejected. The Baggage spaces for larger/heavier luggage shall be located at each end of the car within the passenger compartment.
17	Volume II Part 2 -Employer's Requirements Section V1. Technical Requirements ERT-52 5.16.3	The Driver's Cab layout shall be agreed between the Contractor and the Engineer. Cab layout shall be nearly the same as	-NA-	The employer unable to provide the requested information by the bidder. The Contractor shall have to identify all interfaces requirement with CP NS-02 Contractor during project execution with

	Driver's Cab	MCRP and NSRP-S New Commuter train (CP NS-02) cab layout. *Please clarify the information about the cabins lay-out (drawings) of the mentioned projects (MRCP and NSRP-S) in order to propose the correct cab dimension and arrangement.*		reference to the Employer requirement set forth in this tender.
18	Volume III Part 3 – Conditions of Contract and Contract Forms Section VII – General Conditions Sub-Clause 14.9 Payment of Retention Money	Unless otherwise stated in the Contract Data, when the Taking- Over Certificate has been issued for the Works, the Works have passed all specified tests (including the Tests after Completion, if any) and the first half of the Retention Money has been certified for payment by the Engineer, the Contractor shall be entitled to substitute a guarantee, in the form annexed to the Particular Conditions or in another form approved by the Employer and provided by an entity approved by the Employer, for the		Please refer to General Bid Bulletin No. 3 12 April 2021; Annex A item 8 for related clarification response: 1) The bidder's understanding is not correct. The Relevant Percentage Weighting for Release of Retention for each Section will be based on the Part A – Contract Data, CD 14.9. Reference to the General Conditions, GC 14.9, first paragraph; relevant percentage of the first half of the Retention Money shall be certified and paid when the Section passes all tests. 2. Reference to the General Conditions (GC) 14.9, after first half of the Retention Money has been certified for payment by the Engineer, the Contractor shall be

		second half of the Retention Money. The Contractor shall ensure that the guarantee is in the amounts and currencies of the second half of the Retention Money and is valid and enforceable until the Contractor has executed and completed the Works and remedied any defects, as specified for the Performance Security in Sub-Clause 4.2. On receipt by the Employer of the required guarantee, the Engineer shall certify and the Employer shall pay the second half of the Retention Money. *1. Please confirm whether Tender's understanding is correct as below:* *The relevant percentage of the first half of Retention Money (=90% of the Retention Money) will be paid if the Contractor can pass all the tests at the*		entitled to substitute a guarantee, in the form annexed to the Particular Conditions and provided by an entity approved by the Employer, for the second half of the Retention Money. The Contractor shall ensure that the guarantee is in the amounts and currencies of the second half of the Retention Money and is valid and enforceable until the Contractor has executed and completed the Works and remedied any defects, as specified for the Performance Security in Sub-Clause 4.2.

		time of KD8. *When the Contractor has passed all specified tests and the first half of the Retention Money (=90%) has been certified for payment by the Engineer, the Contractor is entitled to substitute the Retention Guarantee for the second half of Retention Money (the rest of 10% of the Retention Money for Defect Notification Period). And then the Contractor will be paid the second half of the Retention Money.* *2. Please also confirm whether or not Tender is entitled to substitute the Retention Guarantee based on the above understanding.*		

Annex B

PACKAGE CP NS-03: ROLLING STOCK - LIMITED EXPRESS TRAINSETS
General Bid Bulletin No. 4
Annex B

ITEM NO.	REFERENCE/CLAUSE/ SECTION	REVISIONS / AMENDMENTS
		Volume II Part 2 – Employer's Requirements
1	ERT-61 7.1.4	Updated Clause 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 ±350mm 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 bi-parting plug-in 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.
2	ERT-29 1.20.1	Item 1.20.1 (5) is deleted.
3	ERT-37 3.1.13	Updated clause 3.1.13: Slewing rings shall be provided with adequate number of standard grease fittings. If bolster connection is used, equipped with center pin and friction plates, the material and design of the friction plates shall not cause undue noise or any residual sound during start of traction and braking. The Contractor shall submit a detailed study of the friction plate properties and performance for review by the Engineer.

Annex B – Attachment 1

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 ±350mm 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 plug-in 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.

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.

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 to result in excessive wear or incorrect operation of the door equipment.

7.1.11 The Contractor shall indicate the amount of time required to replace a door leaf in-situ including the adjustment and testing during the design review.

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 ±350mm 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 bi-parting plug-in 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.

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.

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 to result in excessive wear or incorrect operation of the door equipment.

7.1.11 The Contractor shall indicate the amount of time required to replace a door leaf in-situ including the adjustment and testing during the design review.

	intelligibility by speech transmission index

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
4	DIN 5510-2 Fire test to railway components

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

	intelligibility by speech transmission index

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
4	DIN 5510-2 Fire test to railway components

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) 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.

3 Bogies

3.1 General

3.1.1 The Contractor shall ensure the bogies supplied with the vehicles are of service proven design.

3.1.2 The bogies shall be designed to operate safely and reliably for the service life of the trains.

3.1.3 The vehicles shall be supported on twin axle bogies incorporating primary and secondary suspension system.

3.1.4 The bogies shall be designed and constructed to minimize the unsprung mass including any attachment to axle and shall provide service for a period of not less than 30 years, under normal use and maintenance.

3.1.5 Bogies shall be designed and manufactured such that as many components as practicable are fully interchangeable. All motor bogie assemblies will be fully interchangeable, similarly all trailer bogie assemblies. The entire bogie shall be suitably protected against corrosion and adequately painted.

3.1.6 Provision shall be made in the bogie design to allow vertical mechanical adjustment to compensate for wear or other bogie parts. It shall be possible to adjust carbody height for wheel wear without having to remove the bogie from the vehicle. The design shall allow for lifting the bogie with the carbody.

3.1.7 Sufficient number of shims or liners shall be supplied for adjusting body height.

3.1.8 Motor bogies shall utilize an individual motor driving each axle, and the motors shall be mounted on the bogie frame. Bogies will be as light as possible, commensurate with meeting the requirements of this ERT.

3.1.9 The bogies shall be compatible with the under-floor wheel turning machine to be installed at Workshop without the need for removal of bogies or disassembly of any major parts from the bogie or the carbody or to add interfacing hardware.

3.1.10 The wheel and axle design shall allow wheel mounting and dismounting.

3.1.11 Bogie wheelbase shall be between 2100 mm – 2700mm. The Contractor shall include the dry stick type wheel lubricant in case of the wheelbase design is higher than 2100mm.

3.1.12 The Contractor shall ensure that the bogie frames are provided with lifting eyes of sufficient strength at four points to permit level lift and transport by workshop crane of the fully assembled bogie.

3.1.13 Slewing rings shall be provided with adequate number of standard grease fittings. If bolster~~-less~~ connection is used, equipped with center pin and friction plates, the material and design of the friction plates shall not cause undue noise or any residual sound during start of traction and braking. The Contractor shall submit a detailed study of the friction plate properties and performance for review by the Engineer.

3.1.14 The bogies shall be capable of being disconnected and reconnected to carbody with minimal operation requirements. The maximum time to remove and replace a bogie with an exchange bogie shall be less than two (2) hours.

3.1.15 The bogie shall be configured such that equipment is positioned and oriented in a manner that facilitates access for maintenance. The bogie design shall include the mounting arrangements for the on-board signaling equipment, which shall include, but not be limited to:

3 Bogies

3.1 General

3.1.1 The Contractor shall ensure the bogies supplied with the vehicles are of service proven design.

3.1.2 The bogies shall be designed to operate safely and reliably for the service life of the trains.

3.1.3 The vehicles shall be supported on twin axle bogies incorporating primary and secondary suspension system.

3.1.4 The bogies shall be designed and constructed to minimize the unsprung mass including any attachment to axle and shall provide service for a period of not less than 30 years, under normal use and maintenance.

3.1.5 Bogies shall be designed and manufactured such that as many components as practicable are fully interchangeable. All motor bogie assemblies will be fully interchangeable, similarly all trailer bogie assemblies. The entire bogie shall be suitably protected against corrosion and adequately painted.

3.1.6 Provision shall be made in the bogie design to allow vertical mechanical adjustment to compensate for wear or other bogie parts. It shall be possible to adjust carbody height for wheel wear without having to remove the bogie from the vehicle. The design shall allow for lifting the bogie with the carbody.

3.1.7 Sufficient number of shims or liners shall be supplied for adjusting body height.

3.1.8 Motor bogies shall utilize an individual motor driving each axle, and the motors shall be mounted on the bogie frame. Bogies will be as light as possible, commensurate with meeting the requirements of this ERT.

3.1.9 The bogies shall be compatible with the under-floor wheel turning machine to be installed at Workshop without the need for removal of bogies or disassembly of any major parts from the bogie or the carbody or to add interfacing hardware.

3.1.10 The wheel and axle design shall allow wheel mounting and dismounting.

3.1.11 Bogie wheelbase shall be between 2100 mm – 2700mm. The Contractor shall include the dry stick type wheel lubricant in case of the wheelbase design is higher than 2100mm.

3.1.12 The Contractor shall ensure that the bogie frames are provided with lifting eyes of sufficient strength at four points to permit level lift and transport by workshop crane of the fully assembled bogie.

3.1.13 Slewing rings shall be provided with adequate number of standard grease fittings. If bolster connection is used, equipped with center pin and friction plates, the material and design of the friction plates shall not cause undue noise or any residual sound during start of traction and braking. The Contractor shall submit a detailed study of the friction plate properties and performance for review by the Engineer.

3.1.14 The bogies shall be capable of being disconnected and reconnected to carbody with minimal operation requirements. The maximum time to remove and replace a bogie with an exchange bogie shall be less than two (2) hours.

3.1.15 The bogie shall be configured such that equipment is positioned and oriented in a manner that facilitates access for maintenance. The bogie design shall include the mounting arrangements for the on-board signaling equipment, which shall include, but not be limited to: