

MAHARASHTRA METRO RAIL CORPORATION LIMITED
(Nagpur Metro Rail Project)

BID DOCUMENT

FOR

Five-year Annual Maintenance Contract of CRRC make Metro Rolling Stock including Intermediate Overhauling for Nagpur Metro Rail Project Phase-1 of Maha-Metro.

TENDER NO: N1-O&M-38/2025



Maharashtra Metro Rail Corporation Limited

Metro Bhawan, East High Court Road (VIP Road),
Near Dikshabhoomi, Ramdaspeth, Nagpur-440010,
Maharashtra, INDIA

Website: <http://www.metro railnagpur.com>

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E-TENDER NOTICE

Maharashtra Metro Rail Corporation Limited
Metro Bhawan, East High Court Road (VIP Road),
Near Dikshabhoomi, Ramdaspath, Nagpur-440010,
Maharashtra, INDIA

Website: <http://www.metrorailnagpur.com>

E-mail: md.nmrcl.tenders@gmail.com, Telefax: 0712-2554217

Tender Notice No: N1-O&M-38/2025

Dated: 13/10/2025

Name of Work: Five-year Annual Maintenance Contract of CRRC make Metro Rolling Stock including Intermediate Overhauling for Nagpur Metro Rail Project Phase-1 of Maha-Metro.

KEY DETAILS:

Contract Period	Five (5) Years from the Letter of Commencement by Maha-Metro.
Documents on sale	Documents can be downloaded from 1600 Hrs of 13/10/2025 to 1600 Hrs of 17/11/2025 from Maha-Metro's E-Tender Portal.
Cost of documents	INR 47200/- (INR Fifty Seven Thousand Two Hundred only) (inclusive of applicable GST) , non-refundable payable through e-payment by Credit Card / Debit Card / Net Banking, as per procedure given in tender document.
Pre-bid Meeting	At 1130 Hrs on 30/10/2025 at the office of ED/Procurement, Maha-Metro through Video Conference & in-person (optional). VC Link shall be published on Maha-Metro website and e-tender Portal. Bidder's Queries must be submitted through e-mail at md.nmrcl.tenders@gmail.com OR in hard copy to the office of the ED (Procurement) before the stipulated date & time of Pre-Bid meeting.
Bid Security (EMD)	The Bid Security / EMD amounting INR 15,20,000 (INR Fifteen Lakhs Twenty Thousand Only) shall be in the form of Unconditional Bank Guarantee issued by any Nationalized or Scheduled Commercial Bank (Except Co-Operative Bank) of Indian origin or Scheduled Commercial foreign bank having business office in India, in the format provided in Bid Document. Agencies registered as MSME are exempted from the submission of EMD; instead, they shall submit the Bid Securing Declaration along with Certificate of registration as MSME.
Date & Time of submission of Tender	Online submission shall start from 1600 Hrs. of 10/11/2025 up till 1600 Hrs. of 17/11/2025 on Maha-Metro, e-tender portal.
Date & Time of Opening of Technical bid	On 18/11/2025 after 16:30 Hours in Procurement Department, 1 st Floor, "Metro Bhawan" East High Court Road (VIP Road), Near Dikshabhoomi, Ramdaspath, Nagpur – 440010.

1. Sale of document, e-payment procedure, submission, and other details are available on Maharashtra Government eTender portal. <https://mahatenders.gov.in>.
2. To view this tender notice, interested Agencies may visit the Maha-Metro's website www.mahametro.org or CPPP website <https://eprocure.gov.in>.
3. The bidder shall bear all costs associated with the preparation and submission of the bid. Maha-Metro will in no case, be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.
4. Maha-Metro reserves the right to accept or reject all or any of the bids without assigning any reason whatsoever.




Executive Director
(Procurement),
Maharashtra Metro Rail
Corporation Limited

MAHARASHTRA METRO RAIL CORPORATION LIMITED
(Nagpur Metro Rail Project)

BID DOCUMENTS

FOR

**Five-year Annual Maintenance Contract of CRRC make
Metro Rolling Stock including Intermediate Overhauling for
Nagpur Metro Rail Project Phase-1 of Maha-Metro.**

TENDER NO. N1-O&M- /2025

Section 2

Instructions to Bidders (ITB), Bid Data Sheet (BDS) and Tool Kit
for using E-Tender Portal



Maharashtra Metro Rail Corporation Limited
Metro Bhawan, East High Court Road (VIP Road),
Near Dikshabhoomi, Ramdaspath, Nagpur-440010,
Maharashtra, INDIA
Website: <http://www.metrotrainnagpur.com>

Section 2. Instructions to Bidders (ITB)

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Section 2. Instructions to Bidders (ITB)

A. General

1. Scope of Bid

- 1.1 In connection with the Invitation for Bids **specified in the Bid Data Sheet (BDS)**, the Employer, as **specified in the BDS**, issues these Bidding Documents for the procurement of Works as specified in Section-5 Scope of Work. The name, identification, and number of Bid is as **specified in the BDS**.
- 1.2 Throughout these Bidding Documents:
- (a) the term “in writing” means communicated in written form and delivered against receipt;
 - (b) except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular; and
 - (c) “day” means calendar day.

2. Source of Funds

- 2.1 The Employer **specified in the BDS** has received or has applied for financing (hereinafter called “funds”) from the funding as **(specified in BDS)** toward the project named **in the BDS**. The Employer intends to apply a portion of the funds to eligible payments under the contract(s) for which these Bidding Documents are issued.

3. Corrupt and Fraudulent Practices

- 3.1 The Agency requires compliance with its policy in regard to corrupt and fraudulent practices as set forth in Section-6.
- 3.2 In further pursuance of this policy, Bidders shall permit and shall cause its agents (whether declared or not), sub-contractors, sub-consultants, service providers, or suppliers and any personnel thereof, to permit the Agency to inspect all accounts, records and other documents relating to any prequalification process, bid submission, and contract performance (in the case of award), and to have them audited by auditors appointed by the Agency.

4. Eligible Bidders

- 4.1 A Bidder may be a firm that is a private entity, a government-owned entity—subject to ITB 4.3—or any combination of such entities in the form of a joint venture (JV) under an existing agreement or with the intent to enter into such an agreement supported by a letter of intent. In the case of a joint venture,

all members shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms. The JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the members of the JV during the bidding process and, in the event the JV is awarded the Contract, during contract execution. **Unless specified in the BDS**, there is no limit on the number of members in a JV.

4.2 A Bidder shall not have a conflict of interest. Any Bidder found to have a conflict of interest shall be disqualified. A Bidder may be considered to have a conflict of interest for the purpose of this bidding process, if the Bidder:

- (a) directly or indirectly controls, is controlled by or is under common control with another Bidder; or
- (b) receives or has received any direct or indirect subsidy from another Bidder; or
- (c) has the same legal representative as another Bidder; or
- (d) has a relationship with another Bidder, directly or through common third parties, that puts it in a position to influence the bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or
- (e) Participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all Bids in which such Bidder is involved. However, this does not limit the inclusion of the same sub-contractor in more than one bid; or
- (f) any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the bid; or
- (g) any of its affiliates has been hired (or is proposed to be hired) by the Employer as Engineer for the Contract implementation; or
- (h) has a close business or family relationship with a professional staff of the Employer (or of the project implementing agency, or of a recipient of a part of the loan) who: (i) are directly or indirectly involved in the preparation of the bidding documents or specifications of the contract, and/or the bid evaluation process of such

contract; or (ii) would be involved in the implementation or supervision of such contract unless the conflict stemming from such relationship has been resolved in a manner acceptable to the Agency throughout the procurement process and execution of the contract.

4.3 The Agency's eligibility criteria to bid are described in **Section-3 – Eligibility criteria.**

4.4 A Bidder shall not be under suspension from bidding by the Employer as the result of the operation of a Bid Security.

4.5 This bidding is open only to prequalified Bidders unless **specified in the BDS.**

4.6 A Bidder shall provide such evidence of eligibility satisfactory to the Employer, as the Employer shall reasonably request.

5. Eligible Materials, Equipment, and Services

5.1 The materials, equipment and services to be supplied under the Contract and financed by the Agency may have their origin in any country subject to the restrictions specified in Section-3, Eligibility criteria and social and environmental responsibility, and all expenditures under the Contract will not contravene such restrictions. At the Employer's request, Bidders may be required to provide evidence of the origin of materials, equipment and services.

B. Contents of Bidding Documents

6. Sections of Bidding Documents

6.1 The Bidding Documents consist of the Sections specified below, which should be read in conjunction with any Addenda issued in accordance with ITB 8.

Notice Inviting Tender (NIT)

Instructions to Bidders (ITB)

Bid Data Sheet (BDS)

Tool Kit for e-tender

Eligibility Criteria

Evaluation Criteria

Scope of Work

General Conditions of Contract

Specific Conditions of Contract

Corrupt and Fraudulent Practice Policy

Bidding & Contract Forms

List of Documents to be enclosed along with the bid

Financial Bid

- 6.2 The Invitation for Bids (Notice Inviting Tender) i.e. NIT issued by the Employer is part of the Bidding Documents.
- 6.3 Unless obtained directly by the bidder concerned from the Employer's office (as mentioned in NIT) or Employer's E-tender portal, the Employer is not responsible for the completeness of the Bidding Documents, responses to requests for clarification, the minutes of the pre-Bid meeting (if any), or Addenda to the Bidding Documents in accordance with ITB 8. (Downloaded / Uploaded by Bidder). In case of any contradiction, documents available at Employer's Office or uploaded on E-Tender portal of Employer shall prevail.
- 6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Documents and to furnish with its bid all information and documentation as is required by the Bidding Documents.
- Failure to comply with the requirements of the Bidding Documents and to furnish all information required by the Bidding Documents or submission of a Bid not substantially responsive to the Bidding Documents, in every respect will be at the Bidder's risk and may result in rejection of its Bid.
- 6.5. The Bidder shall not make or cause to be made any alteration, erasure or obliteration to the text of the Bid Documents issued by Employer or uploaded on the E-tender portal of Employer, which shall otherwise results in rejection of its Bid.
- 6.6. The documents including the Bid Document provided by Employer are and shall remain or becomes the property of Employer and are transmitted to the Bidders solely for the purpose of preparation and the submission of a Bid in accordance herewith. The provisions of this Para shall also apply *mutatis mutandis* to the Bids and all other documents submitted by the Bidders, and Employer will not return to the Bidders any Bid, document or any information provided along therewith.

7. Clarification of Bidding

- 7.1 A Bidder requiring any clarification of the Bidding Documents shall contact the Employer in writing at the Employer's address

**Documents, Site
Visit, Pre-Bid
Meeting**

specified in the BDS or raise its enquiries during the pre-bid meeting if provided for in accordance with ITB 7.4. The Employer will respond in writing to any request for clarification, provided that such request is received on or before the date specified in this document. The Employer shall forward copies of its response to all Bidders who have acquired the Bidding Documents in accordance with ITB 6.3, including a description of the inquiry but without identifying its source. If so specified in the BDS, the Employer shall also promptly publish its response at the web page identified in the BDS. Should the clarification result in changes to the essential elements of the Bidding Documents, the Employer shall amend the Bidding Documents following the procedure under ITB 8 and ITB 22.2 **OR as provided for in BDS in consonance with E-Tendering System.**

- 7.2 The Bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.

Any site / work information given in this bidding document is for guidance only. It shall be deemed that the Bidder has undertaken a visit to the Work Site of the Works and is aware of and has ascertained itself, the prevailing site conditions, traffic, location, surroundings, climate, demography availability of power, water and other utilities, raw materials, required consumables, access to Site, handling and storage of materials, weather data, applicable laws and regulations, and any other matter considered relevant by it prior to the submission of the Bid.

- 7.3 The Bidder and any of its personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.

- 7.4 If so specified in the BDS, the Bidder's designated representative is invited to attend a pre-bid meeting. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage **(as specified in BDS)**.
- 7.5 The Bidder is requested, as far as possible, to submit any questions in writing, to reach the Employer not later than one week before the meeting **or as specified in BDS**.
- 7.6 Minutes of the pre-bid meeting, if applicable, including the text of the questions asked by Bidders, without identifying the source, and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Bidders who have acquired the Bidding Documents in accordance with ITB 6.3. Any modification to the Bidding Documents that may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to ITB 8 and not through the minutes of the pre-bid meeting. Non-attendance at the pre-bid meeting will not be a cause for disqualification of a Bidder **OR as provided for in BDS in consonance with E-Tendering System**.

8. Amendment of Bidding Documents

- 8.1 At any time prior to the deadline for submission of bids, the Employer may amend the Bidding Documents by issuing addenda.
- 8.2 Any addendum /corrigendum issued by Employer shall be part of the Bidding Documents and shall be communicated in writing to all who have obtained the Bidding Documents from the Employer in accordance with ITB 6.3. The Employer shall also promptly publish the addendum on the Employer's web page in accordance with ITB 7.1. **or as specified in BDS**.
- 8.3 To give Bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may, at its discretion, extend the deadline for the submission of bids, pursuant to ITB 22.2

C. Preparation of Bids

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- 9. Cost of Bidding** 9.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
- 10. Language of Bid** 10.1 The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer, shall be written in the language **specified in the BDS**. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language **specified in the BDS**, in which case, for purposes of interpretation of the Bid, such translation shall govern.
- 11. Documents Comprising the Bid** 11.1 The Bid shall comprise the following: **(refer BDS for additional requirement)**
- (a) Letter of Bid in accordance with ITB 12;
 - (b) completed schedules as required, including Price Schedules, in accordance with ITB 12 and 14;
 - (c) Bid Security or Bid-Securing Declaration, in accordance with ITB 19.1 **(as specified in BDS)**
 - (d) alternative bids, if permissible, in accordance with ITB 13 **(as specified in BDS)**;
 - (e) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2;
 - (f) Statement of Integrity, Eligibility and Social and Environmental Responsibility duly signed, in accordance with ITB 12;
 - (g) Documentary evidence in accordance with ITB 17 establishing the Bidder's continued qualified status or, if post-qualification applies, as specified in accordance with ITB 4.5, the Bidder's qualifications to perform the contract if its Bid is accepted;
 - (h) Technical Proposal in accordance with ITB 16;
 - (i) Any other document **required in the BDS**.
- 11.2 In addition to the requirements under ITB 11.1, bids submitted by a JV shall include a copy of the Joint Venture Agreement

entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful bid shall be signed by all members and submitted with the bid, together with a copy of the proposed Agreement.

- 11.3 The Bidder shall furnish in the Letter of Bid information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Bid **(as specified in BDS)**.

12. Letter of Bid and Schedules

- 12.1 The Letter of Bid, the Statement of Integrity and Schedules, including the Bill of Quantities for unit price contracts or the schedule of price in case of lump sum contracts, shall be prepared using the relevant forms furnished in Section-7, Bidding Forms. The Letter of Bid and the Statement of Integrity must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under ITB 20.4. All blank spaces shall be filled in with the information requested.

- 12.2 The Letter of Bid with all Schedules/ Forms shall be completed and signed by a authorized and empowered representative of the Bidder. If the Bidder comprises a JV/Consortium, the Letter of Bid shall be signed by an authorized representative of the **Lead Member**. Signatures on the Letter of Bid shall be witnessed and dated. Copies of relevant powers of attorney shall be attached.

13. Alternative Bids

- 13.1 **Unless otherwise specified in the BDS**, alternative bids shall not be considered.

- 13.2 When alternative times for completion are explicitly invited, a statement to that effect **will be included in the BDS**, as will the method of evaluating different times for completion.

- 13.3 Except as provided under ITB 13.4 below, Bidders wishing to offer technical alternatives to the requirements of the Bidding Documents must first price the Employer's design as described in the Bidding Documents and shall further provide all information necessary for a complete evaluation of the alternative by the Employer, including drawings, design calculations, technical specifications, breakdown of prices, and proposed construction methodology and other relevant details. Only the technical alternatives, if any, of the lowest evaluated Bidder conforming to the basic technical

requirements shall be considered by the Employer **(as specified in BDS)**

13.4 When specified in the BDS, Bidders are permitted to submit alternative technical solutions for specified parts of the Works, and such parts **will be identified in the BDS**, as will the method for their evaluating, and described in Section 5, Scope of Work.

14. Bid Prices and Discounts

14.1 The prices and **discounts** quoted by the Bidder in the Letter of Bid and in the Schedules shall conform to the requirements specified below. **(or as specified in BDS)**

14.2 The Bidder shall submit a bid for the whole of the Works described in ITB 1.1, by filling in price(s) for all items of the works, as identified in Section-9, Financial Bid. In case of admeasurement contracts, the Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by the Bidder shall be deemed covered by the rates for other items in the Bill of Quantities and will not be paid for separately by the Employer. An item not listed in the priced Bill of Quantities shall be assumed to be not included in the Bid, and provided that the Bid is determined substantially responsive notwithstanding this omission, the average price of the item quoted by substantially responsive bidders will be added to the bid price and the equivalent total cost of the bid so determined will be used for price comparison. **(or as specified in BDS)**

14.3 The price to be quoted in the Letter of Bid shall be the total price of the Bid, excluding any discounts offered **(or as specified in BDS)**.

14.4 The Bidder shall quote any discounts and the methodology for their application in the Letter of Bid **(or as specified in BDS)**

14.5 Unless otherwise specified in the BDS and the Contract, the rate(s) and price(s) quoted by the Bidder are subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract. In such a case, the Bidder shall furnish the indices and weightings for the price adjustment formulae in the Schedule

of Adjustment Data and the Employer may require the Bidder to justify its proposed indices and weightings.

14.6 If so specified in ITB 1.1, bids are being invited for individual lots (contracts) or for any combination of lots (packages). Bidders wishing to offer discounts for the award of more than one Contract shall specify in their bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Discounts shall be submitted in accordance with ITB 14.4, provided the bids for all lots (contracts) are opened at the same time **or as specified in the BDS**.

14.7 Unless otherwise **specified in the BDS**, all duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date **28 days** prior to the deadline for submission of bids, shall be included in the rates and prices and the total Bid Price submitted by the Bidder.

15. Currencies of Bid and Payment

15.1 The currency (ies) of the bid and the currency (ies) of payments shall be **as specified in the BDS**.

15.2 Bidders may be required by the Employer to justify, to the Employer's satisfaction, their local and foreign currency requirements, and to substantiate that the amounts included in the prices shown in the Schedule of Adjustment Data in the Appendix to Bid are reasonable, in which case a detailed breakdown of the foreign currency requirements shall be provided by Bidders.

16. Documents Comprising the Technical Proposal

16.1 The Bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in Section-7 – Bidding Forms, in sufficient detail to demonstrate the adequacy of the Bidder's proposal to meet the work requirements and the completion time.

17. Documents Establishing the Qualifications of the Bidder

17.1 In accordance with Section-3, Evaluation and Qualification Criteria, to establish that the Bidder continues to meet the criteria used at the time of prequalification or at the time of actual bidding (as the case may be), the Bidder shall provide in the corresponding information sheets included in Section-7, Bidding Forms, updated information on any assessed aspect that changed from that time, or if post-qualification

applies as specified in ITB 4.5, the Bidder shall provide the information requested in the corresponding information sheets included in Section-7, Bidding Forms.

17.2 If a margin of preference applies as specified in accordance with ITB 33.1, domestic Bidders, individually or in joint ventures, applying for eligibility for domestic preference shall supply all information required to satisfy the criteria for eligibility specified in accordance with ITB 33.1 (as detailed in BDS)

17.3 Any change in the structure or formation of a Bidder after being prequalified and invited to Bid (including, in the case of a JV, any change in the structure or formation of any member thereto) shall be subject to the written approval of the Employer prior to the deadline for submission of Bids. Such approval shall be denied if (i) as a consequence of the change, the Bidder no longer substantially meets the qualification criteria set forth in Section-3, Qualification Criteria and Requirements; or (ii) in the opinion of the Employer, the change may result in a substantial reduction in competition. Any such change should be submitted to the Employer not later than fourteen (14) days after the date of the Invitation for Bids. **(or as specified in BDS)**

18. Period of Validity of Bids

18.1 Bids shall remain valid for the period **specified in the BDS** after the bid submission deadline date prescribed by the Employer in accordance with ITB 22.1. A bid valid for a shorter period shall be rejected by the Employer as non-responsive.

18.2 In exceptional circumstances, prior to the expiration of the bid validity period, the Employer may request Bidders to extend the period of validity of their bids. The request and the responses shall be made in writing. If a bid security is requested in accordance with ITB 19, it shall also be extended for **twenty-eight (28) days beyond** the deadline of the extended validity period. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request shall not be required or permitted to modify its bid, except as provided in ITB 18.3.

18.3 **Unless specified in BDS**, if the award is delayed by a period exceeding fifty-six (56) days beyond the expiry of the initial bid validity, the Contract price shall be determined as follows:

- (a) In the case of fixed price contracts, the Contract price shall be the bid price adjusted by the factor **specified in the BDS**.
- (b) In the case of adjustable price contracts, no adjustment shall be made.
- (c) In any case, bid evaluation shall be based on the bid price without taking into consideration the applicable correction from those indicated above.

19. Bid Security

19.1 The Bidder shall furnish as part of its bid, a bid security **as specified in the BDS**, in original form and, in the case of a bid security, in the amount and currency **specified in the BDS**.

19.2 A Bid-Securing Declaration shall use the form included in Section-7, Bidding Forms, **as specified in BDS**

19.3 If a bid security is specified pursuant to ITB 19.1, the bid security shall be a demand guarantee in any of the following forms at the Bidder's option:

- (a) an unconditional guarantee issued by any Scheduled bank in India;
- (b) an irrevocable letter of credit;
- (c) Demand Draft, from any Scheduled Bank in India.
- (d) another security **specified in the BDS**,

from a reputable source from an eligible country as specified in Section-3 Eligibility criteria. If the unconditional guarantee is issued by a financial institution located outside the Employer's Country, the issuing financial institution shall have a correspondent financial institution located in the Employer's Country to make it enforceable. In the case of a bank guarantee, the bid security shall be submitted either using the Bid Security Form included in Section-7, Bidding Forms, or in another substantially similar format approved by the Employer prior to bid submission. The bid security shall be valid for twenty-eight (28) days beyond the original validity period of the

bid, or beyond any period of extension if requested under ITB 18.2.

- 19.4 Any bid not accompanied by a substantially responsive **Bid security** or **Bid-Securing Declaration** (as the case may be) shall be rejected by the Employer as non-responsive.
- 19.5 The bid security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's signing the Contract and furnishing the performance security pursuant to ITB 42.(**Replaced in BDS**)
- 19.6 The bid security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the required performance security.
- 19.7 The bid security may be forfeited or the Bid-Securing Declaration executed:
- (a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bid, or any extension thereto provided by the Bidder; or
 - (b) If the Bidder submit fake/ forged/ fabricated/ false documents as well as false & misleading information/ data with his Bid, which fails the authenticity verifications initiated by Maha-Metro.
 - (c) If the Bidder tamper/ edit/ mutilate the Bid document and associated information/data and submit the same with his Bid.
 - (d) If the successful Bidder fails to:
 - (i) *sign the Contract in accordance with ITB 41; or*
 - (ii) furnish a performance security in accordance with ITB 42.
 - (iii) authenticate and verification of performance security
- 19.8 The bid security or a Bid-Securing Declaration of a JV shall be in the name of the JV that submits the bid. If the JV has not been legally constituted into a legally enforceable JV at the time of bidding, the bid security or the Bid-Securing Declaration shall be in the names of all future members as named in the letter of

intent referred to in ITB 4.1 and ITB 11.2. **or as Specified in BDS, Section-2.**

19.9 If a bid security is **not required in the BDS pursuant to ITB 19.1**, and

- (a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bid or any extension thereto provided by the Bidder, or
- (b) if the successful Bidder fails to sign the Contract in accordance with ITB 41; or furnish a performance security in accordance with ITB 42;

the Employer may, **if provided for in the BDS**, declare the Bidder ineligible to be awarded a contract by the Employer for a period of time **as stated in the BDS**.

20. Format and Signing of Bid

20.1 The Bidder shall prepare one original of the documents comprising the bid as described in ITB 11 and clearly mark it "ORIGINAL." Alternative bids, if permitted in accordance with ITB 13, shall be clearly marked "ALTERNATIVE." In addition, the Bidder shall submit one set of copies of the bid, in the number **specified in the BDS** and clearly mark them "COPY." In the event of any discrepancy between the original and the copies, the original shall prevail.**(Replaced in BDS)**

20.2 The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation **as specified in the BDS** and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the bid where entries or amendments have been made shall be signed or initialed by the person signing the bid. **(Replaced in BDS)**

20.3 In case the Bidder is a JV, the Bid shall be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced by a power of attorney signed by their legally authorized representatives. **(As specified in BDS)**

20.4 Any inter-lineation, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the bid.

D. Submission and Opening of Bids (as specified in BDS)

21. Sealing and Marking of Bids (Replaced In BDS)

21.1 The Bidder shall enclose the original and one set of all copies of the bid, including alternative bids, if permitted in accordance with ITB 13, in separate sealed envelopes, duly marking the envelopes as "ORIGINAL", "ALTERNATIVE" and "COPY." These envelopes containing the original and the copies shall then be enclosed in one single envelope.

21.2 The inner and outer envelopes shall:

- (a) bear the name and address of the Bidder;
- (b) be addressed to the Employer in accordance with ITB 22.1;
- (c) bear the specific identification of this bidding process specified in the BDS 1.1; and
- (d) bear a warning not to open before the time and date for bid opening.

21.3 If all envelopes are not sealed and marked as required, the Employer will assume no responsibility for the misplacement or premature opening of the bid.

22. Deadline for Submission of Bids

22.1 Bids must be received by the Employer at the address and no later than the date and time **specified in the BDS. When so specified in the BDS**, bidders shall have the option of submitting their bids electronically. Bidders submitting bids electronically shall follow the electronic bid submission procedures **specified in the BDS**.

22.2 The Employer may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Documents in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.

23. Late Bids

23.1 The Employer shall not consider any bid that arrives after the deadline for submission of bids, in accordance with ITB 22. Any bid received by the Employer after the deadline for submission of bids shall be declared late, rejected, and returned unopened to the Bidder **or as specified in BDS**

24. Withdrawal, Substitution, and Modification of Bids

24.1 **Unless specified in BDS**, A Bidder may withdraw, substitute, or modify its bid after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITB 20.2. The corresponding substitution or modification of the bid must accompany the respective written notice. All notices must be:

- (a) prepared and submitted in accordance with ITB 20 and ITB 21 (except that withdrawals notices do not require copies), and in addition, the respective envelopes shall be clearly marked "WITHDRAWAL," "SUBSTITUTION," "MODIFICATION;" and
- (b) received by the Employer prior to the deadline prescribed for submission of bids, in accordance with ITB 22.

24.2 Bids requested to be withdrawn in accordance with ITB 24.1 shall be returned unopened to the Bidders.

24.3 No bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Letter of Bid or any extension thereof.

25. Bid Opening

25.1 Except in the cases specified in ITB 23 and 24, the Employer shall publicly open and read out in accordance with ITB 25 all bids received by the deadline (regardless of the number of bids received), at the date, time and place **specified in the BDS**, in the presence of Bidders' designated representatives and anyone who choose to attend. Any specific electronic bid opening procedures required if electronic bidding is permitted in accordance with ITB 22.1, shall be **as specified in the BDS**.

25.2 First, envelopes marked "WITHDRAWAL" shall be opened and read out and the envelope with the corresponding bid shall not be opened, but returned to the Bidder. No bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at bid opening. Next, envelopes marked "SUBSTITUTION" shall be opened and read out and exchanged with the corresponding bid being substituted, and the substituted bid shall not be opened, but returned to the Bidder.

No bid substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at bid opening. Envelopes marked "MODIFICATION" shall be opened and read out with the corresponding bid. No bid modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at bid opening. Only bids that are opened and read out at bid opening shall be considered further.

25.3 All other envelopes shall be opened one at a time, reading out: the name of the Bidder and whether there is a modification; the total Bid Price, per lot (contract) if applicable, including any discounts and alternative bids; the presence or absence of a bid security and any other details as the Employer may consider appropriate. Only discounts and alternative bids read out at bid opening shall be considered for evaluation. The Letter of Bid and the Schedules are to be initialed by a minimum of three representatives of the Employer attending bid opening. The Employer shall neither discuss the merits of any bid nor reject any bid (except for late bids, in accordance with ITB 23.1) **(Replaced in BDS)**

25.4 The Employer shall prepare a record of the bid opening that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, substitution, or modification; the Bid Price, per lot (contract) if applicable, including any discounts and alternative bids; and the presence or absence of a bid security. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Bidders. **(Replaced in BDS)**

E. Evaluation and Comparison of Bids

26. Confidentiality

26.1 Information relating to the examination, evaluation, and comparison of the bids, and qualification of the Bidders and recommendation of contract award shall not be disclosed to Bidders or any other persons not officially concerned with the

bidding process until information on Contract award is communicated to all Bidders in accordance with ITB 40.

26.2 Any attempt by a Bidder to influence the Employer in the examination, evaluation, and comparison of the bids, and qualification of the Bidders, or Contract award decisions may result in the rejection of its bid.

26.3 Notwithstanding ITB 26.2, from the time of bid opening to the time of Contract award, if a Bidder wishes to contact the Employer on any matter related to the bidding process, it shall do so in writing.

27. Clarification of Bids

27.1 To assist in the examination, evaluation, and comparison of the bids, and qualification of the Bidders, the Employer may, at its discretion, ask any Bidder for a clarification of its bid, given a reasonable time for a response. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing. No change, including any voluntary increase or decrease, in the prices or substance of the bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the bids, in accordance with ITB 31.

27.2 If a Bidder does not provide clarifications of its bid by the date and time set in the Employer's request for clarification, its bid may be rejected.

28. Deviations, Reservations, and Omissions

28.1 During the evaluation of bids, the following definitions apply:

- (a) "Deviation" is a departure from the requirements specified in the Bidding Documents;
- (b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Documents; and
- (c) "Omission" is the failure to submit part or all of the information or documentation required in the Bidding Documents.

29. Determination of Responsiveness

29.1 The Employer's determination of a bid's responsiveness is to be based on the contents of the bid itself, as defined in ITB11.

29.2 A substantially responsive bid is one that meets the requirements of the Bidding Documents without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,

(a) if accepted, would:

(i) *affect in any substantial way the scope, quality, or performance of the Works specified in the Contract;*
or

(ii) *limit in any substantial way, inconsistent with the Bidding Documents, the Employer's rights or the Bidder's obligations under the proposed Contract;*
or

(b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive bids.

29.3 The Employer shall examine the technical aspects of the bid submitted in accordance with ITB 16, in particular, to confirm that all requirements of Section-5, Scope of Work have been met without any material deviation, reservation or omission.

29.4 If a bid is not substantially responsive to the requirements of the Bidding Documents, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

30. Nonmaterial Nonconformities

30.1 Provided that a bid is substantially responsive, the Employer may waive any nonmaterial non-conformity in the Bid.

30.2 Provided that a bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.

30.3 Provided that a bid is substantially responsive, the Employer shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price shall be adjusted,

for comparison purposes only, to reflect the price of a missing or non-conforming item or component.

**31. Correction of
Arithmetical Errors
(replaced in BDS)**

31.1 Provided that the bid is substantially responsive, the Employer shall correct arithmetical errors on the following basis:

- (a) Only for admeasurement contracts, if there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected;
- (b) Only for admeasurement contracts, if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
- (c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless, only for admeasurement contracts, the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.

31.2 Bidders shall be requested to accept correction of arithmetical errors. Failure to accept the correction in accordance with ITB 31.1 shall result in the rejection of the Bid.

**32. Conversion to
Single Currency**

32.1 For evaluation and comparison purposes, the currency(ies) of the Bid shall be converted into a single currency as specified in the BDS.

**33. Margin of
Preference**

33.1 Unless otherwise specified in the BDS, a margin of preference for domestic bidders shall not apply.

34. Subcontractors

34.1 Unless otherwise stated in the BDS, the Employer does not intend to execute any specific elements of the Works by subcontractors selected in advance by the Employer.

34.2 In case of Prequalification, the Bidder's Bid shall name the same specialized subcontractor as submitted in the prequalification application and approved by the Employer,

or may name another specialized subcontractor meeting the requirements specified in the prequalification phase.

- 34.3 In case of Post-qualification, the Employer may permit subcontracting for certain specialized works as indicated in Section-3 Experience. When subcontracting is permitted by the Employer, the specialized sub-contractor's experience shall be considered for evaluation. Section-3 describes the qualification criteria for sub-contractors or as specified in BDS.

35. Evaluation of Bids

- 35.1 The Employer shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted.

- 35.2 To evaluate a bid, the Employer shall consider the following **(as specified in BDS)**:

- (a) the bid price, excluding Provisional Sums and the provision, if any, for contingencies in the Schedules, but including Day work items, where priced competitively;
- (b) price adjustment for correction of arithmetic errors in accordance with ITB 31.1;
- (c) price adjustment due to discounts offered in accordance with ITB 14.4;
- (d) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 32;
- (e) price adjustment due to quantifiable nonmaterial nonconformities in accordance with ITB 30.3;
- (f) the additional evaluation factors as specified in Section-3 & 4, Eligibility and Evaluation Criteria.

- 35.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.

- 35.4 If these Bidding Documents allows Bidders to quote separate prices for different lots (contracts), the methodology to determine the lowest evaluated price of the lot (contract) combinations, including any discounts offered in the Letter of

Bid Form, is specified in Section-3 & 4, Eligibility and Evaluation Criteria.

35.5 If the bid, which results in the lowest Evaluated Bid Price, is significantly lower than the Employer's estimate or seriously unbalanced or front loaded in the opinion of the Employer, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Schedules, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. If it turns out that the bid price is abnormally low, the bid may be declared non-compliant and rejected. After evaluation of the price analyses, taking into consideration the schedule of estimated Contract payments, the Employer may require that the amount of the performance security be increased at the expense of the Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract. **(As specified in BDS)**

36. Comparison of Bids

36.1 The Employer shall compare the evaluated prices of all substantially responsive bids established in accordance with ITB 35.2 to determine the lowest evaluated bid.

37. Qualification of the Bidder

37.1 The Employer shall determine to its satisfaction whether the Bidder that is selected as having submitted the lowest evaluated and substantially responsive bid either continues to meet (if prequalification applies) or meets (if post-qualification applies) the qualifying criteria specified in Section-3 & 4, Eligibility and Evaluation Criteria.

37.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 17.1.

37.3 An affirmative determination shall be a prerequisite for award of the Contract to the Bidder. A negative determination shall result in disqualification of the bid, in which event the Employer shall proceed to the next lowest evaluated bid to make a similar determination of that Bidder's qualifications to perform satisfactorily.

38. Employer's Right to Accept Any Bid,

38.1 The Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to contract award, without thereby incurring any liability

**and to Reject Any
or All Bids**

to Bidders. In case of annulment, all bids submitted and specifically, bid securities, shall be promptly returned to the Bidders.

F. Award of Contract

39. Award Criteria

39.1 Subject to ITB 38.1, the Employer shall award the Contract to the Bidder whose bid has been determined to be the lowest evaluated bid and is substantially responsive to the Bidding Documents, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.

**40. Notification of
Award**

40.1 Prior to the expiration of the period of bid validity, the Employer shall notify the successful Bidder, in writing, that its bid has been accepted. The notification letter (hereinafter and in the Conditions of Contract and Contract Forms called the "Letter of Acceptance") shall specify the sum that the Employer will pay the Contractor in consideration of the execution and completion of the Works (hereinafter and in the Conditions of Contract and Contract Forms called "the Contract Price") and the requirement for the Contractor to remedy any defects therein. At the same time, the Employer shall also notify all other Bidders of the results of the bidding.

40.2 Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract.

40.3 The Employer shall promptly respond in writing to any unsuccessful Bidder who, after notification of award in accordance with ITB 40.1, requests in writing the grounds on which its bid was not selected.

41. Signing of Contract

41.1 Promptly upon notification, the Employer shall send the successful Bidder the Contract Agreement.

41.2 In case the agreement is sent, within twenty-eight (28) days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Employer.

**42. Performance
Security**

42.1 Within **twenty-eight (28) days** of the receipt of notification of award from the Employer, the successful Bidder shall furnish the performance security in accordance with the General Conditions of Contract, subject to ITB 35.5, using for that purpose the Performance Security Form included in Section-

7 Contract Forms, or another form acceptable to the Employer. If the performance security furnished by the successful Bidder is in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful Bidder to be acceptable to the Employer. A foreign institution providing a bond shall have a correspondent financial institution located in the Employer's Country. **(as specified in BDS)**

- 42.2 Failure of the successful Bidder to submit the above-mentioned Performance Security or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security or execution of the Bid-Securing Declaration. In that event the Employer may award the Contract to the next lowest evaluated Bidder whose offer is substantially responsive and is determined by the Employer to be qualified to perform the Contract satisfactorily.

Section-2**Annexure-2A: Bid Data Sheet****A. General**

General	The following terms are used in the Bidding Documents shall have the same meaning and interpretations: • 'Tender(s)' and 'Bid(s)' • 'Tenderer(s)' and 'Bidder(s)' • 'Employer's Requirements' and 'Work Requirements'
ITB 1.1	<u>Name of Project:- Nagpur Metro Rail Project, Phase-1</u> It is an Open tender, any Indian bidder who meet the eligibility criteria as per Section-3 may participate in the bid. <u>NAME OF WORK:</u> Five-year Annual Maintenance Contract of CRRC make Metro Rolling Stock including Intermediate Overhauling for Nagpur Metro Rail Project Phase-1 of Maha-Metro. The number of the Invitation for Bids/Tender (NIT) is: N1-O&M-38/2025
ITB 1.1	The Employer is: <u>Maharashtra Metro Rail Corporation Limited (Maha-Metro, Nagpur)</u>
ITB 1.1	National Competitive Bid The number of the Invitation for Bids/Tender (NIT) is: N1-O&M-38/2025
ITB 1.1	The detailed Scope of Work under this contract is described in detail in the Section-5 of the bid document. The Contractor has to execute the work accordingly with the approval of Employer. The successful Bidder has to establish its Office at Nagpur, if it does not have at present. The cost and expenses for setting up the said office(s) will be deemed to have been included in the Quoted Contract Price by the bidder and no separate / extra / additional amount is payable by Employer
ITB 2.1	Source of Fund for the project: Funded through budget provision for O&M of Nagpur Metro Rail Project Phase-I

ITB 4.1	The bidder may be a firm as a Single Entity or A Joint Venture/ Consortium of maximum 2 (Two) members subject to eligibility as detailed in Section - 3 of this Bid Document and corrigenda (if any).
ITB 4.2	(In Continuation to the existing clause, further added as under) (i) No Bidder can be a subcontractor of other Bidder while submitting a Bid individually in his own name or as a partner of a JV / Consortium in the same bidding process. A Bidder, if proposed as a subcontractor in any Bid (if allowed in the bid document), may be a proposed subcontractor in more than one Bid also, but only in the capacity of Sub-contractor. (j) A JV/Consortium member of any Bidding Entity will not be permitted to participate in the bid as a single entity individually or as member of another JV/Consortium entity. (k) No individual member will be member of JV/Consortium of more than one group of bidder.
ITB 4.5	This Bidding Process is in single stage two-packet system through e-tender portal of Maha-Metro & open to all eligible bidders as per Eligibility Criteria under Section-3 of this Bid Document.
ITB 4.7 (Additional Para)	The Bidder (sole or any member of JV/Consortium) must not have been blacklisted / debarred, which is in force on the last date of Submission of the Bid, A) for the reasons like supply of sub-standard material, non-supply of material, abandonment of works, sub-standard quality of works, failure to abide "Bid Securing Declaration" etc. by (i) any Department / PSU / Subordinate Offices under Ministry of Housing and Urban Affairs (MoHUA) or (ii) any department of Government of Maharashtra or B) By Department of Expenditure (DoE), Ministry of Finance, Government of India from participating in any government bidding procedure. The Bidder should not be listed in exclusion list of World Bank, on the last date of Bid submission.

ITB 4.8 (Additional Para)	JV/Consortium Agreement: In case, the Bidder is a consortium / JV, a detailed Consortium Agreement between the Members of such Consortium stating clearly their inter-relationship, name of lead member, percentage share, detailed division of work and obligations among the Members as mentioned in ITB 4.13 below should be submitted along with the Bid for proper examination by Maha-Metro. The format of the Consortium Agreement is provided in Section-7: Bidding Form .
ITB 4.9 (Additional Para)	Further, a JV/Consortium member shall enclose the following with their bid: i. Power of Attorney issued by Competent Authority of all the JV/Consortium Members duly supported by their board resolutions ii. duly notarized Joint Statement of JV/Consortium signed by Directors or Power of Attorney holders of each JV/Consortium members, authorizing the Lead Member, to sign & submit the Bid on behalf of JV/Consortium. The formats of the Power of Attorney as well as the board resolution are provided in Section-7: Bidding Forms. All the relevant forms should be duly signed and be submitted as per the requirements of the forms.
ITB 4.10 (Additional Para)	(a) Every Bidder, be it a single entity or a JV/ Consortium, is required to submit along with its Bid, a Power of Attorney duly signed and stamped and supported by its board resolution / Directors authorizing an individual as its authorized signatory, inter alia, to sign and submit the Bid. The formats of the Power of Attorney as well as the board resolution are provided in Section-7: Bidding Forms. In case of JV/Consortium, such power of attorney and board resolution must be executed by respective members. The POA of lead member shall be the Authorized Signatory for Bid Submission and any correspondence between the Bidder and the Maha Metro. (b) The Lead member shall be authorized to incur liabilities, receive payment (if provided for in MoU / Consortium Agreement) and receive instructions for and on behalf of any or all Members of the Consortium / Joint Venture. (c) All members of the Consortium / Joint Venture shall be jointly and severally responsible for the execution of the Contract in accordance with the terms and conditions of the Contract. (d) In case of the Bidder being Successful, the JV / Consortium Agreement shall be registered at any place in Maharashtra so as be legally valid and binding on all partners / members.

	(e) The Bid shall be signed by the POA of Lead Member so as to be legally binding on all the Members of the JV/ Consortium. (f) If the bidding entity is a Proprietorship firm, the proprietor of the firm shall submit a declaration notarized by Notary Public stating that he is the legal owner of the bidding firm & authorized signatory all document. Such declaration shall accompany with PAN Card of proprietor. (g) If the bidding entity is a Partnership firm / Private Limited Company, all the partners shall jointly provide a Power of Attorney in the name of one partner as an authorized signatory. Such declaration shall accompany with copy of DIN numbers of all partners.
ITB 4.11 (Additional Para)	The mode of execution of the power of attorney should be in accordance with the procedure, if any laid down by the applicable law and the charter documents of the executant(s) and when it is so required the same should be under common seal affixed in accordance with the required procedure in the prescribed format as provided in Section-7. For a Power of Attorney executed and issued overseas, the document will also have to be endorsed by the Indian Embassy or notarized/ registered with appropriate statutory authority in the jurisdiction where the Power of Attorney is being issued. However, the Power of Attorney provided by a Bidder from a country which has signed the Hague Legislation Convention, 1961 is not required to be endorsed by the Indian Embassy if it, carries a conforming Apostille certificate. This power of attorney should be registered at appropriate authority and easily verifiable.
ITB 4.12 (Additional Para)	If the Bidder is a Consortium or Joint Venture, the Bidder shall essentially submit the following information in addition to other requirement detailed in Section-3 and 4: Eligibility and Evaluation Criteria respectively. (a) A Memorandum of Understanding / Consortium Agreement / JV Agreement duly notarized by the notary public of country of origin or should be stamped by Embassy / High Commission of India (in case of overseas bidders of non Hague Convention member countries). Bidders from Member Countries of Hague convention may submit all these documents with "Apostille" stamp instead of Embassy. (b) Nomination of one of the Members of the Consortium or Joint Venture to be in-charge ("Lead member"); and this authorization shall be covered in the Consortium Agreement signed by the legally authorized signatories of all Members of Consortium or Joint Venture. Further, the authorized representative of lead member shall be authorized to sign the bid

	document and other allied correspondence by signing a notarized Joint Statement of JV/Consortium, as mentioned in above clauses. (c) Details of the intended financial participation by each member shall be furnished with complete details of the proposed division of responsibilities and relationships among the individual Members in a JV/Consortium Agreement.
ITB 4.13 (Additional Para)	The Bidder shall submit with the Bid full details of its ownership and control. The required information should be submitted in relevant form in the Section 7.
ITB 4.14 (Additional Para)	Indian Bidders, or Indian Members of a JV/ Consortium shall submit, a copy of the Permanent Account Number (PAN) issued by the Income Tax Authorities and a certified copy of the last 3 years (including the latest Financial Year) income tax return, duly acknowledged by Income Tax department with their Bid and the Technical Package. In case the Indian member of a JV/ Consortium is a wholly owned 100% subsidiary of their foreign partner in the said Consortium and this Indian company has been formed less than 3 years ago, the certified copy of the latest Financial Year income tax return (applicable only if company was formed more than a year ago), duly acknowledged by Income Tax department shall be submitted in the Technical Package. The Indian bidders shall submit copy of GST registration Certificate along with the bid. The foreign partner of the JV/ Consortium shall submit appropriate documents pertaining to their financial capability/ audited balance sheets and clearances of taxes as per the relevant law of the country of their origin.
ITB 4.15 (Additional Para)	Each Bidder (each Member in the case of a JV/Consortium) is required to confirm and declare with its Bid that no agent, middleman or any intermediary has been, or will be, engaged to provide any services, or any other item or work related to the award and performance of this Contract. Such Bidder or Member will have to further confirm and declare in the Bid that no agency commission or any payment which may be construed as an agency commission has been, or will be, paid and that the Contract Price will not include any such amount. If the Employer subsequently finds to the contrary, the Employer reserves the right to declare the Bidder as non-compliant, and declare any Contract if already awarded to the Bidder to be null and void. Specific declaration to this effect exactly as per Section 7: Bidding Form shall be submitted with the Technical Package.

ITB 4.16 (Additional Para)	Canvassing or offer of an advantage or any other inducement by any person with a view to influencing acceptance of a Bid will be an offence under laws of India. Such action will result in the rejection of the Bid, in addition to other punitive measures.
ITB 4.17 (Additional Para)	Provisions & guidelines of <u>MAKE IN INDIA POLICY 2017</u> (latest Revision, till final date of submission of Bid), shall be applicable in this bid.
B. Bidding Documents	
ITB 6.7 (Additional Para)	Supporting Documents / Information. (a) The reference documents, reports, drawings containing site information included in the Bidding Documents are for general information only and any interpretation of the results shall be construed as opinions only and not as true representations of actual site conditions. (b) The Bidders shall note that over ground, at grade and underground structures, utilities and infrastructure in the near vicinity of the proposed work site/metro alignment may also required to be maintained. (c) The accuracy or reliability of the documents, reports & information referred and other information supplied in this bid document, may vary at the time of actual execution of work. Bidders are advised to verify the same prior to the bid submission. Any changes or discrepancies identified by bidders should be brought in the knowledge of Maha-Metro as well as considered in their bid submission. (d) The Bidder should visit, examine and assess the Site including working conditions and will be deemed to have satisfied himself of the risks and obligations under the Contract.
ITB 7.1	(a) For <u>clarification purposes</u> only, the Employer's address is: Executive Director (Procurement), MAHARASHTRA METRO RAIL CORPORATION LIMITED, Metro Bhawan, East High Court Road (VIP Road), Near Dikshabhoomi, Ramdaspath, Maharashtra, INDIA – 440010. Electronic mail address: md.nmrcl.tenders@gmail.com Web page: www.metrorailnagpur.com (b) All correspondence from Maha Metro pertaining to this Bid till award of the work shall be done by the authorized representative of Maha Metro. Bidders are advised to regularly check their email ID registered with their user account at e-tendering portal http://mahametrorail.etenders.in

	for any update/ addendum/corrigendum/ pre-bid and post-bid queries/ any other correspondence by the Employer. (c) Pre-bid meetings shall be arranged as per schedule & mode mentioned in NIT. Bidders may discuss any queries pertaining to this bid during this pre bid meeting. Simultaneously, bidders shall also send the queries to Maha-Metro via email or in physical form at the address mentioned above. Maha-metro shall not reply the queries to bidders individually. The reply of all pre-bid queries shall be compiled & published on e-tender portal of Maha-Metro at respective place. (d) Maha Metro may also on its own discretion, if deemed necessary, issue interpretations and clarifications in the form of Addendum/Corrigendum and the same shall be uploaded on e-tender portal of Maha Metro. (e) All clarifications, interpretations, Corrigenda, Addenda, reply to pre-bid queries issued by Maha Metro & published on e-tender portal against respective bids shall be deemed to be part of the Bid Documents. (f) Oral queries, clarifications asked by bidder and oral reply given by Maha Metro or its employees or representatives shall not be treated as part of the bid document as well the Contract Agreement.
ITB 7.4	a) A Pre-Bid meeting shall take place at the following date, time and place: b) Date & Time: As per NIT and any Corrigendum published on the website of Maha Metro. <u>Place:</u> MAHARASHTRA METRO RAIL CORPORATION LIMITED Metro Bhawan, East High Court Road (VIP Road), Near Dikshabhoomi, Ramdaspath, Nagpur-440010, Maharashtra c) Viewing & downloading the document is free of cost, bidder has to pay the Cost of Bid Document at the time of submission of the Bid.
ITB 7.5	The Bidder is requested, as far as possible, to submit any questions in writing, to reach the Employer before the date and time specified for Pre-Bid meeting in NIT & ITB 7.4 above. The bidder may send such queries either by post to the address mentioned in the bid document or send by mail to md.nmrcl.tenders@gmail.com
ITB 7.6	Replies of the pre-bid queries, if applicable, including the text of the questions asked by Bidders, without identifying the source, will be uploaded on the E-Tender portal of Maha Metro against the respective bid, in accordance with ITB 6.3, and the same shall also be part and parcel of the Bid Document.

ITB 8.2	Following is added to the existing clause of ITB 8.2 Such modification/clarifications/corrections in the form of an Addendum/Corrigendum will be uploaded on the e-tendering portal http://mahametrorail.etenders.in as well as Maha-Metro's website. All these addendums, corrigendum and clarifications shall be part of the Contract Agreement.
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C. Preparation of Bids

ITB 10.1	The language of the bid is: English All correspondence/ exchange shall be in the English language. Language for translation of supporting documents and printed literature is English. Supporting documents related to eligibility criteria enclosed with the bid, other than English Language, should be translated in to English and will have to be endorsed by the Indian Embassy or notarized/ registered with appropriate statutory authority in the jurisdiction where the supporting document is being issued. However, such documents provided by a Bidder from a country which has signed the Hague Legislation Convention 1961 is not required to be endorsed by the Indian Embassy, if it carries a conforming Apostille Certificate. The bidder should provide the relevant contact number & E-Mail ID along with the postal address, in English, of issuing authority / agency of such documents for verification purpose.
ITB 11	Documents Comprising the Bid
ITB. 11.1 (c)	Bid Security / EMD shall be acceptable as detailed in NIT & ITB 19.1
ITB. 11.1 (d)	Alternative bid is not permissible .
ITB. 11.1 (j)	The Bidder shall, on or before the date and time given in the Notice of Invitation (NIT) to Bid, upload his Bid on e-tendering portal http://mahametrorail.etenders.in in accordance with provisions in ITB 22.1. i. The Bidder shall follow the procedure and steps of E-Tender portal of Maha Metro given in E-Tender Toolkit provided as Annexure-2-B ii. Cost of the bid: Paid online through E-Tender portal. iii. Bid Security: Evidence of submission / payment of Bid Security as per provision of NIT and BDS ITB 19.1 to be submitted.

	iv. Technical Package: To be submitted at appropriate place i.e. Technical Section/Envelope on e-tender portal. v. Financial Package: Financial bid form to be duly filled up directly in the Commercial Section / Envelope only on e-tender portal and not anywhere else. vi. Bidder should ensure that the no part of the Financial Bid should be up- loaded anywhere in the technical envelope, if the bidder does so then his bid will be rejected out-rightly. vii. The original Bank Guarantee towards Bid Security (if any), shall be submitted within (07) Seven working days from the last date stipulated for submission of bid at the office of Maha Metro at address given at ITB 7.1 above.
ITB 11.1 (k)	The bid documents shall include all the corrigendum/ addendum/ clarifications provided by the Employer during the course and before submission of Bid along with all necessary essential enclosures as specified in the bid document. In case of failure by the bidder in uploading (submission) the same, the bid shall be treated as non-responsive and not evaluated further.
ITB 11.3	Bidder shall inter alia undertake in the Letter of Bid that, no Payment of Commission or Gratuities has been made to any middleman/ agent regarding this tender
ITB 13.1	Alternative bids shall not be permitted under ITB 13.2 , ITB 13.3 , or ITB 13.4
ITB 13.2	Alternative times for completion is not permitted.
ITB 13.3	Technical alternatives to the requirements of bid documents is not permitted
ITB 13.4	Alternative technical solutions is not permitted.
ITB 14.1	The Price is to be quoted Online on E-tender portal of Maha-Metro in Financial Bid Section of E-Tender Portal only. No discounts offer are allowed to be quoted by the bidder in the Letter of Bid and No discount letter to be uploaded anywhere in e-Tender Portal. Offering Discount in any form or anywhere in E-Tender Portal or in Letter of Bid, shall lead to disqualification of Bidder and Financial Bid of such bidder shall not be taken in consideration for evaluation.
ITB 14.2	The bidder shall quote the price online in the Financial Bid Section of the E-Tender portal of Maha Metro, either rate against each item or in the summary sheet of schedule of BOQ or scanned & upload the filled

	BOQ/Schedule or Lump sum Price (as the case may be) as per provision described in the aforesaid Financial Bid Section of Bid Document.
ITB 14.3	The price quoted in the Financial Bid Section of E-tender portal of Maha Metro shall be the total price of the bid.
ITB 14.4	Any disclosure of Financial Offer and any offering of any Discount thereon in Technical Bid is not permitted. Offering any kind of Discount, is not permitted.
ITB 14.7	i. Price quoted by the bidder including or excluding GST & other applicable Taxes, Duties, Levies payables etc. shall be as per provisions detailed in Financial Bid. ii. If composite price (i.e. inclusive all taxes, GST etc) is permitted in Financial bid, it shall include All taxes, duties, levies prior to Base date i.e. 28 days prior to latest date of submission of Bid. iii. Any change in legislation of any kind of Taxes by GOI or GOM, after Base Date shall be accounted separately and shall be applicable both ways (Reimbursement & Deduction). iv. Successful bidder has to pay the applicable stamp duty towards the registration of Contract Agreement, as per prevailing norms /act of Govt of Maharashtra.
ITB 14.8 (Additional Para)	Bidders shall quote for the entire work on a “single responsibility” basis such that the Bid Price covers all Contractor’s obligations mentioned in or to be reasonably inferred from the Bid Documents in respect to this works and completion of the whole of Works. This includes all requirements under the Contractor’s responsibilities for testing and commissioning of the works executed including integrated testing and commissioning, the acquisition of all permits, approvals and tender licenses, etc.; the operation, maintenance and such other items and services as may be specified in the Bid Documents.
ITB 14.9 (Additional Para)	The Employer may get, from the Government, partial or complete waiver of taxes, royalties, duties, Labour, cess, octroi, and other levies payable to various authorities. The successful Bidder (the Contractor) shall maintain meticulous records of all the taxes and duties paid and provide the same with each running bill. In case the waiver becomes effective, the Contractor will be advised on the process to be followed to obtain the refund from the concerned authority. The Contractor shall arrange for the remit of the refund to the Employer. In case of failure by the Contractor to remit such amounts,

	the same shall be recovered from amounts due for payment to the Contractor. The Pro forma of undertaking is provided in Section-7: Bidding Form .
ITB 14.10 (Additional Para)	With the Bid submission, the Bidder shall submit the Pro forma of undertaking provided in Section 7: Bidding Form stating that registrations under various fiscal and labour laws like GST, Central Excise, Import Export Code, Employee State Insurance, Provident Fund, Maharashtra Labour Welfare Fund, Local Body Tax shall be obtained by the bidders in the event of award of the work.
ITB 14.11 (Additional Para)	Maha Metro project is covered under Project Import chapter 98.01 of Custom Tariff Act according to which only concessional custom duty is payable. The Bidder should avail this benefit and pass on the benefit of the same to Maha Metro. As regards registration under Project Import, after the award of the contract, Maha Metro at the written request of Contractor shall facilitate the Contractor for obtaining sponsoring / recommendation letter from the Ministry of Urban Development / Government of Maharashtra for getting themselves registered for availing Project Import benefits. The responsibility to avail the concessional benefits under Project Import shall solely rest with the Contractor.
ITB 15.1	The currency of the Bid & payment shall be Indian Rupees (INR) only.
ITB 17.2	Provisions and norms as stipulated in "Make in India Policy 2017" issued by GOI with the latest amendment till the time of submission of the bid, shall be applicable in this Tender.
ITB 17.3	Applicable if the bid is two stage i.e, Pre-Qualification Stage & Bidding Stage
ITB 18.1	The bid validity period shall be 180 (One Hundred & Eighty) days .
ITB 18.3 (a)	The bid price shall not be adjusted in event of delay of award.
ITB 19.1	(a) A Bid Security is required as specified in NIT: (b) Bid security shall be in form of unconditional Bank guarantee issued by any Nationalized or Scheduled Commercial Bank (Except Co-Operative Bank) of Indian origin or Scheduled commercial foreign bank having business office in India. The Bid Security Bank Guarantee shall be as per Form in Section-7: Bidding Forms. Or

	In the form of Bid Securing Declaration, as per format provided in the Section-7: Bidding Forms of Bid Document (applicable in case of MSME, as specified in ITB 19.2 below) (c) A scanned copy of this BG or the Bid securing declaration (as the case may be) is to be uploaded online and the Bidder should ensure physical submission of the original bank guarantee at the office of Maha Metro at address specified in Bidding Documents, within 7 (Seven) working days from the time and last date scheduled for handing over the Bidding Documents (online). (d) If the Bidder fails to submit the scanned copy at the aforesaid (c. above) or fails to submit the original bank guarantee (c. above) , his bid shall not be considered for opening/evaluation & shall be rejected outright. (e) <u>Bankers Detail of Employer (Maha Metro) for issuance of Bank Guarantee as Bid Security as per Structured Finance Messaging System (SFMS).</u> Bank Name: State Bank of India Branch with Address: S.V Patel Marg, Kingsway Nagpur 440001 Bank Account Name: Maharashtra Metro Rail Corporation Limited. Bank Account No.: 35378499419 Bank Account Type: Current Account IFSC Code: SBIN0000432 MICR Code: 440002002 <u>Note: -</u> Bidders are requested not to deposit any cash in the above account towards Bid Security. This account is only for issuance of Bank Guarantee through Bidder's Bank in Electronic format (SFMS). (f) The EMD / Bid Security received in the form of Bank Guarantee shall be scrutinized in accordance with the Format provided in Section-7 of Bid Document and its authenticity shall also be verified from the issuing bank. (g) Any material or cognizable changes in format of Bid Security Bank Guarantee (Provided in Section-7), which leads to affect the interest of Maha-Metro adversely, shall not be accepted. In such case Maha-Metro reserves the right to reject the EMD/Bid Security & disqualify the bid.
ITB 19.2	As per GFR-2017, Rule No. 171, Bid Security / EMD is exempted for participating bidder registered as MSME. If applicable, the bidder shall submit "Bid Securing Declaration" as provided in Bidding forms along with a Copy of the MSME Registration Certificate.

	If bid securing declaration is executed for the events mentioned in ITB 19.7 and in the Bi securing declaration (form B-10), the bidder shall be suspended from participating in any Tender issued by Maha Metro for the period of 3 years.
ITB 19.3	The Bidder shall submit with his Bid, a Bid Security for the sum mentioned in NIT in the form as specified in NIT and ITB 19.1 above.
ITB 19.4	EMD /Bid Security shall be as per ITB 19.1 & NIT
ITB 19.5	The bid security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's acceptance of Letter of Acceptance (LOA) issued by Maha-Metro.
ITB 19.8	The bid security or a Bid Securing Declaration (if applicable, Ref.19.2), as specified in Section-2 BDS, Cl No. 19.1 can be submitted by JV/Consortium or lead member only on behalf of the JV/Consortium.
ITB 19.9	Bid Security is required in this bid.
ITB 20.1	Replacement for ITB as under: Bid to be submitted through E-Tender portal of Maha Metro only.
ITB 20.2	Replacement for ITB as under: The Bid shall be submitted by bidder, online through e-tender portal of Maha-Metro. Details has been described at ITB clause no. 21 & Annexure-II-B The written confirmation of authorization to sign on behalf of the Bidder shall consist of: i. In case of bidder is a Proprietorship Firm, the proprietor shall be authorized signatory of bid and a notarized Undertaking shall be submitted by bidder as per Format provided in Section-7: Bidding Forms ii. In case of single bidder (i.e. Limited Company, Private Limited Company , LLP company), a notarized Power Of Attorney authorizing a signatory, supported by board resolution iii. In case of JV/Consortium, a notarized Power of Attorney shall authorize the Lead Member as a signatories of the Bid on behalf of JV/Consortium. A duly notarized Joint Statement of JV/Consortium (as per Section-7 formats) , signed by authorized signatories (POA) of each member of the JV/Consortium supported by copy of POA and board

	resolution of respective JV/Consortium Members' Companies, authorizing POA of Lead Member to represent JV/Consortium, legally on their behalf, is required to be enclosed with the bid. The Power of Attorney (ies) shall be in the format provided under Section-7: Bidding Forms of these Bidding Documents. iv. The online bid shall be submitted by using Digital Signature Certificate (DSC) of authorized POA of bidder detailed at (i),(ii) & (iii) above.
ITB 20.3	As detailed in BDS para 20.2 above.

ITB 21.1, 21.2 & 21.3	The Bidder shall submit/ upload (through digital signature of authorized person in e-tender portal of Maha Metro) (as described in ITB 20) in the Technical Package of its Bid the following documents, duly completed, which in the event of acceptance of the Bid, shall form part of the Contract:- - For submission of Tender Document and Corrigendum, Tick (✓) Submission Process has been enabled in Technical section of E-Tender Portal of Maha Metro. Bidders have to tick (✓) the corresponding checkbox provided in the Technical Section of E-Tendering portal as a token of acceptance of these bid documents & corrigendum / Addendums. By clicking the tick (✓) the bid documents & corrigendum /addendum shall automatically get attached to offer of bidder. Further bidder may proceed for submission by clicking submit button. - All required enclosures as per bid document shall be uploaded in "Technical Envelope" / "Technical Section" of E-Tender portal by using DSC of bidder. - The "Technical Envelope" / "Technical Section" of E-Tender portal has been provided with facilities to upload a file of maximum size of 20 mb only at each entity. - If bidder is desirous to upload a file more than 20mb size, he shall have to spilt the file in two or more parts of 20mb or lesser than 20mb each and can upload the same at appropriate Technical Template or "Additional Document" section of "Technical Envelope/section" of E-Tender Portal. - If the bidder has completed the submission process of his bid before due date of submission and in between employer issue a corrigendum, in this circumstances the bidder has to re-submit his bid by "clicking tick (✓)" to the new added corrigendum, in case the new corrigendum has any
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	implications to his already submitted bid. Bidder may, at his option, amend his bid accordingly & re-submit it. vi. Physical Sign & seal of bidder on each page of Bid Documents available online is not required. vii. Copy of Power of Attorney signing the bid of bidder or of Lead member in case of JV / Consortium. viii. Scanned copy of Bid Security: Cash, (if any) as well as BG component refer E-tender Notice). ix. Scanned copy of POA of each member & Lead member in case of JV/ Consortium. x. All relevant formats given in Section 7: Bidding format. Physically Signed by authorized signatory / POA of bidders or Lead member in case of JV/ Consortium. xi. Certificate of registration and other statutory documents of formation of bidder's company or JV/ Consortium or each members of JV/ Consortium (If not incorporated yet) issued by appropriate authority. xii. Copy of PAN card of bidder. (PAN card of Indian member of JV/Consortium, if JV/Consortium consist foreign member). xiii. Copy of all financial documents as directed in Section-3. xiv. Relevant work experience certificate (in line of Section 3 & 4: Evaluation and Qualification Criteria) and other qualifications certificates as given in Evaluation of Qualification under Section-3. xv. All Format of Section-7 and other enclosure, certificates stated above or desired elsewhere in the bid documents shall be physically filled, signed & stamped by authorized signatory / POA of bidder or POA of Lead member of JV/Consortium and scanned copies of such enclosures/documents should be uploaded on e-tender portal of Maha Metro along with bid documents. The enclosures meant for Technical Bid shall be uploaded with Technical Envelope & Financial enclosures (If any) shall be uploaded with Commercial Envelope on E-Tender Portal of Maha Metro only.
ITB 21.4 (Additional Para)	1. Financial Bid (Commercial Envelope)

ITB 21.4.1 (Additional Para)	i. The financial bid shall be submitted in financial envelope/commercial envelope. ii. BOQ/Summary sheet provided in the Commercial Envelope/financial envelope Section of E-Tender portal of Maha Metro shall be duly filled up online by bidder. iii. Few price schedules may require to be filled up physically and required to be signed & stamped by authorized signatory / POA of bidder or POA of Lead member of JV/Consortium and a scanned copy of such schedules may be uploaded, as per instructions provided in the Financial bid of bid Document or E-Tender Portal.
ITB 22	Last date and time of submission of online Bid shall be as per NIT or subsequent revision through corrigendum/addendum. Procedure of submission of bid is electronically i.e. E-tender has been described in Annexure-2B of bid document.
ITB 23	The submission of bid is permitted through E-Tender portal only. Submission of bid is not possible beyond the permitted date and time of submission of bid.
ITB 24.1, 24.2 & 24.3	i. As the bid process is through e-tendering portal of Maha Metro, amendment/ modification of bid by using the Re-Work option of the E-Tender portal shall be permissible before closing of the bidding process i.e. last date and time of submission of bid. ii. In case the bidder desires to withdraw the already uploaded/submitted bid, the same would not be possible but the bidder can opt not to proceed with the submission of the bid after opting “Re-work” option on E-tender portal. This can be done only prior to closing date and time of bidding process. iii. The bidder should further note that in such case of not proceeding with submission of bid, the Bid Security, if paid online, through the E-Tender portal, the same will not be refunded immediately. Such cases shall be dealt separately offline after completion of bidding process.
ITB 25.1	The bid opening/ shall take place at office of: Executive Director (Procurement) MAHARASHTRA METRO RAIL CORPORATION LIMITED “Metro Bhawan”, East High Court Road (VIP Road),

	Near Dikshabhoomi, Ramdaspath, Nagpur-440010, Maharashtra, INDIA Date: As per NIT Time: As per NIT The electronic bid (E-tender) opening procedure shall be as under: <u>The Technical Envelope/ Packages of Online Submitted Bids shall be opened/ downloaded by the opening committee on due date and time of Bid opening.</u> No minimum number of bids is required in order to proceed to bid opening. Add following paragraph below the existing paragraph of ITB 25.1: i. The Bid Security will be checked and details will be read out for the information of representative of Bidders, present at the time of opening of Bid. ii. Opening of Technical Bid shall take place as per Schedule of NIT or any later date notified by Corrigendum. Envelope/ Package of those Bidders who have not submitted Bid Security shall not be opened. Bid which is accompanied by an unacceptable or fraudulent Bid Security shall be considered as non – compliant and rejected. Also, bidders who have not uploaded the essential enclosures and formats and not agree the Bid document, Corrigendum, Addendum as uploaded on the E-Tender portal by Maha Metro, their submission treated as non-responsive and no further technical evaluation will be carried out. iii. The entire submission of the bidder shall be downloaded and examined, scrutinized and evaluated by a committee of officers of Maha-Metro. iv. After evaluation of Technical Bid received electronically via E-Tender portal of Maha Metro, the Financial/ Commercial Package/ Envelope of bid of the bidders who have been evaluated as substantially responsive shall be opened. The date & time of opening of Financial Bid shall be communicated to Technically Successful bidder electronically (E-mail).
ITB 25.2	Cases of “Withdrawal of Bid” and “Modification of Bid” has been described and clarified in clause ITB 24 above.
ITB 25.3	Replace provisions of ITB 25.3 with the following: The Bid received through E-tender portal shall be opened in two stages i.e. Technical Bid opening and Financial Bid opening. The entire opening process shall be done online on E-Tender portal of Maha-Metro. If bidder

	desires, the opening of bids may be witnessed by their authorized representatives.
ITB 25.4	Replace provisions of ITB 25.4 with the following: The opening of Bid shall be done online on E-Tender portal of Maha-Metro. The employer shall open the Bid using DSC (Digital Signature Certificate) of authorized officers of Maha-Metro. The opening log of Bid shall be generated automatically on E-Tender Portal and the printout of the same shall be retained in the tender file. The Bidders' representatives who are present at the time of bid opening shall witness the opening by signing the attendance sheet for record. The entire bid submitted by bidder shall be downloaded & printed for evaluation by a Tender Evaluation Committee.
ITB 25.5 (Additional Para)	After the evaluation of the Technical Bid in accordance with ITB 27, 28, 29 and ITB 30, the Employer shall prepare a list of responsive Bidders for opening of their Financial Bid. Unacceptable and non-responsive bids will be rejected and the corresponding Financial Package will not be opened. A date, time and venue will be electronically notified to responsive Bidders for announcing the result of evaluation and opening of Financial Bid. The opening of Financial Bid shall be done in presence of respective representatives of responsive Bidders who choose to be present. Result of Technical Evaluation shall be communicated electronically to successful bidders only.
ITB 25.6 (Additional Para)	All Financial Bid shall be opened by using DSC of authorized officer of Maha-Metro and the same shall be downloaded from the online E-Tender portal of Maha Metro. The contents of the Financial Bid are to be signed by bid opening committee of the Employer attending bid opening either in ink or by using DSC. The authorized representative of contractor are permitted to witness the opening process of Financial Bid.
E. Evaluation, and Comparison of Bids	
ITB 26.4 (Additional Para)	The Bid document & drawings/other technical details issued for this work is the property of Maha Metro (Employer) and shall be used solely for bidding

	purpose. It shall not be used in part or whole or altered form for any other purpose without the prior permission in writing of Maha-Metro. Bid shall be evaluated as per provisions of Section-4 of the Bid document which is Least Cost Based Evaluation system.
ITB 29.1.1 (Additional Para)	<u>Prior to the detailed evaluation of Bids, the Employer will determine whether each Bid:</u> a) All enclosures, declarations, formats are properly signed by authorized representative of bidder or authorized representative of lead member of a JV/Consortium b) The complete bid document including all corrigendum/addendum/clarifications issued time to time, prior to the submission of bid should be agreed by bidder and all required enclosures should be uploaded on the e-tender portal of Maha Metro through digital signature of bidders or through Digital Signature (DSC) of authorized representative of all member of a JV/Consortium c) has been accompanied by a valid Bid Security (as applicable); and d) meets the Qualification & Evaluation Criteria - Bidders, which do not qualify in any of the minimum eligibility criteria including Bid Capacity criteria and other criteria described in bid document elsewhere, shall not be considered for further evaluation of Technical packages and shall be rejected e) meets the other aspects of general evaluation as per BDS ITB 4.9 to 4.17 Absence of the above documents shall result in disqualification of the Bid/Bidder.
	Replace existing ITB 32 and its sub-Para as under
ITB 32.1	Bids will be compared in Indian National Rupees (INR) only. This will be achieved by conversion of the Foreign Currency if any, of the Bid into Indian Rupees by using the Exchange Rates of Reserve Bank Of India at the close of business of the Reserve Bank of India on 7 days prior to the day of Bid submission, and then adding the same to the Indian Rupee portion (if any) of the Bid. In case this particular day happens to be a holiday, the exchange rate at the closing of the business of the Reserve Bank of India on the previous working day will be considered.
ITB 33.1	Margin of purchase preference shall be applicable as per MAKE IN INDIA POLICY 2017 (latest Revision at the time of Submission of Bid). The relevant

	Circulars / office Memorandum enclosed attached as an Annexure-II A of BDS.
ITB 34.1	No subcontractor is nominated by Employer.
ITB 34.2	Not Applicable
ITB 34.3	Not Applicable
ITB 34.4 (Additional Para)	Sub-Contract Sub-contracting shall be limited to 50% of the awarded price of the work excluding the cost of design, if any. The terms and conditions of subcontracts and the payments that have to be made to the Subcontractors shall be the sole responsibility of the Contractor. For sub-contracts, it will be obligatory for the Contractor to obtain a "No-Objection" from the Engineer/ Employer. The credentials of the Sub-contractor and Vendor need approval of employer. The Contractor shall certify that the cumulative value of the subcontracts awarded is within the aforesaid 50% limit. Any proposals by the Bidders in their offer shall not be construed as an approval of the vendor. The Subcontractor / Vendor shall fully comply with the technical specifications included in the Works Requirements.
ITB 35.2	Replace existing ITB 35.2 as below: For evaluation of Price Bid, the employer shall consider the price bid submitted by the bidder making corrections for errors, if any, pursuant to ITB 31.2 above only. Price variation clause will not be considered for financial evaluation.
ITB 35.5	As per OM No, F 9/4/2020-PPD, Dt. 12.11.2020, Ministry of Finance, Department of Expenditure, Procurement Policy Division, Government Of India. (No provision should be kept in Bid Document regarding Additional Security Deposit / Bank Guarantee (BG) in case of Abnormally Low Bid) <u>Hence following pertains to ABG is not applicable to this tender.-</u> If bidder's quoted price is lower than the 10% of the estimated cost of the proposed work, Additional Bank Guarantee (APG) at the rate of 10% of the difference of the lowest allowable limit of quoting and quoted price by the

	bidders is to be furnished along with the normal performance bank guarantee (PBG). Additional Performance Guarantee (APG) shall be calculated as under:- A=Estimated cost of the work; B=Quoted price by the bidder; Difference of cost, $C=A-B$, if $C > (10\%A)$, then $APG = (C-10\%A) \times 10/100$ However, such bid may be accepted by employer solely at their discretion, after going through the cost analysis submitted by the bidder and finding it workable.
ITB 35.6 (Additional Para)	Variations, deviations, alternative offers and other factors which are not in line with the requirement and conditions of the bidding documents or otherwise result in the accrual of unsolicited benefits to the Employer shall not be taken into account in Bid evaluation.

F. Award of Contract	
ITB 39.1	Replace the existing ITB 39.1 with the following: Subject to ITB 38.1, the Employer will award the Contract to the Bidder whose Bid has been determined to be lowest evaluated bid in terms of ITB 35.6 and is substantially responsive to the Bidding Documents, provided that such Bidder has been determined to be eligible and qualified in accordance with provisions of ITB 4.
ITB 39.2 (Additional Para)	In case, Successful Bidder is a JV/ Consortium, then the Performance Security may be furnished on behalf of the JV/ Consortium either by the Lead Member or by all the Members of such JV/ Consortium in such proportion as may be agreed between them as per JV/ Consortium agreement.
ITB 40.4 (Additional Para)	The “Letter of acceptance” will be sent in duplicate to the successful Bidder, who will return one copy to the Employer duly acknowledged and signed by the authorized signatory, within one week of receipt of the same by him. The Letter of Acceptance will constitute a part of the Contract.
ITB 42.1	The Performance Guarantee required in accordance with Clause 4.2 of the GC shall be for an amount as specified in Section-6 Conditions of Contract in

	the form of a bank guarantee issued from a Scheduled commercial bank of India (excluding Cooperative Banks) or from a scheduled Foreign Bank having business office in India as defined in Section 2(e) of RBI Act 1934 read with Second Schedule in the types and proportions of currencies in which the Contract Price is payable.
ITB 42.3 (Additional Para)	The Bidder has to furnish other Guarantees, Undertakings, and Warranties, in accordance with the provisions of the General Conditions of Contract and Particular Conditions of Contract (refer ITB 43).
ITN 42.4 (Additional Para)	Failure of the successful Bidder to comply with the requirements of ITB 41 and ITB 42 shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security.
ITB 43 (Additional Para)	Guarantees and Warranties The Contractor shall submit other all Warranties, Guarantees as per the policy of OEM & Undertakings (as applicable) in accordance with Section-2 and Section-6 in the formats provided in Section-7-Bidding/ Contract forms regarding quality of services rendered to Maha-Metro under this Contract.
ITB 44 (Additional Para)	Insurance The Bidders' attention is drawn to the provisions contained in the General Conditions of Contract & Specific Conditions of Contract .

MAHARASHTRA METRO RAIL CORPORATION LIMITED
(Nagpur Metro Rail Project)

**Five-year Annual Maintenance Contract of CRRC make
Metro Rolling Stock including Intermediate Overhauling for
Nagpur Metro Rail Project Phase-1 of Maha-Metro.**

TENDER NO. N1-O&M-38/2025

Section 3: Eligibility Criteria



Maharashtra Metro Rail Corporation Limited
Metro Bhawan, East High Court Road (VIP Road),
Near Dikshabhoomi, Ramdaspath, Nagpur-440010,
Maharashtra, INDIA
Website: <http://www.metro railnagpur.com>

Section – 3**Eligibility Criteria****3.1 General:**

- 3.1.1 The Bids for this work shall be considered from only those bidders (either Single Entity or JV/Consortium) who meet requisite eligibility criteria prescribed in the following paragraphs of this section.
- 3.1.2 The Bids submitted by Bidders, which do not qualify the criteria specified in Section-3, shall be rejected.
- 3.1.3 Sole Bidder or any member of proposed JV/Consortium for this bid, should not have a 'Conflict of Interest' in this tender process. Bidders shall be considered to have a conflict of interest, if:
- (a) Bidders submit more than one bid for the work.
 - (b) Bidders having common controlling share holders in two or more bidding entities
 - (c) Bidders have common partner/s in two or more bidding entities
 - (d) Bidders having any family relationship with the any employee of Maha-Metro.
 - (e) Two or more than two bidding JV/Consortiums have common JV/Consortium members
 - (f) Bidders are already appointed as consultants of Maha-Metro for preparation of tender document, estimation, planning & designing of proposed work.
- 3.1.4 Sole Bidder or any member of proposed JV/Consortium for this bid, must not have been Banned/Blacklisted/Debarred, which is in force on the 'latest date of Submission of the Bid':
- A) for the reasons like supply of sub-standard material, non-supply of material, abandonment of works, sub-standard quality of works, failure to abide "Bid Securing Declaration" etc. by
 - (i) any Department / PSU / Subordinate Offices under Ministry of Housing and Urban Affairs (MoHUA)
 - or
 - (ii) any department of Government of Maharashtra
 - or
 - B) By Department of Expenditure (DoE), Ministry of Finance, Government of India from participating in any government bidding procedure.
- 3.1.5 Sole Bidder or any member of proposed JV/Consortium for this bid, should not have been listed in the exclusion list of World Bank, on the 'latest date of Submission of bid.

3.2 Technical & Financial Criteria:

Sr. No.	Subject	Requirement	Single Entity	Joint Venture/ Consortium		
				All Parties Combined	Each member	Any one member
1	Eligibility					
1.1	Nationality	Domestic Bidder	Must meet requirement	Must meet requirement	Must meet requirement	N/A
2	Financial Situation and Performance					
2.1	Financial Capabilities (cash flow)	The Bidder shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the cash flow requirements of 1.01 Cr.	Must meet requirement	Must meet requirement	Must meet Min. 20% (Twenty percent) of the requirement	For Lead Member: Must meet Min. 50% (Fifty percent) of the requirement
2.2	Bid Capacity	Required Bid Capacity(s) of INR 30.40 Cr. Evaluation of Bid Capacity:- The Bidders will be qualified only if their available bid capacity is more than the value specified in above table. Available bid capacity will be	Must meet requirement	Must meet requirement	Must meet requirement as per their % share of participation in JV	-

Sr. No.	Subject	Requirement	Single Entity	Joint Venture/ Consortium		
				All Parties Combined	Each member	Any one member
		calculated based on the following formula: Available Bid Capacity= $2 \times A \times N - B$ Where, A = Maximum of the value of works executed in any one year during the last 05 (five) financial years reckoned up to 31st March'2025 (Updated to price level of 31 March 2025 assuming 5% (for INR portion) and 2% (for foreign currency portion) inflation per year compounded annually) N = Number of years prescribed for completion of the present work B = Value of existing commitments as on first day of the month of this Bid submission i.e. for on-going works during completion period of proposed work. Proportionate value will be taken if it falls during the financial year. Note:				

Sr. No.	Subject	Requirement	Single Entity	Joint Venture/ Consortium		
				All Parties Combined	Each member	Any one member
		1. The available bid capacity should be more than specified value in above table 2. A certificate issued from a Statutory Auditor certifying A and B value must be enclosed with the Technical bid. The certificate must be with UDIN				
2.3	Net Worth	Minimum Net worth of Bidder ending 31 st March'2025 shall be positive. Note: Only Statutory Auditor's certificate required to be enclosed with bid. The certificate must be with UDIN.	Must meet requirement	Must meet the requirement	Must meet the requirement	Must meet the requirement
2.4	Average Annual Turnover	Minimum average annual turnover within last 5 years shall be 12.16 Cr. Note:- 1. Last five years shall be (FY 2020-21, 21-22 ,22-23, 23-24 & 24-25) 2. In case of Companies, which follows Financial Year as Calendar Year (January to December), data for 2024 shall	Must meet requirement	Must meet requirement	Must meet Min. 20% (Twenty Percent) of the requirement	For Lead Member: Must meet Min. 50% (Fifty) of the requirement

Sr. No.	Subject	Requirement	Single Entity	Joint Venture/ Consortium		
				All Parties Combined	Each member	Any one member
		be treated equivalent to the data of FY 20224-25 and so on. 3. Statutory Auditor's certified summary sheet of audited balance sheet need to be enclosed with bid. The certificate must be with UDIN 4. Copy of audited balance sheets also need to be submitted along with the bid				
3	Technical Criteria					
3.1	Required Work Experience	Bidder should have executed "Similar Work" during last 7 years period prior to the latest date of submission of bid and should be either of the following reckoned from the last day of the month previous to the one in which the latest date of the bid submission falls: i) The bidder must have executed "Similar Work" of cost not less than INR 4.86 Cr under "One Contract". ii) The bidder must have executed "Similar Work" of cost not less	Must meet requirement	Must meet requirement	NA	Lead Partner must have executed similar work of at least INR 2.43 Cr in 1 (one) contract

Sr. No.	Subject	Requirement	Single Entity	Joint Venture/ Consortium		
				All Parties Combined	Each member	Any one member
		than INR 3.04 Cr under each of the "Two Contracts". iii) The bidder must have executed "Similar Work" of cost not less than INR 2.43 Cr under each of the "Three Contracts".				

Notes:

- 1) Sole bidder or Members of the JV/Consortium submitting the bid should have been registered with any statutory body for at least 5 years before the date of issue of NIT. Bidders shall submit Certificate of Incorporation/Statutory Registration/Shop Act License certificate (As the case may be). Period shall be considered from the date of Incorporation/ Statutory Registration/Shop Act Registration of bidding Firm/Company.
- 2) "Similar Works" means work of either of the (i) or (ii) below completed or ongoing contracts wherein the bidder should have received the payment more than the qualifying amount (as defined in 3.1 i,ii & iii above) in last 7 years for the below works. Client certificate for the payment received should be produced along with the bid.
 - i) Maintenance or Testing or Commissioning Works of Metro trains/subsystems, Electric Locomotives/subsystems, Suburban trains/subsystems including their Overhauling.
 - Or
 - ii) Manufacturing of Metro trainsets, Electric Locomotives, Suburban trains.

in Metro Rail Projects (Government or private owned) OR Railways OR Public Sector Undertakings under Ministry of Railways (GOI) OR Railway SPVs OR Private Railway Systems owned by any Corporate listed in BSE/NSE, as a direct contractor or sub-contractor as a JV/Consortium member.
- 3) "Executed Work" means either Fully completed or Ongoing Works, during last 7 years period reckoned from the latest date of submission of bid, subject to certification of amount of work done by the employer.

-
- 4) Deleted
 - 5) The Bidder shall submit details of '*Similar Work Experience' in the Form given in bidding forms along with documentary proof such as client's certificates as mentioned above.
 - 6) Sole Bidder or members of proposed JV/Consortium for this bid, shall submit summary of financial data & turnover for last five audited financial years (FY 2024-25, FY 2023-24, FY 2022-23, FY 2021-22, FY 2020- 21), duly certified by Chartered Accountant along with his stamp, signature and UDIN.
 - 7) In case of audited Balance Sheets of Financial Year 2024-25 are not Available, Sole Bidder or members of proposed JV/Consortium for this bid, shall submit Provisional Balance Sheets duly certified by Statutory Auditor/ Chartered Accountant with UDIN.
 - 8) JV/Consortium of Maximum 2 members is allowed.
 - 9) The Lead Member must have minimum 51% contribution in the proposed JV/Consortium and Other Members must have minimum 20% contribution in the proposed JV/Consortium.
 - 10) Full (100%) experience for previous works of the JV/Consortium shall be considered, if the claiming member of the JV/Consortium has at least 60% share in previous JV/Consortium for the relevant referred Work Experience, else proportionate quantum of experience of previous works up to the percentage share of participation in the previous JV/consortium shall be considered.
 - 11) If any member has less than 20% share in previous JV/consortium, his experience shall be considered as non-substantial and shall not be considered for evaluation.
 - 12) Existing JV/Consortium already worked/working in any department & meeting the eligibility criteria of '*Similar Work', mentioned above, can bid with the same JV/Consortium configuration as a Single Entity.
 - 13) Registration under Provident Fund: Bidder (Sole Bidder or members of JV/Consortium) will be qualified only if they are registered with Provident Funds Department. Bidder has to submit notary attested copy of the certificate of PF registration.
 - 14) ESIC Registration: The bidder (Sole Bidder or members of JV/Consortium) will be qualified only if they are registered with ESI. Bidder has to submit notary attested copy of the certificate of registration with Employee State Insurance Corporation.
 - 15) GST Registration: - The bidder (Sole Bidder or members of JV/Consortium) must have a valid GST registration under the relevant act. Bidder has to submit copy of the certificate of registration.

- 16) The Bidder (Sole Bidder or JV/Consortium) shall submit an Affidavit along with the bid, stating that it shall comply with all relevant statutory norms like Minimum wages, Employees' provident fund, Employees State Insurance & GST as well any legislated obligations during entire execution period of the contract.

MAHARASHTRA METRO RAIL CORPORATION LIMITED

(Nagpur Metro Rail Project)

Five-year Annual Maintenance Contract of CRRC make Metro Rolling Stock including Intermediate Overhauling for Nagpur Metro Rail Project Phase-1 of Maha-Metro.

TENDER NO. N1-O&M-38/2025

Section 4: Evaluation Criteria



Maharashtra Metro Rail Corporation Limited
Metro Bhawan, East High Court Road (VIP Road),
Near Dikshabhoomi, Ramdaspath, Nagpur-440010,
Maharashtra, INDIA
Website: <http://www.metrorailnagpur.com>

Section-4**Evaluation criteria**

An evaluation committee will be constituted by Maha-Metro to evaluate the Technical proposals. The evaluation will be based on their responsiveness to the tender conditions, and will be done by applying the evaluation criteria. A Proposal shall be rejected at this stage if it does not respond to all aspects of the Technical Qualification & Evaluation criteria.

- a) Financial Proposals will remain unopened for those Agencies which fail to meet the minimum technical criteria given in Section-3.
- b) Financial Proposals shall be taken up only with those firm/company who meet the technical criteria.

Financial evaluation of proposals:

The financial evaluation will be carried out based on, service charges of the Contractor, other charges etc. The authority will determine whether in the financial proposals are complete, unqualified and unconditional. The cost indicated the financial proposals shall be deemed as final and reflecting the total cost of services. Omission or mistake in calculation of obligator payments such as ESI, PF, HRA, and LWF etc. will be disqualified.

The Employer shall award the Contract to the Bidder whose bid has been determined to be the lowest evaluated bid price and is substantially responsive to the Bidding Documents, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.

MAHARASHTRA METRO RAIL CORPORATION LIMITED
(Nagpur Metro Rail Project)

Five-year Annual Maintenance Contract of CRRC make Metro Rolling Stock including Intermediate Overhauling for Nagpur Metro Rail Project Phase-1 of Maha-Metro.

Section-5: Scope of Work

Tender No: N1-O&M-38/2025



Maharashtra Metro Rail Corporation Limited
Metro Bhawan, East High Court Road
(VIP Road), Near Dikshabhoomi,
Ramdaspath, Nagpur-440010,
Maharashtra, India.
Website: <http://www.metro railnagpur.com>

Section-5**Index**

Sr. No.	Description
Part-A	Rolling Stock
I	Scope of Work
II	Key Performance Indicators
III	Penalties
IV	Scope during Intermediate Overhauling
V	Scope of Predictive & Condition Based Monitoring
Part-B	List of Documents attached
Appendix 1	Maintenance Checklists
Appendix 2	List of Spares available at Nagpur Metro Depots
Appendix 3	List of Consumables to be arranged by the contractor
Appendix 4	List of IOH spares to be arranged by Contractor
Appendix 5	List of documents to be made available at Nagpur Metro Depots

I. Scope of Work:**A. Preventive Maintenance-**

1. Contractor shall provide service at 2 depots of MAHA Metro, Mihan depot and Hingna depot in Nagpur.
2. Contractor may Carry out the service checks detailed in **Table-1** below:

Type of Inspection	Km	Car builder's Estimation			Total No. of Inspections per year	Total Man Hours
		No. of Person	Stop time	Man Hours		
Daily Inspection	NA	2	1 hr	2	6969	13938
Weekly Inspection	3125	4	2 hrs	8	920	7360
Monthly Inspection	8000	8	4 hrs	32	184	5888
3 Monthly Inspection	25000	10	8 hrs (1d)	80	46	3680
Semi Annual Inspection	50000	12	16 hrs (2d)	192	23	4416
Annual Inspection	100000	20	40 hrs (5d)	800	23	18400
Total						53682

Notes:

The contractor shall complete the services as per the stipulated time schedule as given above. The allowable response time for each category of maintenance shall be as under:

- i. Services of Preventive maintenance-maximum response time of 30 minutes.
 - ii. Services of Corrective Maintenance-maximum response time of 2 Hrs.
 - iii. The maximum allowable completion time will be reckoned from the time at which the response from Contractor arrived at site.
 - iv. Intermediate Overhauling of all the trainset after each train completes 7.5Lac KM running.
3. The Contractor shall carry out maintenance activity as per maintenance check list issued to contractor by Maha Metro and attached at Appendix 1. Contractor shall follow proper EHS guidelines and shall implement safe practices inside MAHA Metro premises.
 4. The contractor's maintenance personnel shall independently be capable of executing and supervising the rolling stock maintenance activities and download train energy

consumption data and TCMS event log data on daily basis for the revenue trains.

5. The train will be handed over by MAHA Metro to the contractor's maintenance personnel and after performing maintenance as per stipulated procedures, the fit train shall be handed back to MAHA Metro.
6. Mahametro will issue of job cards to the contractor for each activity and job cards Closure after work completion by contractor's maintenance personnel shall form part of this process. The Job cards will be issued only to competent Shift engineer.
7. The Services mentioned in this document are generally for preventive & corrective maintenance of Rolling Stock. Breakdown maintenance measures shall also be taken up by Contractor on the instructions of Maha-Metro at the time of breakdown.
8. The on-job-training will also be supported by MAHA-METRO if required, However the contractor's staff should be capable of doing the work independently.

B. Estimated Human resource for AMC of 23 trains in 2 depots

As per previous experience, the minimum manpower required to handle all the maintenance works, based on 8-hour work shifts, is estimated as total 59 persons i.e., 30 persons at Hingna depot for 12 trains and 29 persons at MIHAN depot for 11 train sets. The same may be decided mutually during AMC stage.

Sr. No.	Maintenance Personnel	Minimum Availability
1.	Engineer / Supervisor	1 Per shift * 3 shift * 2 depots + 20% LR/RG = Total 15 nos.
2.	Technician	6 per shift * 3 shift * 2 depots + 20% LR/RG = Total 44 nos

C. Corrective maintenance:

1. The contractor shall attend train failures reported in depot and during the revenue service. If required, maintenance personnel may need to attend the failure on mainline to support the operating staff.
2. The contractor shall collect the sub system fault logs and data on every service failure including Train Control Management System (TCMS) data and RTDM and Sub system data.
3. The contractor shall analyze failure to determine the cause of failure and submit the failure investigation report for MAHA-METRO review.
4. The contractor shall determine the correction method for the defective component / equipment (If necessary) with the approval of MAHA Metro.
5. The contractor shall rectify the failure, either by wiring correction or replacement of defective component/equipment, to make the train fit for revenue service.
6. The contractor shall ensure the sub system performance after the rectification of failure.

7. The contractor shall carryout Fleet checks as and when required, based on advice of MAHA Metro.
8. Retrofits and modifications required to avoid recurrence of failures are included in the scope of work. The contractor shall carry out these out as per advice of MAHA Metro.
9. All corrective maintenance shall be time bound and shall comply with the stipulated time.
10. Contractor shall be penalized for mainline passenger de-boarding/rescue operation caused because of improper maintenance/workman-ship issues. Decision of Maha METRO in this respect shall be final and shall be based on records.
11. Contractor shall be held responsible for Pre-departure failures, Service withdrawal, End of the line failures due to improper maintenance/workman-ship issues and those failures need to rectify by contactor within 48hrs of failures. If contactor fails to rectify the failure within 48 hrs., he shall be penalized as per MAHA- Metro discretion.
12. Contactor shall be held responsible for all maintenance relevant failures including NFF (No Fault found) shall be calculated as Service affecting failures.
13. Depending on the work, contractor shall provide man power to meet the requirements of corrective maintenance work. Contractor shall ensure availability of this minimum man power during the contract period as detailed below in table. The minimum manpower required to handle the above work content is estimated as 59 persons for both depots as described in above Table. Contractor should ensure that a minimum of 6 Technician & 1 Supervisor per shift are available on all 365 days including Sundays & Public holidays.

D. Training of maintenance personnel:

1. The contractor is responsible for providing training to maintenance personnel for executing the maintenance tasks. However, basic training on maintenance shall be provided by Maha-Metro for initial contractor staff.
2. Re-training is in scope of contractor for recruitees deployed as replacement of initial staff. The contractor has to prepare handouts and other training material, class room on job training to them.
3. The allowed period of training will be 30 days. On successful completion of training, competency certificate shall be issued by Maha-Metro for one year. The competency certification procedure shall be approved by Maha Metro. The tenure of unsuccessful candidates shall be discontinued & contractor at his own cost shall re-train the new personnel. No re-training will be provided by Maha-Metro. The certification needs to be renewed every year by contractor duly reviewing the competency of the candidate.
4. Possession of valid competency certificate is a pre-requisite for performing rolling stock maintenance services.

E. Training Support by MAHA Metro:

1. MAHA Metro will support for training of maintenance Personnel to familiarise with the Metro Rolling Stock for a period of Thirty days from the date of their induction.
2. Maha-Metro shall provide training on different types of scheduled, unscheduled,

- stores, spares usage etc., for initial period only. If the trained personnel of the contractor leaves/resigns from contractor payroll, Maha-Metro shall not provide training to new incumbent. Charges for the training shall apply in that case.
3. The above support will be provided one time and free of cost.
 4. Safety induction training to work in MAHA metro premises will be provided.
 5. MAHA Metro will arrange for any technical support required from suppliers in case of major failures or typical failures.
 6. The contractor shall ensure the materials, tools etc., including those required for the work being executed in the train-set are being kept in an orderly manner and shall ensure removal of any debris and other materials before the work completion.
 7. At the end of the contract period or termination, all the equipment, hand tools, software, maintenance data, hard copies of maintenance documents, maintenance manuals, site office and any other items belonging to Maha Metro shall be handed over back in good condition to Maha Metro. Any damages found shall be charged and recovered from the contractor whatever amount Maha Metro feels appropriate.
 8. Contractor personnel shall perform all the activities of the maintenance & update the same in DotNet platform (Digital O&M Platform) of Maha-Metro. Contractor shall integrate the AMC services with this Digital O&M platform so that, regular updates on maintenance, interface, joint inspection reports, inventory management etc., is done through digital O&M platform. Necessary training to the staff for using the O&M platform shall be provided by Maha-Metro.
 9. It shall be ensured that, KPIs of the contractor/AMC services are monitored through Maha-Metro O&M platform & its mobile application. Contractor shall co-ordinate & interface with Maha-Metro IT to further integrate & add the necessary changes/modifications so that complete monitoring of KPIs, AMC services monitoring, spare management, reporting etc., is made possible through the O&M platform and its mobile application.

F. Division of work:

Sr. No.	Work	Scope	
		Contractor	MAHA METRO
1	Maintenance Facility	--	i) The maintenance facility and related equipment, tools, tackles etc. Depot area, major M&P ii) Power supply and water supply

Sr. No.	Work	Scope	
		Contractor	MAHA METRO
2	Material - Spares and consumables	i) Uniforms, Cotton gloves, Face/Nose masks, Ear plugs and other PPE kits. ii) Consumables spares as per list enclosed. iii) IOH spares as enclosed. Contractor shall replenish the spares obtained from Maha-Metro by the end of financial year @ 10% overhead to the actual invoice from OEMs	i) Maintenance spares that are required for maintenance as per list provided in Appendix 2 ii) Special Tools shall generally be supplied by Mahametro. If required, contractor shall purchase and MAHA Metro shall reimburse the "Actual Cost + 10% overhead in each case of procurement by contractor (after submission of invoice).
3	General Tools	General tools, Torch, Spanners, Screw drivers, Allen keys, crimping tool, Pin remover etc.	Penalty on Loss/Damage of Mahametro Tools/Jigs/fixtures as per actual cost of Tools and case to case reviewed appropriately.
4	Special tools, Jigs and Fixtures	--	Special tools, Jigs and Fixtures required for maintenance work.
5	Test Instruments	General instruments like Multimeter, Megger etc..	Measuring and test instruments required for Maintenance work.
6	Office space	--	Office space at site.
7	Training Support	Internal training and staff Competency	MAHA metro shall provide initial training support.
8	Workshop arrangement	Carryout train equipment overhaul. Uncoupling of cars, Crane operation and	-

Sr. No.	Work	Scope	
		Contractor	MAHA METRO
		Lifting/Lowering of train.	
9	Measurement and Testing of Preventive Maintenance	Testing as per the check list provided by MAHA Metro	Any testing other than the items given in check sheet
10	Failure	Investigation/Rectification	Arrange the repair and investigation of fault component/equipment
11	Retrofit/Modifications	Retrofitting works, Hardware/Software modifications	
12	Train Fitness test / Pre departure checks	Ensuring train fitness	Issue of Train fitness for revenue service

II.

Key Performance Indicators

Sr. No.	System	Max Weightage (%)	Evaluated Marks (%)
1.	Bogie system	5	
2.	Brake system	5	
3.	High Voltage system and Sub system	5	
4.	Propulsion System & TCMS	5	
5.	Door System	5	
6.	PAPIS system	4	
7.	HVAC system	4	
8.	Low voltage system/ Battery	3	

Sr. No.	System	Max Weightage (%)	Evaluated Marks (%)
9.	Coupler & Gangway	2	
10.	Carbody & Interior (seat/grab pole etc)	2	
11.	Discipline & Punctuality, Uniforms with necessary PPE's, safety and protective gear for respective work. Following of safety rules / procedures pertaining to outsourced staff issued by MAHA-METRO from time to time or as per international standards.	5	
12.	Availability of sufficient Man power and ensured.	5	
13.	Should have in depth Technical Knowledge in all system for quick trouble shooting and rectification of issues in time.	5	
14.	Promptness in attending the failures and complaints on time whenever raised with necessary consumables, Spares, Tools and Tackles wherever required	5	
15.	Complete Preventive and Corrective maintenance work as per schedule	20	
16.	Monthly report and other required reports submission as per requirements on time or as and when required by MAHA-METRO.	5	
17.	Should coordinate with other agencies as and when required for work execution and completion on time.	5 5	
18	Availability of required Tools &Tackles, consumables on time	5 5	
19.	Day to day maintaining of records in SAP system	5	

Sr. No.	System	Max Weightage (%)	Evaluated Marks (%)
	GRAND TOTAL	100	

The existing manual for Operation & Maintenance of Mahametro is to be followed for deciding the KPI and Preventive maintenance check sheet.

Performance Management – Payment shall be made based on Performance of the Contractor as per above KPI as explained below. The overall performance grading will be done on a monthly basis. The payment as per the bill raised by the contractor will depend upon the overall score obtained by the contractor. 20% of every monthly bill shall be withheld on account of KPIs. This 20% of payment shall be released quarterly based on the average monthly KPI. The payment terms of the quarterly KPI payment shall be as below:-

- Monthly Score of 95% and above: 100% payment
- Monthly Score of 85<95%: 95% payment
- Monthly Score of 75<85%: 85% payment
- Monthly Score of 70<75%: 75% payment
- Monthly Score of 60<70% : 50% Payment
- Monthly Score of < 60% : no payment

Further, if the monthly **KPI** score is consistently **below 75%** for 3 consecutive quarters then the **contract will be subjected to termination.**

If the monthly **KPI** score is consistently **below 75%** for 3 consecutive months or for more than 6 months in a period of one year from the date of issue of LOA, it will attract a penalty of **Rs. 100000/- (Rupees One Lakh only)** in the subsequent monthly bill or subsequent years first monthly bill.

KPI forms shall be submitted every month along with invoice submission.

Note: Specified KPI formats have to be frozen and got approved from Maha-Metro within 30 days from the issue of LOA.

The above KPIs shall be applicable for the preventive, corrective & breakdown maintenance works but not for IOH.

III. Penalties

1. Any depot or main line detention or late start or loss of punctuality of trains whatsoever that may arise out of poor workmanship, failure to observe stipulated procedures, failure to observe safety procedures or carelessness during the course of maintenance, will be penalized for every event. For every event, a penalty of INR 5,000 (Indian Rupees Five Thousand only) will be imposed on the contractor. The penalty amount will be deducted from the bills payable to the contractor for the month. However, this will not include the detention or delay or loss of punctuality to trains on account of design failures or any other

failure, MAHAMETRO decision is final and binding.

2. Delay in attending the preventive maintenance (as per Scope of Work) on the part of the contractor will invite penalty of INR 5,000 (Indian Rupees Five Thousand only) per activity per train-set subject to limit of ten (10) percent of contract price. The calculation of delay will start from expiry of downtime per train-set given in Table of Scope of Work.
3. Delay in attending the services of Corrective maintenance and Optional services on the part of the contractor will invite penalty of INR 5,000 (Indian Rupees Five Thousand only) per day per train-set subject to limit of ten (10) percent of contract price. The calculation of delay will start from expiry of maximum allowable completion time.
4. Failure to follow the monthly work schedule leading to overdue service checks on account of contractor shall attract a penalty of INR 5,000 (Indian Rupees Five Thousand only) plus the amount as stipulated in Table below.

Sr. No.	Service Check	Penalty per Overdue check per day
1	Daily Inspection	₹ 1000
2	Weekly Inspection	₹ 2000
3	Monthly Inspection	₹ 4,000
4	3 Monthly Inspection	₹ 6,000
5	Semi Annual Inspection	₹ 8,000
6	Annual Inspection	₹ 10,000

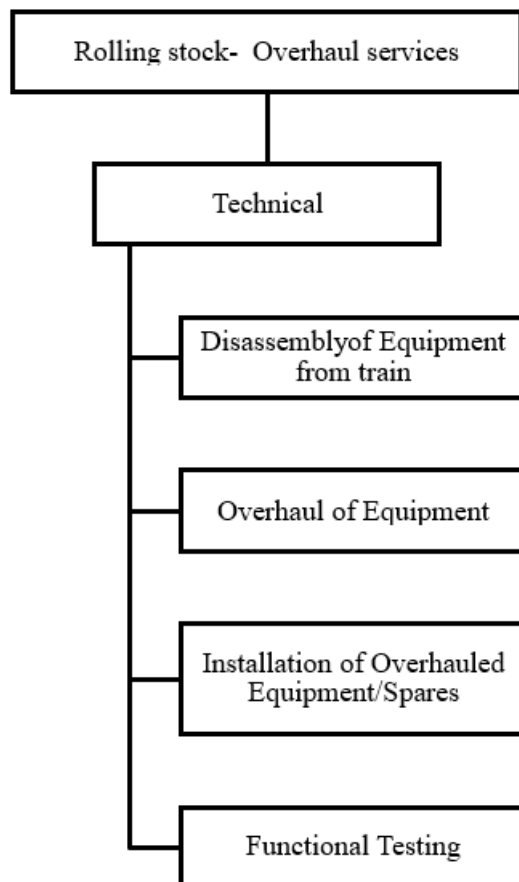
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6. If any accident occurs due to execution of work or due to negligence on the part of the contractor's personnel, it shall be the full responsibility of the contractor. If any damage occurs to the structures/material & equipment as well as rolling stock due to contractor's work, the cost of damages will be recovered from the contractor's bill. The firm must maintain a 'Zero Accident' record. In case of occurrence of any safety incident/major accident/fatality, a penalty not exceeding ten (10) percent of total contract value shall be levied. This penalty will be in addition to the other penalties specified under other appropriate clauses.
7. If the contractor's maintenance team is found to be without proper ID badge, uniform, helmet, safety shoes, other appropriate PPE, and indulging in practices in violation of the safety procedures laid out by the Employer, a penalty of INR 200 (Indian Rupees Two Hundred only) for every case of violation shall be imposed on the contractor
8. **Additional Penalty for non-compliance of Statutory & other requirements by**

Contractor

Sr. No.	Parameters	Conditions	Penalty for non-compliance
1	Payment of minimum wage	Payment to the staff/employee of Contractor should be done on or before 7th of each month, complying the minimum wages Act of Govt of Maharashtra.	INR 10000/- to be deducted from monthly bill of that month.
2	ESI & EPF facility	Compliance of ESIC & EPF facilities by Contractor & Detail submission of ESI & EPF (Employer & Employee) contribution of each Employee to Maha-Metro.	INR 10000/- to be deducted from monthly bill of that month.
3	Response of Official correspondence & compliance of instructions of Maha-Metro	Time bound Response of official correspondence & compliance of instructions within 7 working days from the date of issue of letter & instructions. Note: Instructions & its Compliance shall be recorded in 'Instruction book' by Engineer of Maha-Metro & signed by Contractor's representative & Maha-Metro both.	INR 5000/- to be deducted from monthly bill of that month.
4	Arrangement of first aid facilities for staff at work site.	First Aid Box with all required emergency medicines & SOP to be provided and maintained at site by Contractor.	INR 5000/- to be deducted from monthly bill of that month.
5	Submission of Monthly bill duly enclosing all documents as per contract	Contractor shall submit monthly bill on or before 10th day of subsequent month.	INR 2000/- to be deducted from monthly bill of that month.

IV. Intermediate Overhauling of Maha-Metro trainsets.

1. Overhauling of rolling stock includes activities like train preparation for overhauling, Removal of equipment from train, overhauling of equipment, replacement of new/ overhauled train parts, Functionality checks after overhaul.
2. Currently, Maha-Metro Nagpur Metro Rail project has 23nos of trainsets. These trainsets are liable for the said overhauling after their running KMs exceeds 7.5Lacs per train. The train which has completed 7.5Lacs running KMs shall be offered for overhauling to the contractor however, Maha-Metro at its sole discretion can provide the trainsets for overhauling at any time during contract period.
3. Maha-Metro shall offer the trainsets to the contractor with a notice of 30 days.

A. Scope of overhauling**The scope of overhauling includes but not limited to following services**

- a. Procurement of Consumables, Hand tools and special tools required for day-to-day activities in overhauling by contractor at his own cost. List of IOH spares is given in Appendix 4.
- b. Receiving the spare parts or IOH spares to be replaced during the overhauling process from the MAHA- METRO stores.
- c. Preparation of train allocated by MAHA-METRO for overhauling by covering the floor, removing the panel covers, loosening of fasteners, etc., as required.

-
- d. Removal of equipment to be overhauled or replaced.
 - e. Carry out the overhaul activities outlined in the document titled "Maintenance Checklist –
 - f. Unwheeling Repair including cleaning & dust blowing.
 - g. Replacement or Re-fixing of overhauled equipment in train as per stipulated procedure.
 - h. Functionality check of sub-systems and train.
 - i. Returning the spares to MAHA-METRO stores after overhauling.
 - j. Documenting all the activities which were done during overhauling.
 - k. Recording all the activities, readings/measurements taken and all the materials transactions during overhauling.
 - l. Submission of check sheets after overhaul
 - m. Interface with Maha-Metro Dot-Net platform regarding overhauling data.

A. Scope of Maha-Metro during Overhauling

- a) The maintenance area, Depot M&P (whichever is available at depots), The list of spares which are available with Maha-metro are given in appendix 2. Overhauling spares as listed in Appendix 4 shall be procured by the contractor at his own cost for the purpose of overhauling the NMRP trainsets. There is no need to replenish the IOH spares as listed in Appendix-4
- b) Office space and rest rooms will be provided by MAHA-METRO at free of cost. However, the necessary office set-up, furniture, misc office equipment/ equipment/stationery required shall be arranged by the contractor at their own cost.
- c) Rooms/Space for storage of Consumables, Materials, Spares, etc. will be provided by MAHA-METRO. The arrangements such as racks, hangers, stackers, holders, etc., required for safe storage shall be provided by MAHA-METRO.
- d) Electrical supply, Pneumatic supply and Water supply will also be provided by MAHA-METRO for the purpose of overhauling & maintenance of NMRP trainsets.
- e) Consumables that are required for complete Overhauling service to Rolling stock will be supplied by Contractor. The list of consumables that contractor should arrange is given in Appendix 3 below.
- f) Any additional consumables required for rolling stock overhauling shall be purchased by the contractor and the purchased bills shall be submitted to MAHA-METRO with overhead charges (10%) (after submission of invoice) and shall be claimed from MAHA-METRO while claiming bills for overhauling, preventive, corrective & breakdown services.
- g) The Contractor can propose any alternate consumables based on the performance and economical aspects. The alternate items/consumables can be used by the contractor with prior approval from MAHA-METRO only. Financial impact due to the same shall be decided by Maha-Metro.
- h) Environment friendly consumables and chemicals to the extent possible shall be used for cleaning of trains. These should be free from harmful chemical reactions, odour and

shall not affect the passengers/employees, materials and equipment etc.

- i) Uniforms, cotton gloves, face/nose masks, ear plugs and other PPEs required for overhauling service to maintainers shall be provided by the contractor at their own cost.
- j) Special tools (whichever are available) that are required for Overhauling service to Rolling stock will be provided by MAHA- METRO at free of cost.
- k) Any additional tools required for overhauling service shall be purchased by the contractor with prior approval of MAHA-METRO. The purchased bills shall be submitted to MAHA- METRO with overhead charges (10%) for necessary claim (after submission of invoice).

B. Manpower for Overhauling Services

- a. Minimum maintenance staff required for overhauling or maintenance services is given in clause I(b) above. If contractor wishes to deploy additional staff or specialized staff for overhauling services, the same can be recruited/deployed by contractor. Police verification report of all staff employed by the contractor shall be submitted to MAHA-METRO.
- b. New recruitment or relieving of staff shall also be intimated to MAHA-METRO in prior. A period of 90 days will be allowed as stabilization period where the contractor has to provide their services with their competent staff.
- c. This period is for the contractor to stabilize in all aspects such as shortfall of resources, arranging the materials & Consumables in case of any shortage, preparing their stores and office space, etc.,
- d. The normal timeline for completing the overhauling activities and releasing one train is 30 days. Contractor may perform overhauling in 3 shifts. The contractor shall make all arrangements necessary for completing the activities within the time period required for the respective train.

C. Safety, Quality & Environment:

- a) MAHA-METRO rolling stock is a sophisticated system with adequate safety provisions in-built for maintainers. Various safety measures need to be observed while performing RS overhauling service. Hence, usage of relevant Personal Protective Equipment (PPE) is mandatory during rolling stock overhauling service. Safety belt for working at height, Helmet, Safety Shoe, Aprons, cotton gloves, nose mask, face mask and ear plug form a set of PPE. Provisioning and renewal of PPE to maintainers shall be the responsibility of the contractor, at their own cost.
- b) The MAHA-METRO rolling stock is designed for a service life of 30 years. Keeping the healthiness of rolling stock in fettle for such a long period is solely dependent upon the quality of maintenance. It is expected from the contractor to establish a good quality culture and adopt best practices. The contractor shall strive for continual improvement in quality of RS overhauling & maintenance services.
- c) The working environment needs to be maintained with utmost cleanliness. Better maintenance practices need to be followed to avoid spillage of oil, grease and other consumables. Removed packaging materials of spares used waste clothes, etc. to be disposed in bins provided in the maintenance shed. All removed spares shall be handed back to stores.

- d) The depot premises are having high voltage over-head electric lines, high voltage equipment on train and depot, movement of trains in the depot, rail track, sophisticated equipment etc., which may cause major injury, electrocution or even death to the personnel and thus requirements for safety observance are very high. Hence, usage of relevant personal protective equipment (PPE) and observance of all laid out precautions are mandatory during overhauling service.
- e) In case of fire or observing anything unusual on electric traction equipment or wires, the contractor personnel shall promptly inform PPIO. Power Block procedures and other safety procedures issued by MAHA-METRO from time to time shall be followed without any violation by the contractor.

D. Audit & Inspection by Maha-Metro during Overhauling

- a. MAHA-METRO will perform random, periodic or continuous audits to ascertain the quality of overhauling to the expected levels. Maha-Metro depot incharges & Officers shall check, review during & after the overhauling services. Any discrepancy related to missing items, bad workmanship, damage to the train, violating Maha-Metro rules, indecent behaviour of contractor staff shall lead to penalty.
- b. The contractor shall strive to exceed the expectations of MAHA-METRO through continual improvement of methods, work sequences, motion economy and practices.

E. Other Conditions:

- a. The Contractor has to fill all the details such as man power deployed, work done on the particular day, and close all the job cards raised related to overhauling within the time. Progress report shall be submitted to MAHA-METRO on train-to- train basis throughout the contract period. The works mainly include planning and execution of overhauling service to Rolling stock, and timely completion of overhauling activities.
- b. Necessary training support to execute the overhauling activities, based on the "Maintenance Checklist - Unwheeling Repair", on the first train, will be provided by Maha Metro. The training will cover detailed instructions, based on the procedures outlined by MAHA- METRO/OEM, as per the maintenance manuals.
- c. The required documentation for performing the overhauling tasks, including Maintenance Manuals, Drawings, and Spare Part Catalogues etc. will be provided by Maha Metro
- d. The contractor shall inform MAHA-METRO of any OEM support required during the overhauling period, and MAHA-METRO will arrange the necessary support accordingly.
- e. All the equipment, hand tools, software, maintenance data, hard copies of maintenance documents, maintenance manuals or any other items belonging to MAHA-METRO shall be handed back to MAHA-METRO at the end of the contract period or in case of termination.
- f. Payment will be made to the contractor by MAHA-METRO per train basis for the overhauling service. Maha-Metro is liable to make payment/levy penalty based on the satisfactory performance of overhauling services for each trainset as per clause E above. The Contractor shall submit bills for any additional tools/ consumables purchased along with the original invoice.

V. Scope of Predictive & Condition Based Monitoring & Maintenance (PdM)

- a. The TCMS data from each Rolling Stock is desired to be transmitted through a central server at OCC (procured by Maha-Metro) in real-time basis automatically. The transmission link is provided Signalling Contractor (Maha-Metro). The data thus collected shall be analysed for predictive maintenance & condition-based monitoring.
- b. In order to create real time data monitoring of individual subsystems inside the Rolling stock with the help of sensors and devices, IoT devices & sensors shall be installed by contractor in underframe, car-body, saloon, roof etc., These sensors collect the real time data and send it to TCMS or any other Predictive maintenance (PdM) controller allowing the predictive maintenance, operational efficiency improvements and enhanced safety measures. Few data related to propulsion, onboard signalling unit, train health etc., are already monitored by TCMS in real time basis, However, Maha-Metro would like to monitor further equipment which needs installation of few sensors/IoT devices.
- c. Contractor shall install these sensors for PdM system in all the NMRP rolling stock. Contractor can propose IOT devices & predictive maintenance algorithms to track the real-time performance of rolling stock for reducing the unplanned maintenance.
- d. The parameters like temperature, pressure, humidity, friction heat, lubrication, flashing, current/voltage etc., are to be monitored for different relevant subsystems like doors, brakes, motors, cables etc., These parameters shall be examined during maintenance and the failures/repair can be predicted.
- e. PdM system in rolling stock shall also result in optimizing the maintenance so that over maintenance can be reduced & manpower may be minimized.
- f. Predictive and Condition based Monitoring (PdM) involves integrating sensors and smart devices into the rolling stock. These devices continuously collect data, providing insights into the operational status of the trains. Artificial Intelligence (AI) takes the data collected by PCM and uses it to make informed decisions for improving the performance of rolling stock.
- g. Contractor in co-ordination with OEM of TCMS (MELCO), Transmission link vendor, Central Server vendor & DotNet platform shall enable the real-time data transmission of TCMS & PdM controller to Central Server & enable the data analytics. Proper interface between the subsystems shall be ensured so that the data generated is in readable and analysable format. Any items not mentioned in Appendix 1,2,3 will be re-imbursed to contractor (+10% overhead) upon submission of invoice
- h. Contractor shall submit PCM predictive maintenance proposal in his bid submission. What are the proposed sensors that are to be fitted in the train to monitor the parameters shall be submitted in bid
- i. Contractor shall analyse the PCM outputs and establish the predictive maintenance strategy. Suitable training for the Maha-Metro technicians/engineers shall also be provided.
- j. The work of monitoring, daily updating, utilization, data analytics etc., need to be done by contractor. Supply, installation, commissioning of sensors, hardware, software related to PdM shall be re-imbursed to contractor at actual basis + 10% overheads after submission of invoice.

APPENDIX - 1 MAINTENANCE CHECKLISTS

Given as Attachment 'Checklists'

APPENDIX 2 – LIST OF SPARES AVAILABLE WITH MAHA-METRO**Note:**

1. Depot Wise Spares, special tools/equipment available with Maha-Metro is attached. These spares shall be made available to contractor for corrective maintenance (under custody of Maha-Metro).
2. If contractor uses the Maha-Metro spares, then those spares need to be replenished by the contractor by the end of financial year @ 10% overhead to the actual invoice from OEMs .
3. Spares, special tools/equipment, IoT sensors, PdM technology (hardware/software) which are not in the above list but are required for the maintenance/execution shall be procured by contractor after approval of Maha-Metro. The same shall be re-imbursed at actual invoice + 10% overhead.

APPENDIX – 3 – LIST OF CONSUMABLES

Note :

1. The above consumables are to be arranged by contractor at their own cost. No reimbursement is allowed at any stage of maintenance/Intermediate overhauling for the above consumables.
2. The consumables which are not in the above lists but are felt necessary for maintenance/overhauling shall be procured by the contractor. The same shall be reimbursed at actual invoice + 10% overhead after submission of invoice.

Appendix – 4: Intermediate Overhauling Spares (IOH)**Note:**

1. The above IOH spares are to be arranged by contractor at their own cost. The relevant costs shall be quoted in the bid. No reimbursement is allowed at any stage of intermediate overhauling for the above consumables. IOH spares as per the list are to be arranged by the contractor. By the end of overhauling, there is no need to replenish the IOH spares.
2. The spares or any items which are not in the above lists but are felt necessary for maintenance/overhauling shall be procured by the contractor. The same shall be reimbursed at actual invoice + 10% overhead.

Appendix -5 List of Documents

1. List of Documents to be made available at Nagpur Metro Depots
 - a. Access to records of preventive, corrective and overhauling maintenance works, if any undertaken on the Trainsets to be handed over to the Contractor digitally in Dot Net
 - b. Access to records of preventive, corrective and overhauling maintenance works, if any, undertaken on M&Ps at MIHAN & Hingna Depot to be handed over to Contractor
 - c. Access to Maintenance instructions, Descriptions of Rolling Stock components, sub equipments, items along with Part Numbers, related drawings and system training modules.
 - d. Operation and Troubleshooting manual for Trains
 - e. Documents related to training topics such as Procedure Orders, Special Maintenance Instructions, Safety Circulars, Depot Working Order and overview of Assurances and Competency Certificates.
 - f. Visit to MIHAN & Hingna Depot and overview of M&Ps and different Depot activities.
 - g. Failure Details of spares / components and RAMS details of Trainsets
 - h. AutoCAD drawings of both Depot Layouts & Floor Plans
 - i. List of all the spares and consumable procured by Maha-Metro (Nagpur metro) along with the details of suppliers.

Job card No.	Train Set	Date & Time start			
	Kilometer	Date & Time Finish			
EQUIPMENT	CONDITION CHECK	DMA	T	DMB	Remark
1. Cab Equipment	1. Check the General cab appearance and cleaning.				
	2. Ensure BPRBB, ATCCS, EBLBB, PBABB, EBLB-LOOP1&2, UMVB, BNRBB & DCBB are Normal Position.				
	3. Check selector switch PSS-Auto, COMS-Auto, EHGS-off, WSS-off, Push Button, Switches, MCB'S - Normal				
	4. Check that Emergency Door is properly locked.				
	5. Check the condition of TO seat, Auxiliary seat and its proper movements.				
	6. Wind Screen & Cab Door Glass - No Crack/Scratch.				
	7. All Cover & Panels - Closed & Locked.				
	8. Check Availability of First Aid Kit in any one Cab (Mention Cab)				
2. Wind Screen	1. Check the Operation of wiper blade in all position, water level in water tank.				
3. DSD	1. Check Operation from Deadman Switch Device.				
4. MCB&Relay Panel	1. Check the condition of MCB & Relay Panel.				
5. Pneumatic & Brake System	1. Inspect MR Pressure (8.5-10 bar) by Gauge in the cab.				
	2. Check application & Release of Emergency Brake by EBB1 & EBB2				
	3. Check pneumatic audible leakage.				
6. Exterior Lights	1. Check for proper functionality of Head Light, Tail light, Call ON light, Flasher Light.				
7. PA/PIS, CCTV	1. Check the function of PA, PIS System (Cab-to-Cab)				
	2. Check manual announcement.				
	3. Visual and function check of PECU activation, LCD screen & DRM				
	4. Check the CCTV video images on MDS				
8. Passenger Saloon Door	1. Open/Close the passenger saloon Doors.				
	2. Check the results on TCMS Display, Check for doors indication of Unknown/Isolated Doors.				
9. Cab Side Door	1. Check for Status of doors open/close on TCMS & check cab light ON/OFF on cab door operation.				
10. Partition Door	1. Check for proper operation, indication and locking and their status on TCMS of partition door including rear cab. Cab light should glow when door operated.				
11. Saloon HVAC	1. Turn on the HVAC system and check the status on TCMS.				
	2. Check TCMS display for any faults of HVAC				
12. Cab AC	1. Function Check in L- Vent, H-Vent and Heat Modes.				
13. Saloon interior lights	1. Check function of saloon lights in OFF, Auto, 30%, 50%, 100% in TCMS & SLS switch.				
	2. Check driving console light, Cab main light				
14. Interior Facilities	1. Visual inspection of saloon interior (Grab Pole, Handrails, Passenger Seat, saloon and door glass for crack, Draught screen, Fire extinguisher availability its locking pin & pressure in green zone, Gangway, Body, marking and labelling etc.				
15. Under Frame Check	1. Visually Check for any loose or hanging component in under frame specially at brake, actuator, mono link, vertical arm, gearbox oil level & oil leakage etc.				
	2. Visual inspection of brake pads its thickness, crack, damage & their mounting.				
	3. Visual inspection of train equipment moving around the train specially inspection cover junction box, APS, CI visual inspection of primary suspension spring etc.				
	4. Visually inspect bogie and wheels for any abnormality.				
	5. Check for proper Mounting/Visual appearance of Main Compressor, Aux. Compressor, Transformer, BCU, CI, APS, Traction Motor, Couplers etc.				
	6. Check all isolating cocks are in their normal position & sealed.				
	7. Check the condition of WFL system, dust accumulation, operation.				
16. TCMS Equipment Status Check	1. Check the TCMS that there is no faulty equipment in the train.				
	2. Done the Onboard test for all the Systems.				
	3. Check TCMS Function - working normal, Date & Time				
	1. TBD Controller (Emergency Brake) - (Check TCMS & Gauge) (DM-2.5, T-2.3) ± 0.15				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Daily service check

EQUIPMENT	CONDITION CHECK	DMA	T	DMB	Remark																				
	bar																								
	2. FSB (From TBD Controller) - (Check TCMS & Gauge) 2.3 ±0.15 bar																								
	3. Brake application through DBV- (Check TCMS & Gauge) <3 bar BP																								
	4. Check Pressing EBB1/EBB2 Emer. Brake pressure (Check TCMS & Check Gauge)																								
18. Train Performance Test	1. Traction Motor Temp. (Check TCMS)	DMA	T	DMB																					
	2. Check Axle Box Temp. with infrared thermometer within 30 min after arrival of train in depot.																								
	3. SCS counter reading.																								
	4. Main Transformer Oil Temperature (Check TCMS)																								
19. Train Energy Consumption	1. Energy Consumption of Pantograph Level (kWh) Motoring																								
	Braking																								
	Total																								
	2. CI 1 motoring																								
	ED/Regen. Braking																								
	CI 2 motoring																								
	ED/Regen. Braking																								
	3. APS																								
	Braking																								
	Braking from Line																								
	4. Main Air Compressor Run Hours Current Reading																								
Battery voltage	battery-1	battery-2	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">ON BOARD TEST RESULT</th> </tr> </thead> <tbody> <tr> <td>CI</td> <td></td> <td>HVAC</td> <td></td> </tr> <tr> <td>APS</td> <td></td> <td>PAPIS</td> <td></td> </tr> <tr> <td>BECU</td> <td></td> <td>CCTV</td> <td></td> </tr> <tr> <td>DCU</td> <td></td> <td>ER</td> <td></td> </tr> </tbody> </table>			ON BOARD TEST RESULT				CI		HVAC		APS		PAPIS		BECU		CCTV		DCU		ER	
ON BOARD TEST RESULT																									
CI		HVAC																							
APS		PAPIS																							
BECU		CCTV																							
DCU		ER																							
VCB close																									
VCB open																									
Inspected By																									
Supervised By																									

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Weekly service check

Job card No.		Date & Time start
Train Set	Kilometer	Date & Time Finish

SN	System	Description	DM	TC	DM	remark
1	Bogie	Bogie frame-Chk bogie parts for damage				
		Bogie frame-Chk bogie part for corrosion				
		Inspect safety earth cables for damage				
		Check fasteners tightness and marking				
2	Wheel & Axle	Wheel-visual check for any damage				
		Wheel -check for corrosion, overheating				
		Wheel -check tread for scratches marks				
		Axle-Inspect for any damage, corrosion				
3	Gear Box	Gear Box-Check surface for any damage				
		Gear Box-Check oil level, top up if low.				
		Gear Box-Check surface for oil leakage				
		Gear Box-Check spherical bearing of torque				
4	Axle	Axle box-Chk for any abnormality, damage				
		Check temperature rising of axle bearing				
5	Suspension	Primary suspension-chk for damage, abnormal				
		Primary suspension-chk crack on metal part				
		P suspension-chk splicing crack on rubber				
		P suspension-chk ozone crack on rubber part				
		Check rubber skin for oil contamination,				
		Check rubber metal bonding surfaces. Deb				
		Air Spring-Check for abnormality, damage				
		Air Spring-Check air bellows for crack, Re				
		Air Spring-Check air bellows for abrasion				
		Air Spring-Check adherence strip, replace				
		Air Spring-Chk tightness of upper plate				
6	Anti roll bar	AntiRoll bar-Chk for deformation, fastener				
		AR bar-Chk nut connect rod to car body				
		AR bar-Chk nut connect rod to reverse arm				
		AntiRoll bar-Chk rubber part for abnormal				
		AntiRoll bar-Chk cracks on metal surface				
7	Traction Device	Traction device-Chk installed component				
		Traction device-Chk metal part for damage				
		Trac device-Chk fasteners for tightness				
		Traction device-Central pin bottom part				
		Trac device-Chk crack on rubber surface,				
		Trac device-Rubber surface is tacky, brittle				
		Trac device-Chk joint of metal & rubber				
		Trac device-Chk shrink fit of hinge cover				
		Trac device-Chk exterior ring for damage				
		Check rubber surface for damage, crack. Re				
		Check joint of metal & rubber for damage. R				
	Transverse	Check gap of left & right transverse bars				
		Transverse damper-Chk for damage				
		Transverse damper-Chk for severe oil leaks				
		Trans damper-Check for dirt accumulation				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Weekly service check

SN	System	Description	DM	TC	DM	remark
8	damper & backstop	Trans damp-chk for red oil droplets If p				
		Trans damp-Chk bushing for cut or split.				
		Trans damp-Chk pin for loosening				
		Trans damp-Chk pin rubber for cut/split				
		Trans damp-Chk centring seat for damage				
9	Verticle Damper	Vertical damper-Chk for damage				
		Vertical dmpcr-Chk for severe oil leaks				
		Verti damp-Check for dirt accumulation				
		Verti damp-chk for red oil droplets If f				
		Verti damp-Chk bushing for cut or split.				
		Verti damp-Chk pin for loosening				
		Verti damp-Chk pin rubber for cut/split				
		Verti damp-Chk centring seat for damage				
10	Speed Sensor	Speed sensor Chk for any damage,crack				
		Speed sensor Check for overheating.				
		Speed sensor-inspect the cable condition				
		Speed sensr-chk the tightness of bolts				
		Chk cable for excessive bending,layout				
		speed sensr-chk cable for crack/fracture				
11	WFL	WFL-Remove accumulated dust on Nozzle.				
		WFL-chk position of nozzle The distance				
		WFL-chk installation angle of nozzle Ang				
		WFL-Check fasteners for tightness				
		WFL-Chk pipeline for damage,leakage				
		WFL-Check tank oil level,top up if low				
		WFL-Chk installation seat for crack,weld				
		WFL-Visually inspect controller box				
		WFL-Visually inspect oil store tank				
12	Coupler	Auto coupler Check for wear,damage,rust				
		Auto coupler Check for loose,mising part				
		Chk Uncoupling handle for free movement				
		Check the stroke indicator for fixation				
		Check stroke ind on spherical rubber anc				
		Inspect condition of the rubber springs				
		Chk all socket joints for loose parts				
		MRP& BP valve-damages,leak&missing part				
		MRP& BP valve-front seal deterioration				
		Check the red seal on coupler mount bolt				
		Semi-permanent coupler Visual inspection				
		semi permnt cplr Visual chk deformations				
		semi permnt cplr Visual chk coupler wear				
		semi cplr Visual chk loose missing part				
		Check stroke indicator for its fixation				
		semi cplr Chk Gangway support for damage				
		semi cplr Chk Gangway supportfor rubbing				
		semi cplr Chk mounting bolt for damage				
		cplr Chk mounting bolts red seal paint				
		cplr Chk Spherical Rubber Anchor-Wear				
		cplr Chk Spherical Rubber Anchor-damage				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Weekly service check

SN	System	Description	DM	TC	DM	remark
		Chk Socket joints- no loosen or damages				
13	Brake And Pneumatic	Pneumatic-inspect for leakage, damage				
		Temporary support- inspect wear,damage(i				
		brake&pneu Chk equip. in bogie for damage				
		brake&pneu Chk equip in bogie-mounting				
		brake&pneu Chk equip in train for damage				
		brake&pneu Chk equip in train-mounting				
		Hose pipe-visual inspection				
		Hose pipe-chk for any damage.				
		Hose pipe-check leakag on connecting pt.				
		remot control brake releas-chk condition				
		chk control cable for damage, if require				
14	Brake caliper	brake caliper Chk unit-damage&mounting				
		caliper chk Rubber bellows for damage				
		Caliper chk exhaust port for free pasage				
		brake pad chk for damage				
		brake pad chk for remaining thickness				
		brakepad measure thickness, limit 5 mm				
		brake pad Fitment of brake pad in holder				
15	Brake disc	brake disc chk for crack,hotspots,wear				
		brake disc chk for flaking				
		brake disc chk for material deposits				
		brake disc chk for deformation,looseness				
		disc chk cooling ribs for dirt deposits,				
16	Cock	ballcocks-Chk all are normal				
		ballcocks-Chk all are sealed with wire				
17	Main Compressor & Accessories	compressor-Chk set for damage & mounting				
		compressor-chk Oil level and oil leakage				
		compressor set-Clean air inlet filters.				
		comp-chk&clean vacuume indicator on inta				
		comp.-chk hose pipe for leakage,damage				
		safety valve-chk for damage, corrosion				
		valve-chk for dirt at discharge port.				
		air dryer-chk silencer drainage is clear				
		microemesh oil filter perform Venting				
		M.mesh oil filter- discharg precipitat				
		oil saperator-drain liquid manually.				
		silencer-Check for clear passage				
		air reservoir-chk for damage& airleakage				
		reservoir-drain & check if water present				
18	Levelling Valve	levelling valve-check for damage&airleak				
		levelling rod-chk for damage				
		rod-chk screw plug for loose or sealing				
		levlling rod-chk hex-bolt for tightness				
19		Mean pressure valv- chk for airleakage				
		Mean pressure valve-chk for damage				
20		horn(typhoon) inspect for damage				
		Horn check cable for layout				
		Horn-chk EleMgnt valve for any damage				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Weekly service check

SN	System	Description	DM	TC	DM	remark
21		BCU-Chk mounting brackets for damage				
22	Pressure governor	PGovnr box-Chk monting bracketsFor dama				
		P governor BoxChk exterior condition				
		P GovnrChkcover is properly locked & se				
23		Inspect MR pressure(8-10 bar)from gauge				
		gauge-Check the BR pressure				
24	Aux. Compressor	chk Aux comp for any damage				
		chk Aux comp for any abnormalities.				
		Chk Aux comp & attend for any leakages				
		Clean Auxiliary compressor surface				
		Reservoir 4L Inspection and Drainage				
25	C/I	C/I box-Visual Inspection				
		C/I-Check visually covers for damage.				
		C/I chk box covers are locked & secured				
		CI chk mounting,safety braket for damage				
26	ACCB	ACCB-inspect condition Box exterior				
		Ensure cover is properly locked & secure				
		ACCB-chk Fasteners if loose or missing,l				
27	Main Transformer	MTR-Check all Mounting Brackets				
		MTR-Chk Underframe for cracks or damage				
		Chk mounting of Blower motor & oil pump				
		MTR-Chk loosenes mounting fasteners, If				
		MTR-Chk for crack/damage of Cooling unit				
		MTR-Chk Heavy Dust on painted surfac, If				
		Chk if flaw in lead cabl in Terminl box				
		Check for damage on Dial typeThermometer				
		Check for damage on Oil Flow Relay.				
		MTR Chk for damage to Exhaust,Drain Valve				
		MTR-Check for damage to Shut off Valve				
		MTR Chk Earth Cables at both sideof assy				
		MTR Chk Earth straps at both sideof assy				
		Chk o/p lead cables of Termi.box for ins				
		Chk oil leakage at piping,welded joints				
		Chk oil leakage at tank,gasket of flange				
		MTR Chk presure relief valv for oil leak				
28	Traction Motor	Traction motor (TM) Visually inspect				
		TM Chk on motor nose for cracks/damage				
		TM-chk lower mounting points for crack				
		TM-chk grease nipple for any leakages				
		TM-chk for signs of oil leakage				
		Clean TM's wire net air filter by air				
		Check on motor for signs of overheating				
		TM-Check for any other heating mark				
		TM-Chk air outlet portion of Bearing Box				
		LTJB check for any damage.				
		LTJB inspect jumper plug for rust/cracks				
		LTJB inspect receptacle plug for rust				
		LTJB inspect receptacle plug for cracks				
		HTJB check for any damage.				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Weekly service check

SN	System	Description	DM	TC	DM	remark
29	LTJB & HTJB	HTJB inspect jumper plug for rust/cracks				
		HTJB inspect receptacle plug for rust				
		HTJB inspect receptacle plug for cracks				
		Jumper Cable-chk for any damage				
		Jump cble-chk connector are firmly fitte				
		Jump cable clearnce 210mm above Rail lev				
30	APS	APS-Visual Inspection of APS unit				
		APS clean fins with compressed air/brush				
		Inspect APS's all Electrical connections				
		APS-Chk all cover properly fit&closed				
		APS Chk mounting bracket for damage/crak				
		APS Chk safety bracket for damage/cracks				
32	Battery	BCB check mounting brackets for damage				
		BCB chk mounting brackets for crack				
		BCB-Chkcover is properly locked & secure				
		Batery box-chk mounting brackets for dam				
		Batery box-Chkcover properly locked & se				
32		EDB-Chkcover is properly locked & secure				
33		Diodebox-Chkcover is properly locked & s				
34		Gr S box-Chkcover is properly locked & s				
35	SSB	SSB-ChK mounting brackets for damage/cra				
		SSB-Chk earth strap is fitted correctly				
		SSB-Chkcover is properly locked & secure				
36	PEB	PEB-ChK mounting brackets for damage/cra				
		PEB-Chk earth strap is fitted correctly				
		PEB-Chkcover is properly locked & secure				
37	Pantograph	Pantograph-General inspect for damage				
		Panto CollectorHead-Chk for damage				
		Panto CollectorHead-Chk mount screw for				
		Panto CollectorHead-Chk for free movemen				
		Panto CarbonStrip-chk mounting condition				
		Panto CarbonStrip-chk for any damage/cra				
		Panto-Chk whether strip wearing is even				
		Panto-Chkthat carbonstrip have no groove				
		Panto-Chk strip is continuous& free of b				
		Pantohorns-chk for any damage,crack,wear				
		Panto Insulator-chk for damage,flashing				
		Panto insulator-Clean with water/Ethyl A				
38	LA	Lightning Arrestor-inspect for damage				
		LA-chk surface for chippings/crack,flash				
		LA-chk earth strap for any damage				
		Chk tightness of Earth strap connection				
		LA-All connection are properly marked, i				
		LA-Clean surface with warm water and sof				
39	PT	Potential TMR-visual inspection				
		PT-inspect HT connection for looseness,				
		PT-Chk for damage,crack,chipping/grazing				
		PT-Check Earth cable for damage,loosnes				
		PT-Clean Insulator surface with cotton d				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Weekly service check

SN	System	Description	DM	TC	DM	remark
40	Bushing	Bushing-Chk for damage,crack,flashing ma				
		Bushing-Clean surface with cloth -If re				
		Bushing-Chk fastner's Torque marking				
		Bushing-Apply grease on surface				
41	VCB	VCB general inspection				
		VCB-chk for damage,crack,chipping&grazin				
		VCB check damage on earthing cable&strap				
		VCB-Check all fastner's Torque marking				
		VCB-Chk Electrical connection are tight				
		Check Earthing contact and lubricate the				
		VCB-clean Insulator surface with Denatur				
		VCB-apply silicon grease on surface				
42	EGS	EGS-chk Knife & contact for burning mark				
		EGS-chk Earthing connections are proper				
		EGS-Apply grease on Knives&contacts				
		EGS-Smooth mvmnt of switching mechanism				
		EGS-Locking/unlocking of keys smooth				
		EGS-Chk handle locking/unlocking functio				
		EGS Chk Plastic protection of the handle				
		Ensure key no.&safety box key No are ide				
43	Footrest	Footrest -Inspect				
		Footrest-The security of the fixings				
		The footrest functions normally				
44	driver Seat	Driver Seat-Chk mechanical condition				
		Driver Seat-Chk verticle movements				
		Driver Seat-Chk horizontal movements				
		Driver Seat-Check for any wear or tear				
		Driver Seat-Chk folding/seating conditio				
		Auxiliary Seat-Visual chk for damage,fit				
45	Cab equipment	Windscreen-Chk for any damage,crack				
		Wiper-Check washer tank for damage,fitme				
		Wiper-Fill washer tank (RO water),if req				
		Wiper-Visually chk blade for any damage				
		Wiper-Chk nozzle for damage,blockage				
		Cab-Chk the sunvisor operation - normal.				
		Cab-Chk firstaid box items not expired.				
		Cab-chk Windscree glass broken,scratch				
		Cab-chk the glazing sealing not damaged				
		Cab-Chk General cab appearance&cleaning.				
		Cab-BPRBB,ATCCS,EBLBB,PBABB are Normal				
		Cab-EBLS-1&2,UMVB,BNRBB &DCBB are Normal				
		Cab-Chk PSS,COMS selector switch in Auto				
		Cab-EHGS-off,WSS-off,Switches,MCB's-Norm				
		Cab-Chk all push buttons are normal				
		Cab-check All Cover&Panels Closed&Locked				
46	Fire extinguisher	FireExtinguisherCab-Chk available,secure				
		Fire Extinguisher Cab-Chk Pr in GreenZon				
		Fire ExtinguisherCab-Chk for expiry date				
		FireExtinguisherSIn-Chk available,secure				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Weekly service check

SN	System	Description	DM	TC	DM	remark
		Fire Extinguisher SIn-Chk Pr in GreenZon				
		Fire Extinguisher SIn-Chk for expiry date				
47	Saloon Accessories	Windo draught scren-chk for any damage				
		Windo-chk glazing sealing is not damaged				
		Straphanger-Chk for damage,missing				
		Straphanger-Assy parts screws for loose				
		GarbPoles-Chk for damage,missing				
		GarbPoles-Assy parts screw for looseness				
		Saloon light-Check for any damage,crack				
48	Lamps	Front Lamp-Visual inspect for any damage				
		Flasher light-Visual inspect for damage				
		Ext dor indicator-VisualChk for damage				
49	CCU	CCU-Chk connector insulation for damage				
		CCU-Check connectors&frame for dust,If d				
		CCU-Chk external frame for damage/Dent				
50	D & H cabinet	Cabinet(D&H)-visual inspection				
		Cabinet-Chk frame&equip for dirt,spiderN				
		Cabinet-Chk any loose bunch of cables				
		Cabinet-Chk cable rubbing mark,insul dam				
		Cabinet-Chk equip connectors for damage				
		Cabinet-Chk equip connectors for tightne				
		Cabinet(D&H)-chk relays, MCB for damage				
51	R & F cabinet	Cabinet(R&F)-visual inspection				
		Cabinet-Chk frame&equip for dirt,spiderN				
		Cabinet-Chk any loose bunch of cables				
		Cabinet-Chk cable rubbing mark,insul dam				
		Cabinet-Chk equip connectors for damage				
		Cabinet-Chk equip connectors for tightne				
		Cabinet-Chk EBCU,HVAC controller panel				
		Cabinet(R&F)-chk relays, MCB for damage				
		Cabinet(R&F)-chk contactor for abnormali				
		CN1,2-Chk connector insulation forDamage				
		CN1,2-Chk connectors & frame for dust,If				
		CN1,2-Check Ext. frame for damage/Dent				
		RIO1,2-Chk connector insulation forDamag				
		Check connectors & frame for dust,If dus				
		RIO1,2-Check Ext. frame for damage/Dent				
52	VDU	VDU-Check screen for damage				
		VDU Chk screen for deformation &cracks				
		Check for water and moisture near VDU				
		VDU chk mounting screws for any defect				
53		MOP Chk weather mic wiring damaged.				
54		AOP Chk weather mic wiring damaged.				
55	CCTV	Check CCAM for any damage				
		Check SCAM for any damage				
		Check FCAM for any damage				
		Check RCAM for any damage				
56	E. Door	EDoor-Chk leaf&glass for damage,crack				
		EDoor-Chk door leaf rubber for damage				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Weekly service check

SN	System	Description	DM	TC	DM	remark
		EDoor-Ensure door & ramp is closed & loc				
57	P. Door	P Door-Chk for any damage,door hinge				
		P Door-Chk for lockingdevice,limitswitch				
		P Door-Chk opening/closing by square key				
		P Door-Check sight glass for clear view				
58	Gangway	Gangwy-Chk side&top panel for abnormalit				
		Gangway-Chk footplate&apron plate forWea				
		Gangway-chk bellow rubbing mark & damage				
		Gangway-Chk bellow for damage fm outside				
59		Exter CarBody-Chk for rubbing,dent mark,				
		Inter CarBody-Chk for rubbing,dent mark,				
60		Pantograph-Chk lifting times,not more th				
		Pantograph-Chk lowering times,not more t				
61	Barke And Pneumatic function check	Service brake function test -Apply & rel				
		Emergency brake function test-Test Apply				
		Indirect brake function test- I Apply &				
		Indirect brake function test-II Move dr				
		Indirect brake function test-III Charge				
		Parking Brake Function test-I :Apply by				
		Parking Brake Function test-II :Release				
		Air dryer unit function check (switchove				
		Oil separators Function check				
		Drain valve Draining function test : Sta				
62		WFL function check press test button for				
63	All Doors	Saloon door function chk by O/C button				
		Chk working of external indicator lamp				
		S Door-Chk working of internal lamp stri				
		Saloon Door-Chk the door status on TCMS				
		S Door-Chk fault message appears on TCMS				
		C Door-O/Cmanually&chk working of cabLig				
		C Door-O/C manually&check status on TCMS				
		C Door-Chk fault message appears onTCMS				
		P Door-O/Cmanually&chk status onTCMS				
		P Door-Chk for cab light glow when opens				
		Emergency Door-Chk close status on TCMS				
64	CCU	CCU,Chk TCMS communication status on VDU				
		CCU,Chk 5V DC power on PWA2 byLED status				
		CCU,Chk WDT LED status of CPU2-1 PCB				
		CCU,Chk WDT LED status of CPU2-2 PCB				
65	CN and RIO	CN1,2Chk TCMS communication status onVDU				
		CN1,2Check the WDT status on CPU1 PCB				
		CN1,2Check LED status on PWA2 PCB				
		RIO1,2Chk TCMS comunication status onVDU				
		RIO1,2Chk WDT LED status on IFC PCB				
		RIO1,2Check 5V LED on PWA2				
		RIO1,2Check 24V LED on PWB2				
66	TCMS	Check the TCMS function - Normal				
		Check the Date & time - correct				
		Check fault histry:No major fault record				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Weekly service check

SN	System	Description	DM	TC	DM	remark
		Check Current fault list: No major fault				
67	HVAC	Cab AC-Function chk by selector switch				
		Cab AC-Chk fault message appears on TCMS				
		Cab AC-Chk that wind comes out properly				
		S HVAC-Check operation status on TCMS.				
		S HVAC-Check control mode status on TCMS				
		S HVAC-Chk Target & currentTemp - normal				
		S HVAC-Chk Temperature setting - normal				
		S HVAC-Chk fault message appears on TCMS				
		S HVAC-Check that wind comes out properly				
68	Lamps	Saloon light-Check ON/OFF status on TCMS				
		S Light-Fun Chk auto brightness control				
		S Light-Fun Chk TCMS brightness adjustme				
		FrontLamp-Chk brightness&working is norm				
		FlasherLight-Chk brightness&working is n				
		Chk the cab main lights work properly				
		Check the console light work properly				
69	PAPIS	PCU,Initiate&check Artificial broadcast				
		PCU,Initiate Manual station broadcasting				
		SCU,Initiate&check emergency function				
		SCU,Initiate&check Artificial broadcast				
		SCU,Initiate Emergency intercom function				
		DVR,check clear video is displaye on MDS				
		PIS,Chk on MOP that PIS is Master or not				
		PIS,Chk on VDU that PIS is online or off				
		PIS,Chk on MOP that PIS is online or off				
		SLSP,initiate&check Artificial broadcast				
		CLSP,Initiate cab to cab intercom functi				
		ELSP,Initiate Door closing broadcasting				
		D&TNU,chk it display correct information				
		D&TNU,chk weather screen/Display is Norm				
		Check whether SDU shows the destination				
		SDU,chk weather screen/Display is Normal				
		Check SLCD normally play the programs				
		SLCD,chk weather screen/Display is Norma				
		Check DRM weather screen/Display Normal				
		Check DRM Displays correct information				
		Chk MOP weather screen/Display is Normal				
		Chk AOP weather screen/Display is Normal				
		Check all the function of MOP/AOP				
		Carry out PA test on the MOP/AOP				
		Carry out cab to cab call test				
		Initiate Artificial broadcast by MOP/AOP				
		PECU,Press button&Check indicator light				
		PECU,Chk communication with TO is normal				
		Check alarm in cab when PECU is pressed				
		Check video of active PECU on MDS is ok				
		4 active PECU footage on MDS at a time				
		PECU Initiate emerg intercom function				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Weekly service check

SN	System	Description	DM	TC	DM	remark
70	CCTV	Touch the MDS &chk correct response to r				
		Chk MDS weather screen/Display is Normal				
		Check switching between TCMS-CCTV is ok				
		Check CCAM view is clear on MDS				
		Check SCAM view is clear on MDS				
		Check FCAM view is clear on MDS				
		Check RCAM view is clear on MDS				
		Check All camera views on TCMS VDU				
71		Check whether analog station broadcastin				
72		MCH-Chk Operation from DSD(DeadmanSwitch				
73		Horn-Chk operation in Low and High				
74		Wiper-Function Chk&water spray is normal				
75		Battery-Ensure both batteries are fullyc				
		Battery voltage noted from TCMS				
76	OBT	On Board Test - CI				
		On Board Test - APS				
		On Board Test - BECU				
		On Board Test - DCU				
		On Board Test - HVAC				
		On Board Test - PA & PIS				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Monthly service check

Job card No.		Date & Time start
Train Set	Kilometer	Date & Time Finish

SN	System	Description	DM	TC	DM	remark
1	Bogie	Bogie frame-Chk bogie parts for damage				
		Bogie frame-Chk bogie part for corrosion				
		Inspect safety earth cables for damage				
		Check fasteners tightness and marking				
2	Wheel	Wheel-visual check for any damage				
		Wheel -check for corrosion, overheating				
		Wheel -check tread for scratches marks				
		Wheel-Measure the wheel profile parameter				
		Axle-Inspect for any damage, corrosion				
3	Gear box	Gear Box-Check surface for any damage				
		Gear Box-Check oil level, top up if low.				
		Gear Box-Check surface for oil leakage				
		Gear Box-Check spherical bearing of torq				
		Tooth gear coupling-Chk for oil leakage				
		Tooth gear coupling-Chk for damage mecha				
4	Axle box	Axle box-Chk for any abnormalitie,damage				
		Check temperature rising of axel bearing				
4	Suspension	Primary suspension-chk for damage,abnorm				
		Primary suspnsion-chk crack on metal part				
		P suspnsion-chk splicing crack on rubber				
		P suspnsion-chk ozone crack on rubber par				
		Check rubber skin for oil contamination,				
		Check rubber metal bonding surfaces. Deb				
		P suspnsion-Vertical distance between upp				
		Air Spring-Check for abnormalitie,damage				
		Air Spring-Check air bellow for crack,Re				
		Air Spring-Check air bellow for abrasion				
		Air Spring-Check adherence strip,replace				
		Air Spring-Chk tightness of upper plate				
		Air Spring-Carbody measurement- distance				
5	AR bar	AntiRoll bar-Chk for deformation,fastene				
		AR bar-Chk nut connect rod to car body				
		AR bar-Chk nut connect rod to revers arm				
		AntiRoll bar-Chk rubber part for abnormal				
		AntiRoll bar-Chk cracks on metal surface				
6	Traction Device	Traction device-Chk installed component				
		Traction device-Chk metal part for damag				
		Trac device-Chk fasteners for tightness				
		Traction device-Central pin bottom part				
		Trac device-Chk crack on rubber surface,				
		Trac device-Rubber surface is tacky,brit				
		Trac device-Chk joint of metal & rubber				
		Trac device-Chk shrink fit of hinge cove				
		Trac device-Chk exterior ring for damage				
		Check rubber surface for damage,crack.Re				
		Check joint of metal&rubber for damage.R				
		Check gap of left&right transverse backs				

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Monthly service check

SN	System	Description	DM	TC	DM	remark
7	Damper	Transeverse damper-Chk for damage				
		Transvrs dmper-Chk for severe oil leaks				
		Trans damp-Check for dirt accumulation				
		Trans damp-chk for red oil droplets If p				
		Trans damp-Chk bushing for cut or split.				
		Trans damp-Chk pin for loosening				
		Trans damp-Chk pin rubber for cut/split				
		Trans damp-Chk centring seat for damage				
		Vertical damper-Chk for damage				
		Vertical dmper-Chk for severe oil leaks				
		Verti damp-Check for dirt accumulation				
		Verti damp-chk for red oil droplets If f				
		Verti damp-Chk bushing for cut or split.				
		Verti damp-Chk pin for loosening				
		Verti damp-Chk pin rubber for cut/split				
		Verti damp-Chk centring seat for damage				
8	speed sensor	Speed sensor Chk for any damage,crack				
		Speed sensor Check for overheating.				
		Speed sensor-inspect the cable condition				
		Speed sensr-chk the tightness of bolts				
		Chk cable for excessive bending,layout				
		speed sensr-chk cable for crack/fracture				
9	WFL	WFL-Remove accumulated dust on Nozzle.				
		WFL-chk position of nozzle The distance				
		WFL-chk installation angle of nozzle Ang				
		WFL-Check fasteners for tightness				
		WFL-Chk pipeline for damage,leakage				
		WFL-Check tank oil level,top up if low				
		WFL-Chk installation seat for crack,weld				
		WFL-Visually inspect controller box				
		WFL-Visually inspect oil store tank				
10	Coupler	Auto coupler Check for wear,damage,rust				
		Auto coupler Check for loose,mising part				
		Auto coupler-Clean rusty parts				
		Chk Uncoupling handle for free movement				
		Check the stroke indicator for fixation				
		Check stroke ind on spherical rubber anc				
		Inspect condition of the rubber springs				
		Chk all socket joints for loose parts				
		MRP& BP valve-damages,leak&missing part				
		MRP& BP valve-front seal deterioration				
		Check the red seal on coupler mount bolt				
		Semi-permanent coupler Visual inspection				
		semi permnt cplr Visual chk deformations				
		semi permnt cplr Visual chk coupler wear				
		semi cplr Visual chk loose missing part				
		Check stroke indicator for its fixation				
		semi cplr Chk Gangway support for damage				
		semi cplr Chk Gangway supportfor rubbing				
		semi cplr Chk mounting bolt for damage				
		cplr Chk mounting bolts red seal paint				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Monthly service check

SN	System	Description	DM	TC	DM	remark
		cplr Chk Spherical Rubber Anchor-Wear				
		cplr Chk Spherical Rubber Anchor-damage				
		Chk Socket joints- no loosen or damages				
		Pneumatic-inspect for leakage, damage				
		Temporary support- inspect wear,damage(i				
11	Brake & pneumatics	brake&pneu Chk equip. in bogie for damage				
		brake&pneu Chk equip in bogie-mounting				
		brake&pneu Chk equip in train for damage				
		brake&pneu Chk equip in train-mounting				
		Hose pipe-visual inspection				
		Hose pipe-chk for any damage.				
		Hose pipe-check leakag on connecting pt.				
		remot control brake reles-chk condition				
		remot brak-chk layout of cable control				
		chk control cable for damage, if require				
12	Brake caliper	brake caliper Chk unit-damage&mounting				
		caliper chk Rubber bellows for damage				
		Caliper chk exhaust port for free pasage				
		brake caliper chk for ease of movement				
		brake pad chk for damage				
		brake pad chk for remaining thickness				
		brakepad measure thickness, limit 5 mm				
		brake pad Fitment of brake pad in holder				
13	brake disc	brake disc chk for crack,hotspots,wear				
		brake disc chk for flaking				
		brake disc chk for material deposits				
		brakedisc chk for deformation,looseness				
		disc chk cooling ribs for dirt deposits,				
		brakedisc chk Hollow wear measurement				
14		ballcocks-Chk all are normal				
		ballcocks-Chk all are sealed with wire				
15	Main compressor	compressor-Chk set for damage & mounting				
		compressor-chk Oil level and oil leakage				
		compressor set-Clean air inlet filters.				
		comp-chk&clean vaccume indicator on inta				
		comp.-chk hose pipe for leakage,damage				
		safety valve-chk for damage, corrosion				
		valve-chk for dirt at discharge port.				
		air dryer-chk silencer drainage is clear				
		microemesh oil filter perform Venting				
		M.mesh oil filter- discharg precipitat				
		oil saperator-drain liquid manually.				
		silencer-Check for clear passage				
		air reservoir-chk for damage& airleakage				
		reservoir-drain & check if water present				
16	levelling rod	levelling valve-chk for damage&airleakag				
		levelling rod-chk for damage				
		rod-chk screw plug for loose or sealing				
		levlling rod-chk hex-bolt for tightness				
		Mean pressure valv- chk for airleakage				
		Mean pressure valve-chk for damage				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Monthly service check

SN	System	Description	DM	TC	DM	remark
17		horn(typhoon) inspect for damage				
		Horn check cable for layout				
		Horn-chk EleMgnt valve for any damage				
18	BCU & p govnr	BCU-Chk mounting brackets for damage				
		BCU-Chkcover is properly locked & secure				
		P GovnrBox-Chk mounting bracketFor dama				
		P Govnr box-Chk exterior condition				
		P govnr-Chkcover is properly locked & secure				
19		Inspect MR pressure(8-10 bar)from gauge				
		gauge-Check the BR pressure				
20	Aux Compressor	chk Aux comp for any damage				
		chk Aux comp for any abnormalities.				
		Chk Aux comp & attend for any leakages				
		Clean Auxiliary compressor surface				
		Reservoir 4L Inspection and Drainage				
21	C/I	C/I box-Visual Inspection				
		C/I-Check visually covers for damage.				
		C/I box check cover locks for damage				
		C/I-Chk cover lock for right operation				
		C/I-check interior for any dust				
		Clean dust gently with dry cotton cloth				
		C/I chk box covers are locked & secured				
		CI chk cooling fins for dust acumulation				
		CI chk mounting,safety braket for damage				
		CI Check Rubber gaskets on box covers, I				
		CI chk box Fasteners if loose or missing				
		CI chk connector & pins for any damage.				
		C/I Chk no cable/wire touching box body				
22	ACCB	ACCB-inspect condition Box exterior				
		Ensure cover is properly locked & secure				
		ACCB-chk Fasteners if loose or missing,I				
22	Main transformer	MTR-Check all Mounting Brackets				
		MTR-Chk Underframe for cracks or damage				
		Chk mounting of Blower motor & oil pump				
		MTR-Check Resilient mounting devices, If				
		MTR-Chk loosenes mounting fasteners, If				
		MTR-Chk for crack/damage of Cooling unit				
		MTR-Chk Heavy Dust on painted surfac, If				
		Chk if flaw in lead cabl in Terminl box				
		Check for damage on Dial typeThermometer				
		Check for damage on Oil Flow Relay.				
		MTR Chk for damage to Exhaust,Drain Valve				
		MTR-Check for damage to Shut off Valve				
		MTR Chk Earth Cables at both sideof assy				
		MTR Chk Earth straps at both sideof assy				
		Chk o/p lead cables of Termi.box for ins				
		Chk oil leakage at piping,welded joints				
		Chk oil leakage at tank,gasket of flange				
		MTR Chk presure relief valv for oil leak				
		Check the blockage of filter breather				
		MTR chk silica gel for colour change, i				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Monthly service check

SN	System	Description	DM	TC	DM	remark
		MTR-Clean cooling fins of cooling unit				
		Remove the Eight bolts of filter mesh				
		MTR-Remove filter mesh from cooling unit				
		Clean fins on back side with air Pr.2bar				
		Clean removed filter mesh by air pr.2bar				
		Install the Eight bolts to the filter.				
		Tighten all 8 bolts with 20 Nm torque.				
		MTR-Check if Pressure Relief Valve opera				
		MTR-Chk limit switch of Pr. relief valve				
		MTR-if limit s/w dirty,clean s/w contact				
23	traction motor	Traction motor (TM) Visually inspect				
		TM Chk on motor nose for cracks/damage				
		TM-chk lower mounting points for crack				
		TM-chk grease nipple for any leakages				
		TM-chk for signs of oil leakage				
		Clean TM's wire net air filter by air				
		Check on motor for signs of overheating				
		TM-Check for any other heating mark				
		TM-Chk air outlet portion of Bearing Box				
		TM-Check for leakage of bearing oil, If				
		Tighten bearing box bolts if found loose				
		TM-Inspect the fixing bolts				
24	LTJB,HTJB	LTJB check for any damage.				
		LTJB inspect jumper plug for rust/cracks				
		LTJB inspect receptacle plug for rust				
		LTJB inspect receptacle plug for cracks				
		HTJB check for any damage.				
		HTJB inspect jumper plug for rust/cracks				
		HTJB inspect receptacle plug for rust				
		HTJB inspect receptacle plug for cracks				
		Jumper Cable-chk for any damage				
		Jump cble-chk connector are firmly fitte				
		Jump cable clearnce 210mm above Rail lev				
25	APS	APS-Visual Inspection of APS unit				
		APS clean fins with compressed air/brush				
		Inspect APS's all Electrical connections				
		Inspect complete APS Box exterior				
		APS chk Box interior(gasket,locks,dust)				
		APS-Chk all cover properly fit&closed				
		APS Chk mounting bracket for damage/crak				
		APS Chk safety bracket for damage/cracks				
		Check earth strap is tight & not damage				
26	battery	BCB-Visual inspect battery control box				
		BCB inspect cover, locks for damage				
		BCB check mounting brackets for damage				
		BCB chk mounting brackets for crack				
		BCB-Chkcover is properly locked & secure				
		BCB-Chk inside parts for damage,tighten				
		BCB-Clean inside dirt&foreign material				
		Batery box-chk mounting brackets for dam				
		Batery box-Chkcover properly locked & se				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Monthly service check

SN	System	Description	DM	TC	DM	remark
		Battery-Check terminal covers,change dam				
		Battery-Check for electrolyte leakage,if				
		Battery chk connection torque marking				
		Battery-Chk cell terminals for flashmark				
27	ACCT	ACCT chk LV connection for looseness				
		Check all metal parts for rust/corrosion				
		ACCT Check exterior for any damage				
		ACCT Chk 2ndry terminal cable for damage				
		ACCT Chk all metal part for deformation				
		ACCT chk earthing cable for any damage				
		ACCT Check fasteners of ACCT				
		ACCT Check mounting brackets of ACCT				
28	EDB	EDB-Visually check EDB for any damage.				
		EDB-Chkcover is properly locked & secure				
		EDB-Check the status of cable in EDB				
		EDB-Remove dust in EDB, if required				
29	diode & ground switch box	Diode boxChk mounting brachet for damage				
		Diodebox-Chkcover is properly locked & s				
		Diode box-Chk from inside for abnormalit				
		Diode box-Remove dust frm inside,if requ				
		Gr S box-Chk mounting brachet for damage				
		Gr S box-Chkcover is properly locked & s				
		Ground switch box-Chk from inside				
		Gr S box-Remove dust frm inside,if requi				
30	PEB	SSB-ChK mounting brackets for damage/cra				
		SSB-Chk earth strap is fitted correctly				
		SSB-Chkcover is properly locked & secure				
		PEB-ChK mounting brackets for damage/cra				
		PEB-Chk earth strap is fitted correctly				
		PEB-Chkcover is properly locked & secure				
31	Panto	Pantograph-General inspect for damage				
		Panto CollectorHead-Chk for damage				
		Panto CollectorHead-Chk mount screw for				
		Panto CollectorHead-Chk for free movemen				
		Panto CarbonStrip-chk mounting condition				
		Panto CarbonStrip-chk for any damage/cra				
		Panto-Chk whether strip wearing is even				
		Panto-Chkthat carbonstrip have no groove				
		Panto-Chk strip is continuous& free of b				
		Panto CarbonStrip-Measure the thickness				
		Pantohorns-chk for any damage,crack,wear				
		Pantograph-Visual chk of flex.Connection				
		Panto Insulator-chk for damage,flashing				
		Panto insulator-Clean with water/Ethyl A				
		PantoEnd Stops Chk for damage/deformati				
		Panto-Chk pneu/air hose pipe for rub mar				
		Panto-Chk air leakage in pneumatic ckt				
32	LA	Lightning Arrestor-inspect for damage				
		LA-chk surface for chippings/crack,flash				
		LA-chk earth strap for any damage				
		Chk tightness of Earth strap connection				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Monthly service check

SN	System	Description	DM	TC	DM	remark
		LA-All connection are properly marked, i				
		LA-Clean surface with warm water and sof				
33	PT	Potential TMR-visual inspection				
		PT-inspect HT connection for looseness,				
		PT-Chk for damage,crack,chipping/grazing				
		PT-Check Earth cable for damage,loosnes				
		PT-Clean Insulator surface with cotton d				
34	bushing	Bushing-Chk for damage,crack,flashing ma				
		Bushing-Clean surface with cloth -lf re				
		Bushing-Chk fastner's Torque marking				
		Bushing-Apply grease on surface				
35	VCB	VCB general inspection				
		VCB-chk for damage,crack,chipping&grazin				
		VCB check damage on earthing cable&strap				
		VCB-Check all fastner's Torque marking				
		VCB-Chk Electrical connection are tight				
		Check Earthing studs and lubricate them				
		VCB-clean Insulator surface with Denatur				
		VCB-apply silicon grease on surface				
36	EGS	EGS-chk Knife & contact for burning mark				
		EGS-chk Earthing connections are proper				
		EGS-Apply grease on Knives&contacts				
37		Replace fresh air filter with clean one				
38		Replace mix-air filter with clean one				
39	Master controller	MasterCntr(MC)-Chk cable Insul forDamage				
		MasterCntr(MC)-Chk terminal lug for dama				
		MCH & MS-Check for excessive wearing				
		MastCntr-Chk spring,gear,cams for abnorm				
		MasterCntr(MC)-Chk connectors for tightn				
		MastCntr-Chk for OilLeakage atPotentiome				
40	MS	MCH & MS-Chk interlocking as follows				
		MASCON=OFF, MCH=Bmax, MS=OFF				
		Neither MCH nor MS shall be moved				
		When MCH at Bmax,MS can be moved freely				
		When MS=REV check free movement of MCH				
		When MS=FOR check free movement of MCH				
		When MS=SBY MCH can be moved from Bmin t				
		Check spring, replace it if necessary by				
		MasterCntr(MC)-Chk free movement of MCH,				
41	EGS	EGS-Smooth mvmnt of switching mechanism				
		EGS-Locking/unlocking of keys smooth				
		EGS-Chk handle locking/unlocking functio				
		EGS Chk Plastic protection of the handle				
		EGS-Chk all electrical circuit connectio				
		EGS-Chk mechanical parts for damage				
		Ensure key no.&safety box key No are ide				
42	VCB	VCB-Check Pneumatic circuit for leakage				
		VCB-Drain Pressure Regulator				
		VCB-Drain BVAC Tank, check for leakage				
		VCB-chk all seal after complete draining				
		PWM Generator-Check for any damage				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Monthly service check

SN	System	Description	DM	TC	DM	remark
43	PWM	PWM-Chk bolts&screws for loosening,If re				
		PWM-Check cable&Connector for damage				
		PWM-Check cable&Connector for loose,If r				
44	Footrest	Footrest -Inspect				
		Footrest-The security of the fixings				
		The footrest functions normally				
44	Seat	Driver Seat-Chk mechanical condition				
		Driver Seat-Chk verticle movements				
		Driver Seat-Chk horizontal movements				
		Driver Seat-Check for any wear or tear				
		Driver Seat-Chk folding/seating conditio				
		Auxiliary Seat-Visual chk for damage,fit				
45	Cab equipment	Windscreen-Chk for any damage,crack				
		Wiper-Visually check for washer tube,arm				
		Wiper-Chk fixing elements for tightness				
		Wiper-Check washer tank for damage,fitme				
		Wiper-Fill washer tank (RO water),if req				
		Wiper-Visually chk blade for any damage				
		Wiper-Chk nozzle for damage,blockage				
		Cab-Chk the sunvisor operation - normal.				
		Cab-Chk firstaid box items not expired.				
		Cab-chk Windscree glass broken,scratch				
		Cab-chk the glazing sealing not damaged				
		Cab-Chk General cab appearance&cleaning.				
		Cab-BPRBB,ATCCS,EBLBB,PBABB are Normal				
		Cab-EBLS-1&2,UMVB,BNRBB &DCBB are Normal				
		Cab-Chk PSS,COMS selector switch in Auto				
		Cab-EHGS-off,WSS-off,Switches,MCB's-Norm				
		Cab-Chk all push buttons are normal				
		Cab-check All Cover&Panels Closed&Locked				
46	Fire extinguisher	FireExtinguisherCab-Chk available,secure				
		Fire Extinguisher Cab-Chk Pr in GreenZon				
		Fire ExtinguisherCab-Chk for expiry date				
		FireExtinguisherSIn-Chk available,secure				
		Fire Extinguisher SIn-Chk Pr in GreenZon				
		Fire ExtinguisherSIn-Chk for expiry date				
47	Saloon accessories	Windo draught scren-chk for any damage				
		Windo-chk glazing sealing is not damaged				
		Straphanger-Chk for damage,missing				
		Straphanger-Assy parts screws for loose				
		GarbPoles-Chk for damage,missing				
		GarbPoles-Assy parts screw for looseness				
48	Lamps	Saloon light-Check for any damage,crack				
		Front Lamp-Visual inspect for any damage				
		Flasher light-Visual inspect for damage				
		Ext dor indicator-VisualChk for damage				
		Cab Main Light-Visual Chk for any damage				
		Console Read Light-Chk for any damage				
49	CCU	CCU-Check tighness of PCB's				
		CCU-Chk connector insulation for damage				
		CCU-Check connecting cables				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Monthly service check

SN	System	Description	DM	TC	DM	remark
		CCU-Check connectors&frame for dust,If d				
		CCU-Chk external frame for damage/Dent				
50	D & H cabinet	Cabinet(D&H)-visual inspection				
		Cabinet-Chk frame&equip for dirt,spiderN				
		Cabinet-Chk any loose bunch of cables				
		Cabinet-Chk cable rubbing mark,insul dam				
		Cabinet-Chk cable for loose connection				
		Cabinet-Chk equip connectors for damage				
		Cabinet-Chk equip connectors for tightne				
		Cabinet(D&H)-chk relays, MCB for damage				
51	Cabinet R & F	Cabinet(R&F)-visual inspection				
		Cabinet-Chk frame&equip for dirt,spiderN				
		Cabinet-Chk any loose bunch of cables				
		Cabinet-Chk cable rubbing mark,insul dam				
		Cabinet-Chk cable for loose connection				
		Cabinet-Chk equip connectors for damage				
		Cabinet-Chk equip connectors for tightne				
		Cabinet-Chk EBCU,HVAC controller panel				
		Cabinet(R&F)-chk relays, MCB for damage				
		Cabinet(R&F)-chk contactor for abnormali				
		CN1,2-Check tighness of PCB's				
		CN1,2-Chk connector insulation forDamage				
		CN1,2-Check condition of pins for defect				
		CN1,2-Chk connecting cables for damage				
		CN1,2-Chk connectors & frame for dust,If				
		CN1,2-Check Ext. frame for damage/Dent				
		RIO1,2 -Check tighness of PCB's				
		RIO1,2-Chk connector insulation forDamag				
		RIO1,2-Chk condition of pins for defect				
		RIO1,2-Chk connecting cables for damage				
		Check connectors & frame for dust,If dus				
		RIO1,2-Check Ext. frame for damage/Dent				
52	VDU	VDU-Check screen for damage				
		VDU Chk screen for deformation &cracks				
		Check for water and moisture near VDU				
		chk connector cables for any damage				
		VDU chk mounting screws for any defect				
53	PAPIS equipment	PCU-Check if devices have any damages				
		SCU-Check if devices have any damages				
		DVR-Check if devices have any damages.				
		Speaker-Chk device for any damages.				
		MOP Chk weather mic wiring damaged.				
		AOP Chk weather mic wiring damaged.				
54	CCTV	Check CCAM for any damage				
		Check SCAM for any damage				
		Check FCAM for any damage				
		Check RCAM for any damage				
		C Door-Chk assy.parts screws for loose				
		C Door-Visual inspect for any damage				
		C Door-Chk wiring for rub,routing proper				
		C Door-Chk trans nut for loose,displace				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Monthly service check

SN	System	Description	DM	TC	DM	remark
55	Door	EDoor-Chk leaf&glass for damage,crack				
		EDoor-Chk door leaf rubber for damage				
		EDoor-Chk all ramp fasteners are tighten				
		EDoor-Ensure door & ramp is closed & loc				
		P Door-Chk for any damage,door hinge				
		P Door-Chk for lockingdevice,limitswitch				
		P Door-Chk opening/closing by square key				
		P Door-Check sight glass for clear view				
		S Door-Chk assy.parts screws for loose				
		S Door-Visual inspect for any damage				
		S Door-Chk wiring for rub,routing proper				
		S Door-Chk trans nut for loose,displace				
56	gangway	Gangway-Chk debries b/w footplate&apron				
		Gangwy-Chk side&top panel for abnormalit				
		Gangway-Chk footplate&apron plate forWea				
		Gangway-chk bellow rubbing mark & damage				
		Gangway-Chk bellow for damage fm outside				
57	carbody	Exter CarBody-Chk for rubbing,dent mark,				
		Inter CarBody-Chk for rubbing,dent mark,				
58		Pantograph-Chk lifting times,not more th				
59		Pantograph-Chk lowering times,not more t				
60	Mai transformer	Main Tr-Function Chk Main Tr Oil Flow In				
		MTR-Listen abnormal sound blower motor				
		MTR-Listen abnormal sound oil pump motor				
61	Brake and Pneumatic	Service brake function test -Apply & rel				
		Emergency brake function test-Test Apply				
		Indirect brake function test-I Apply &				
		Indirect brake function test-II Move dr				
		Indirect brake function test-III Charge				
		Parking Brake Function test-I :Apply by				
		Parking Brake Function test-II :Release				
		Brake-Chk(StaticCondition)during testing				
		Air dryer unit function check (switchove				
		Oil separators Function check				
		Drain valve Draining function test : Sta				
62		WFL function check press test button for				
63	Door system	Saloon door function chk by O/C button				
		Chk working of external indicator lamp				
		S Door-Chk working of internal lamp stri				
		Saloon Door-Chk the door status on TCMS				
		S Door-Chk fault message appears on TCMS				
		Cab door isolation function check-Operat				
		C Door-O/C manually&chk working of cabLig				
		C Door-O/C manually&check status on TCMS				
		C Door-Chk fault message appears onTCMS				
		P Door-O/Cmanually&chk status onTCMS				
		P Door-Chk for cab light glow when opens				
		Emergency Door-Chk close status on TCMS				
		CCU,Chk TCMS communication status on VDU				
		CCU,Chk 5V DC power on PWA2 byLED status				
		CCU,Chk WDT LED status of CPU2-1 PCB				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Monthly service check

SN	System	Description	DM	TC	DM	remark
64	TCMS	CCU,Chk WDT LED status of CPU2-2 PCB				
		CCU,Chk WDT LED status of REC PCB				
		CN1,2Chk TCMS communication status onVDU				
		CN1,2Check E1toE8 LED status on ESW2 PCB				
		CN1,2Check the WDT status on CPU1 PCB				
		CN1,2Check LED status on PWA2 PCB				
		RIO1,2Chk TCMS comunication status onVDU				
		RIO1,2Chk the Run LED status on IFC PCB				
		RIO1,2Chk WDT LED status on IFC PCB				
		RIO1,2Check 5V LED on PWA2				
		RIO1,2Check 24V LED on PWB2				
		Check VDU touch panel operation using Di				
		Check theVDU screen movement				
		Check the TCMS function - Normal				
		Check the Date & time - correct				
		Check fault histry:No major fault record				
		Check Current fault list: No major fault				
65	HVAC	Cab AC-Function chk by selector switch				
		Cab AC-Chk fault message appears on TCMS				
		Cab AC-Chk that wind comes out properly				
		S HVAC-Check operation status on TCMS.				
		Chk F/A damper status - normal on TCMS				
		Chk R/A Damper status - normal on TCMS				
		S HVAC-Check control mode status on TCMS				
		S HVAC-Chk Target ¤tTemp - normal				
		S HVAC-Chk Temperature setting - normal				
		S HVAC-Chk fault message appears on TCMS				
		S HVAC-Check that windcomes out properly				
66	Lamps	Saloon light-Check ON/OFF status on TCMS				
		S Light-Fun Chk auto brightness control				
		S Light-Fun Chk TCMS brightness adjustme				
		FrontLamp-Chk brightness&working is norm				
		FlasherLight-Chk brightness&working is n				
		Chk the cab main lights work properly				
		Check the console light work properly				
		PCU,Initiate&check Artificial broadcast				
		PCU,Initiate Manual station broadcasting				
		SCU,Initiate&check emergency function				
		SCU,Initiate&check Artificial broadcast				
		SCU,Initiate Emergency intercom function				
		DVR,view video based on date time CAM ID				
		DVR,check clear video is displaye on MDS				
		DVR,check whether video can be download				
		PIS,Chk on MOP that PIS is Master or not				
		PIS,Chk on VDU that PIS is online or off				
		PIS,Chk on MOP that PIS is online or off				
		SLSP,initiate&check Artificial broadcast				
		CLSP,Initiate cab to cab intercom functi				
		ELSP,Initiate Door closing broadcasting				
		D&TNU,chk it display correct information				
		D&TNU,chk weather screen/Display is Norm				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Monthly service check

SN	System	Description	DM	TC	DM	remark
67	PAPIS equipment	Check whether SDU shows the destination				
		SDU,chk weather screen/Display is Normal				
		Check SLCD normally play the programs				
		SLCD,chk weather screen/Display is Normal				
		Check DRM weather screen/Display Normal				
		Check DRM Displays correct information				
		Chk MOP weather screen/Display is Normal				
		Chk AOP weather screen/Display is Normal				
		Check all the function of MOP/AOP				
		Carry out PA test on the MOP/AOP				
		Carry out cab to cab call test				
		Initiate Artificial broadcast by MOP/AOP				
		PECU,Press button&Check indicator light				
		PECU,Chk communication with TO is normal				
		Check alarm in cab when PECU is pressed				
		Check video of active PECU on MDS is ok				
		Check whether analog station broadcastin				
		4 active PECU footage on MDS at a time				
		PECU Initiate emerg intercom function				
68	CCTV	Touch the MDS &chk correct response to r				
		Chk MDS weather screen/Display is Normal				
		Check the IR function of camera (turn of				
		Check switching between TCMS-CCTV is ok				
		Check if MDS light up or not				
		Check CCAM view is clear on MDS				
		Check SCAM view is clear on MDS				
		Check FCAM view is clear on MDS				
		Check RCAM view is clear on MDS				
		Check All camera views on TCMS VDU				
69		MCH-Chk Operation from DSD(DeadmanSwitch				
69		Horn-Chk operation in Low and High				
69		Wiper-Function Chk&water spray is normal				
69		Battery-Ensure both batteries are fullyc				
70		Battery voltage noted from TCMS				
70	OBT	On Board Test - CI				
		On Board Test - APS				
		On Board Test - BECU				
		On Board Test - DCU				
		On Board Test - HVAC				
		On Board Test - PA & PIS				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Quarterly service check

Job card No.		Date & Time start
Train Set	Kilometer	Date & Time Finish

SN	System	Description	DM	TC	DM	Remark
1	BOGIE AND WHEEL	Bogie frame-Chk bogie parts for damage				
		Bogie frame-Chk bogie part for corrosion				
		Inspect safety earth cables for damage				
		Check fasteners tightness and marking				
		Wheel-visual check for any damage				
		Wheel -check for corrosion, overheating				
		Wheel -check tread for scratches marks				
		Wheel-Measure the wheel profile parameter				
2	AXLE, GEARBOX, COUPLING	Axle-Inspect for any damage, corrosion				
		Gear Box-Check surface for any damage				
		Gear Box-Check oil level, top up if low.				
		Gear Box-Check surface for oil leakage				
		Gear Box-Check spherical bearing of torq				
		Tooth gear coupling-Chk for oil leakage				
		Tooth gear coupling-Chk for damage mecha				
		Axle box-Chk for any abnormalitie,damage				
		Check temperature rising of axel bearing				
3	SUSPENSION	Primary suspension-chk for damage,abnorm				
		Primary suspnsion-chk crack on metal part				
		P suspnsion-chk splicing crack on rubber				
		P suspnsion-chk ozone crack on rubber par				
		Check rubber skin for oil contamination,				
		Check rubber metal bonding surfaces. Deb				
		P suspnsion-Vertical distance between upp				
		Air Spring-Check for abnormalitie,damage				
		Air Spring-Check air bellow for crack,Re				
		Air Spring-Check air bellow for abrasion				
		Air Spring-Check adherence strip,replace				
		Air Spring-Chk tightness of upper plate				
		Air Spring-Carbody measurement- distance				
4	ANTIROLL BAR	AntiRoll bar-Chk for deformation,fastene				
		AR bar-Chk nut connect rod to car body				
		AR bar-Chk nut connect rod to revers arm				
		AntiRoll bar-Chk rubber part for abnormal				
		AntiRoll bar-Chk cracks on metal surface				
5	TRACTION DEVICE	Traction device-Chk installed component				
		Traction device-Chk metal part for damag				
		Trac device-Chk fasteners for tightness				
		Traction device-Central pin bottom part				
		Trac device-Chk crack on rubber surface,				
		Trac device-Rubber surface is tacky,brit				
		Trac device-Chk joint of metal & rubber				
		Trac device-Chk shrink fit of hinge cove				
		Trac device-Chk exterior ring for damage				
		Check rubber surface for damage,crack.Re				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Quarterly service check

SN	System	Description	DM	TC	DM	Remark
		Check joint of metal&rubber for damage.R				
		Check gap of left&right transverse backs				
6	TRANSEVERSE DAMPER	Transeverse damper-Chk for damage				
		Transvrs dmpcr-Chk for severe oil leaks				
		Trans damp-Check for dirt accumulation				
		Trans damp-chk for red oil droplets If p				
		Trans damp-Chk bushing for cut or split.				
		Trans damp-Chk pin for loosening				
		Trans damp-Chk pin rubber for cut/split				
		Trans damp-Chk centring seat for damage				
7	VERTICLE DAMPER	Vertical damper-Chk for damage				
		Vertical dmpcr-Chk for severe oil leaks				
		Verti damp-Check for dirt accumulation				
		Verti damp-chk for red oil droplets If f				
		Verti damp-Chk bushing for cut or split.				
		Verti damp-Chk pin for loosening				
		Verti damp-Chk pin rubber for cut/split				
		Verti damp-Chk centring seat for damage				
8	SPEED SENSOR	Speed sensor Chk for any damage,crack				
		Speed sensor Check for overheating.				
		Speed sensor-inspect the cable condition				
		Speed sensr-chk the tightness of bolts				
		Chk cable for excessive bending,layout				
		speed sensr-chk cable for crack/fracture				
9	WFL	WFL-Remove accumulated dust on Nozzle.				
		WFL-chk position of nozzle The distance from flange30-35MM				
		WFL-chk installation angle of nozzle Angle w.r.t tread 30-35 degree				
		WFL-Check fasteners for tightness				
		WFL-Chk pipeline for damage,leakage				
		WFL-Check tank oil level,top up if low				
		WFL-Chk installation seat for crack,weld				
		WFL-Visually inspect controller box				
		WFL-Visually inspect oil store tank				
		Auto coupler Check for wear,damage,rust				
		Auto coupler Check for loose,mising part				
		Auto coupler-Clean rusty parts				
		Auto coupler Chk hook plate for damage				
		Auto coupler Chk hook plate for corrosio				
		Cplr Check hook plate for loose fastener				
		Cplr chk spring intactness to hook plate				
		Auto cplr Check couplinglink for damage				
		Cplr Check coupling link for corrosion				
		Check coupling link for loose fastener				
		Chk Uncoupling handle for free movement				
		Autocplr Inspect D.A.Gas cylinder buffer				
		Chk D.A.Gas cylinder buffer-damage, wear				
		D.A.Gas cylinder buffer for oil leakage				

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SN	System	Description	DM	TC	DM	Remark
10	AUTO COUPLER	Cplr chk set screw on front collar-wear				
		Cplr chk set screw on front collar-damag				
		Top of set screws shall be well below th				
		Check the stroke indicator for fixation				
		Check stroke ind on spherical rubber anc				
		Inspect sphere rubberanchor-wear,damage				
		Check redseal paint on release screws in				
		Chk centring rubber spring strut for dam				
		Inspect condition of the rubber springs				
		Chk all nut,bolt springpin for damage				
		Chk all socket joints for loose parts				
		Autocplr Chk all socket joints for damag				
		MRP& BP valve-damages,leak&missing part				
		MRP& BP valve-front seal deterioration				
		Pneumatic houses-check for slack,leakage				
		Check cable support- for wear & damage				
		Check ground cables for condition,secure				
		Check the red seal on coupler mount bolt				
		Autocplr clean the surface,MR & BP valve				
		Apply lubricate agent-manual uncoupling				
		Apply lubricate agent on link & Bolt				
		Autocplr Apply grease to main pin				
		Autocplr Apply grease to Link Pin				
		greasing of Spherical rubber anchor				
		Greasing Supportingrubber springs struts				
		Greasing centring rubber springs struts				
		greasing of sliding surface of D.A gas c				
		greasing of visible mount interface by b				
		greasing of mouth in hook plate by brush				
		greasing of pin shape front of coupling				
		All unpainted surface treat by spray				
		Auto coupler Measure of Wear- Clean fro				
		Check the adjustment of support¢ring				
		Exercise the Autocoupler vertically- App				
		Test functioning of support & centring.				
		Reset Auto Coupler to operation state				
11	SEMI PERMANENT	Semi-permanent coupler Visual inspection				
		semi permnt cplr Visual chk deformations				
		semi permnt cplr Visual chk coupler wear				
		semi cplr Visual chk loose missing part				
		semi cplr Clean rusty parts and protect				
		Chk D.A.Gas cylinder buffer-damage, wear				
		D.A.Gas cylinder buffer for oil leakage				
		Inspect set screws on front collar for w				
		Check stroke indicator for its fixation				
		semi cplr Chk Gangway support for damage				
		semi cplr Chk Gangway supportfor rubbing				
		semi cplr Chk mounting bolt for damage				
		cplr Chk mounting bolts red seal paint				

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SN	System	Description	DM	TC	DM	Remark
	COUPLER	cplR Chk Spherical Rubber Anchor-Wear				
		cplR Chk Spherical Rubber Anchor-damage				
		Chk the redseal paint on rubber anchor				
		Chk Socket joints- no loosen or damages				
		Pneumatic-inspect for leakage, damage				
		Pneumatic-inspect loose or missing part.				
		Temporary support- inspect wear,damage(i				
		Cleaning-clean coupler surface with low				
		Semi cplR gresing spherical rubber ancho				
		SM CplR greasing visible sliding surface				
		SM CplR greasing visible mount interface				
		SM CplR-All unpainted surface treat by s				
12	BRAKES & PNEUMATICS	brake&pneu Chk equip. in bogie for damage				
		brake&pneu Chk equip in bogie-mounting				
		brake&pneu Chk equip in train for damage				
		brake&pneu Chk equip in train-mounting				
		Hose pipe-visual inspection				
		Hose pipe-chk for any damage.				
		Hose pipe-check leakag on connecting pt.				
		remot control brake reles-chk condition				
		remot brak-chk layout of cable control				
		chk outer plastic sheath damage				
		chk control cable for damage, if require				
		brake caliper Chk unit-damage&mounting				
		caliper chk Rubber bellows for damage				
		Caliper chk exhaust port for free pasage				
		brake caliper chk for ease of movement				
		brake pad chk for damage				
		brake pad chk for remaining thickness				
		brakepad measure thickness, limit 5 mm				
		brake pad Fitment of brake pad in holder				
		brake disc chk for crack,hotspots,wear				
		brake disc chk for flaking				
		brake disc chk for material deposits				
		brakedisc chk for deformation,looseness				
		disc chk cooling ribs for dirt deposits,				
		brakedisc chk Hollow wear measurement				
		ballcocks-Chk all are normal				
		ballcocks-Chk all are sealed with wire				
13	MAIN COMPRESSOR AND RESERVIOR	compressor-Chk set for damage & mounting				
		compressor-chk Oil level and oil leakage				
		compressor set-Clean air inlet filters.				
		comp-chk&clean vaccume indicator on inta				
		comp.-chk hose pipe for leakage,damage				
		safety valve-chk for damage, corrosion				
		valve-chk for dirt at discharge port.				
		air dryer-chk silencer drainage is clear				
		microemesh oil filter perform Venting				
		M.mesh oil filter- discharg precipitat				

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SN	System	Description	DM	TC	DM	Remark
		oil saperator-drain liquid manually.				
		silencer-Check for clear passage				
		air reservoir-chk for damage& airleakage				
		reservoir-drain & check if water present				
14	LINE FILTER	Air fltr L02-Clean the filter element				
		Air fltr B01-drain th filter & check				
		B01-Cleaning the filter element				
15	LEVELLING ROD	levelling valve-chk for damage&airleakag				
		levelling rod-chk for damage				
		rod-chk screw plug for loose or sealing				
		levlling rod-chk hex-bolt for tightness				
16	MEAN PRESSURE VALVE & HORN	Mean pressure valv- chk for airleakage				
		Mean pressure valve-chk for damage				
		horn(typhoon) inspect for damage				
		Horn check cable for layout				
		Horn-chk EleMgnt valve for any damage				
17	BCU BOX	BCU-Chk mounting brackets for damage				
		BCU-Chkcover is properly locked & secure				
		BCU-inspect parts from inside damage,loo				
17	PRESSURE GOVRNER BOX	P GovnrBox-Chk mounting bracketFor dama				
		P Govnr box-Chk exterior condition				
		PEB-Chkcover is properly locked & secure				
		PEB-Chk all covers and lock for damage				
		PEB-Chk inside of box for damage,loose c				
		PEB-Remove the dirt and foreign material				
18		Inspect MR pressure(8-10 bar)from gauge				
18		gauge-Check the BR pressure				
19	AUX COMPRESSOR	chk Aux comp for any damage				
		chk Aux comp for any abnormalities.				
		Chk Aux comp & attend for any leakages				
		Clean Auxiliary compressor surface				
		Reservoir 4L Inspection and Drainage				
20	CI BOX	C/I box-Visual Inspection				
		C/I-Check visually covers for damage.				
		C/I box check cover locks for damage				
		C/I-Chk cover lock for right operation				
		C/I-check interior for any dust				
		Clean dust gently with dry cotton cloth				
		C/I chk box covers are locked & secured				
		CI chk cooling fins for dust acumulation				
		CI chk mounting,safety braket for damage				
		CI Check Rubber gaskets on box covers, l				
		CI chk box Fasteners if loose or missing				
		CI chk connector & pins for any damage.				
		C/I Chk no cable/wire touching box body				
21	ACCB BOX	ACCB-inspect condition Box exterior				
		ACCbox-chk for corrosion/deformity				
		Inspect cover,locks,Box welds for damage				
		Ensure cover is properly locked & secure				

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SN	System	Description	DM	TC	DM	Remark
		ACCB- chk Earth cable for any damage				
		ACCB-chk Fasteners if loose or missing, If				
		ACCB-Inspect interior for dust If dusty, If				
22	MAIN TRANSFORMER	MTR-Check all Mounting Brackets				
		MTR-Chk Underframe for cracks or damage				
		Chk mounting of Blower motor & oil pump				
		MTR-Check Resilient mounting devices, If				
		MTR-Chk loosens mounting fasteners, If				
		MTR-Chk for crack/damage of Cooling unit				
		MTR-Chk Heavy Dust on painted surfac, If				
		Chk if flaw in lead cabl in Termini box				
		Check for damage on Dial type Thermometer				
		Check for damage on Oil Flow Relay.				
		MTR Chk for damage to Exhaust, Drain Valve				
		MTR Chk Earth Cables at both side of assy				
		MTR Chk Earth straps at both side of assy				
		Chk o/p lead cables of Termini box for ins				
		Chk oil leakage at piping, welded joints				
		Chk oil leakage at tank, gasket of flange				
		MTR Chk pressure relief valv for oil leak				
		Check the blockage of filter breather				
		MTR chk silica gel for colour change, i				
		MTR-Clean cooling fins of cooling unit				
		Remove the Eight bolts of filter mesh				
		MTR-Remove filter mesh from cooling unit				
		Clean fins on back side with air Pr. 2bar				
		Clean removed filter mesh by air pr. 2bar				
		Install the Eight bolts to the filter.				
		Tighten all 8 bolts with 20 Nm torque.				
		MTR-Check if Pressure Relief Valve opera				
		MTR-Chk limit switch of Pr. relief valve				
		MTR-if limit s/w dirty, clean s/w contact				
23	TRACTION MOTOR	Traction motor (TM) Visually inspect				
		TM Chk on motor nose for cracks/damage				
		TM-chk lower mounting points for crack				
		TM-chk lead cable for insulation damage				
		TM-chk grease nipple for any leakages				
		TM-chk for signs of oil leakage				
		Clean TM's wire net air filter by air				
		Check on motor for signs of overheating				
		TM-Check for any other heating mark				
		TM-Chk air outlet portion of Bearing Box				
		TM-Check for leakage of bearing oil, If				
		Tighten bearing box bolts if found loose				
		TM-Inspect the fixing bolts				
		LTJB check for any damage.				
24	JUNCTION BOX	LTJB inspect jumper plug for rust/cracks				
		LTJB inspect receptacle plug for rust				
		LTJB inspect receptacle plug for cracks				

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SN	System	Description	DM	TC	DM	Remark
24	JUNCTION BOX	HTJB check for any damage.				
		HTJB inspect jumper plug for rust/cracks				
		HTJB inspect receptacle plug for rust				
		HTJB inspect receptacle plug for cracks				
25	JUMPER CABLE	Jumper Cable-chk for any damage				
		Jump cable-chk connector are firmly fitted				
		Jump cable clearance 210mm above Rail level				
26	APS BOX	APS-Visual Inspection of APS unit				
		APS clean fins with compressed air/brush				
		Inspect APS's all Electrical connections				
		Inspect complete APS Box exterior				
		APS chk Box interior(gasket,locks,dust)				
		APS-Chk all cover properly fit&closed				
		APS Chk mounting bracket for damage/crack				
		APS Chk safety bracket for damage/cracks				
		Check earth strap is tight & not damaged				
27	BATTERY BOX	BCB-Visual inspect battery control box				
		BCB inspect cover, locks for damage				
		BCB check mounting brackets for damage				
		BCB chk mounting brackets for crack				
		BCB-Chkcover is properly locked & secure				
		BCB-Chk inside parts for damage,tighten				
		BCB-Clean inside dirt&foreign material				
		Battery box-chk mounting brackets for damage				
		Battery box-Chkcover properly locked & secure				
		Battery-Check terminal covers,change damaged				
		Battery-Check for electrolyte leakage,if				
		Battery chk connection torque marking				
		Battery-Chk cell terminals for flashmark				
28	ACCT	ACCT chk LV connection for looseness				
		Check all metal parts for rust/corrosion				
		Clean insu. surface with dry cotton cloth				
		ACCT Check exterior for any damage				
		ACCT Chk 2ndry terminal cable for damage				
		ACCT Chk all metal part for deformation				
		ACCT chk earthing cable for any damage				
		ACCT Check fasteners of ACCT				
		ACCT Check mounting brackets of ACCT				
29	EDB	EDB-Visually check EDB for any damage.				
		EDB-Chkcover is properly locked & secure				
		EDB-Check the status of cable in EDB				
		EDB-Remove dust in EDB, if required				
30	DIODE BOX	Diode boxChk mounting bracket for damage				
		Diodebox-Chkcover is properly locked & secured				
		Diode box-Chk from inside for abnormality				
		Diode box-Remove dust from inside,if required				
31	GROUND SWITCH BOX	Gr S box-Chk mounting bracket for damage				
		Gr S box-Chkcover is properly locked & secured				
		Ground switch box-Chk from inside				

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SN	System	Description	DM	TC	DM	Remark
		Gr S box-Remove dust frm inside,if requi				
32	SSB	SSB-Chk mounting brackets for damage/cra				
		SSB-Chk earth strap is fitted correctly				
		SSB-Chkcover is properly locked & secure				
32	PEB	PEB-Chk mounting brackets for damage/cra				
		PEB-Chk earth strap is fitted correctly				
		PEB-Chkcover is properly locked & secure				
33	PANTOGRAPH	Pantograph-General inspect for damage				
		Panto CollectorHead-Chk for damage				
		Panto CollectorHead-Chk mount screw for				
		Panto CollectorHead-Chk for free movemen				
		Panto CarbonStrip-chk mounting condition				
		Panto CarbonStrip-chk for any damage/cra				
		Panto-Chk whether strip wearing is even				
		Panto-Chkthat carbonstrip have no groove				
		Panto-Chk strip is continuous& free of b				
		Panto CarbonStrip-Measure the thickness				
		Pantohorns-chk for any damage,crack,wear				
		Pantograph-Visual chk of flex.Connection				
		Panto Insulator-chk for damage,flashing				
		Panto insulator-Clean with water/Ethyl A				
		PantoEnd Stops Chk for damage/deformati				
		Panto-Chk pneu/air hose pipe for rub mar				
		Panto-Chk air leakage in pneumatic ckt				
		Pantograph-Lubricate moving parts				
		Panto-Lubricate on Chain, Ball joints,wi				
		Panto-Lubricate suspension joint, Damper				
		Panto-Greasing of collector head				
34	LA	Lightning Arrestor-inspect for damage				
		LA-chk surface for chippings/crack,flash				
		LA-chk earth strap for any damage				
		Chk tightness of Earth strap connection				
		LA-All connection are properly marked, i				
		LA-Clean surface with warm water and sof				
35	PT	Potential TMR-visual inspection				
		PT-inspect HT connection for looseness,				
		PT-Chk for damage,crack,chipping/grazing				
		PT-Check Earth cable for damage,loosnes				
		PT-Clean Insulator surface with cotton d				
36	BUSHING	Bushing-Chk for damage,crack,flashing ma				
		Bushing-Clean surface with cloth -If re				
		Bushing-Chk fastner's Torque marking				
		Bushing-Apply grease on surface				
37	VCB	VCB general inspection				
		VCB-chk for damage,crack,chipping&grazin				
		VCB check damage on earthing cable&strap				
		VCB-Check all fastner's Torque marking				
		VCB-Chk Electrical connection are tight				
		Check Earthing studs and lubricate them				

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SN	System	Description	DM	TC	DM	Remark
		VCB-clean Insulator surface with Denatur				
		VCB-apply silicon grease on surface				
38	EGS	EGS-chk Knife & contact for burning mark				
		EGS-chk Earthing connections are proper				
		EGS-Apply grease on Knives&contacts				
39	HVAC FILTER	Replace fresh air filter with clean one				
		Replace mix-air filter with clean one				
40	MCH AND MS	MasterCntr(MC)-Chk cable Insul for Damage				
		MasterCntr(MC)-Chk terminal lug for dama				
		MCH & MS-Check for excessive wearing				
		MastCntr-Chk spring,gear,cams for abnorm				
		MasterCntr(MC)-Chk connectors for tightn				
		MastCntr-Chk for Oil Leakage at Potentiome				
		MCH & MS-Chk interlocking as follows				
		MASCON=OFF, MCH=Bmax, MS=OFF				
		Neither MCH nor MS shall be moved				
		When MCH at Bmax,MS can be moved freely				
		When MS=REV check free movement of MCH				
		When MS=FOR check free movement of MCH				
		When MS=SBY MCH can be moved from Bmin t				
		Check spring, replace it if necessary by				
		MasterCntr(MC)-Chk free movement of MCH,				
41	EGS	EGS-Smooth mvmnt of switching mechanism				
		EGS-Locking/unlocking of keys smooth				
		EGS-Chk handle locking/unlocking functio				
		EGS Chk Plastic protection of the handle				
		EGS-Chk all electrical circuit connectio				
		EGS-Chk mechanical parts for damage				
42		Ensure key no.&safety box key No are ide				
42	VCB	VCB-Check Pneumatic circuit for leakage				
		VCB-Drain Pressure Regulator				
		VCB-Drain BVAC Tank, check for leakage				
		VCB-chk all seal after complete draining				
43	PWM GENERATOR	PWM Generator-Check for any damage				
		PWM-Chk bolts&screws for loosening,If re				
		PWM-Check cable&Connector for damage				
		PWM-Check cable&Connector for loose,If r				
44	FOOTREST AND DRIVER SEAT	Footrest -Inspect				
		Footrest-The security of the fixings				
		The footrest functions normally				
		Driver Seat-Chk mechanical condition				
		Driver Seat-Chk verticle movements				
		Driver Seat-Chk horizontal movements				
		Driver Seat-Check for any wear or tear				
		Driver Seat-Chk folding/seating conditio				
		Auxiliary Seat-Visual chk for damage,fit				
45		Windscreen-Chk for any damage,crack				
		Wiper-Visually check for washer tube,arm				
		Wiper-Chk fixing elements for tightness				

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SN	System	Description	DM	TC	DM	Remark
46	WIPER	Wiper-Check washer tank for damage,fitme				
		Wiper-Fill washer tank (RO water),if req				
		Wiper-Visually chk blade for any damage				
		Wiper-Chk nozzle for damage,blockage				
47	CAB ACCESSORIES	Cab-Chk the sunvisor operation - normal.				
		Cab-Chk firstaid box items not expired.				
		Cab-chk Windscren glass broken,scratch				
		Cab-chk the glazing sealing not damaged				
		Cab-Chk General cab appearance&cleaning.				
		Cab-BPRBB,ATCCS,EBLBB,PBABB are Normal				
		Cab-EBLS-1&2,UMVB,BNRBB & DCBB are Normal				
		Cab-Chk PSS,COMS selector switch in Auto				
		Cab-EHGS-off,WSS-off,Switches,MCB's-Norm				
		Cab-Chk all push buttons are normal				
		Cab-check All Cover&Panels Closed&Locked				
		FireExtinguisherCab-Chk available,secure				
		Fire Extinguisher Cab-Chk Pr in GreenZon				
		Fire ExtinguisherCab-Chk for expiry date				
		FireExtinguisherSln-Chk available,secure				
48	SALOON ACCESSORIES	Fire Extinguisher Sln-Chk Pr in GreenZon				
		Fire ExtinguisherSln-Chk for expiry date				
		Windo draught scren-chk for any damage				
		Windo-chk glazing sealing is not damaged				
		Straphanger-Chk for damage,missing				
		Straphanger-Assy parts screws for loose				
		Straphanger-Chk rubber sealing forDamage				
		GarbPoles-Chk for damage,missing				
		GarbPoles-Assy parts screw for looseness				
		Saloon light-Check for any damage,crack				
49	HEAD LAPMS AND LIGHTS	Front Lamp-Visual inspect for any damage				
		FrontLamp-Chk for crack,discolouration				
		Flasher light-Visual inspect for damage				
		Flasher light-Chk for crack,discolourati				
		Ext dor indicator-VisualChk for damage				
		Ext dor incator-Chk for discolouration,c				
		Cab Main Light-Visual Chk for any damage				
		Console Read Light-Chk for any damage				
		CCU-Check tighness of PCB's				
50	CABINET D & H	CCU-Chk connector insulation for damage				
		CCU-Chk condition of pins for any defect				
		CCU-Check connecting cables				
		CCU-Check connectors&frame for dust,If d				
		CCU-Chk external frame for damage/Dent				
		Cabinet(D&H)-visual inspection				
		Cabinet-Chk frame&equip for dirt,spiderN				
		Cabinet-Chk any loose bunch of cables				
		Cabinet-Chk cable rubbing mark,insul dam				
		Cabinet-Chk cable for loose connection				
		Cabinet-Chk equip connectors for damage				

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SN	System	Description	DM	TC	DM	Remark
		Cabinet-Chk equip connectors for tightne				
		Cabinet(D&H)-chk relays, MCB for damage				
		Cabinet(R&F)-visual inspection				
		Cabinet-Chk frame&equip for dirt,spiderN				
		Cabinet-Chk any loose bunch of cables				
		Cabinet-Chk cable rubbing mark,insul dam				
		Cabinet-Chk cable for loose connection				
		Cabinet-Chk equip connectors for damage				
		Cabinet-Chk equip connectors for tightne				
		Cabinet-Chk EBCU,HVAC controller panel				
51	CABINET R & F	Cabinet(R&F)-chk relays, MCB for damage				
		Cabinet(R&F)-chk contactor for abnormali				
		CN1,2-Check tighness of PCB's				
		CN1,2-Chk connector insulation forDamage				
		CN1,2-Check condition of pins for defect				
		CN1,2-Chk connecting cables for damage				
		CN1,2-Chk connectors & frame for dust,lf				
		CN1,2-Check Ext. frame for damage/Dent				
		RIO1,2 -Check tighness of PCB's				
		RIO1,2-Chk connector insulation forDamag				
		RIO1,2-Chk condition of pins for defect				
		RIO1,2-Chk connecting cables for damage				
		Check connectors & frame for dust,lf dus				
		RIO1,2-Check Ext. frame for damage/Dent				
		VDU-Check screen for damage				
		VDU Chk screen for deformation &cracks				
		Check for water and moisture near VDU				
		VDU-Check Connector condition				
		VDU chk conector insulation for damage				
		VDU Chk condition of pins for any defect				
		chk connector cables for any damage				
		VDU chk mounting screws for any defect				
		PCU-Check if devices have any damages				
		SCU-Check if devices have any damages				
		DVR-Check if devices have any damages.				
52	SPEAKER, CAMERA, MOP/AOP	Speaker-Chk device for any damages.				
		MOP Chk weather mic wiring damaged.				
		AOP Chk weather mic wiring damaged.				
		Check CCAM for any damage				
		CCAM clean protecting glasscover if dirt				
		Check SCAM for any damage				
		SCAM clean protecting glasscover if dirt				
		Check FCAM for any damage				
		FCAM clean protecting glasscover if dirt				
		Check RCAM for any damage				
		RCAM clean protecting glasscover if dirt				
		C Door-Chk assy.parts screws for loose				
		C Door-Visual inspect for any damage				
		C Door-Chk wiring for rub,routing proper				

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Quarterly service check

SN	System	Description	DM	TC	DM	Remark
53	CAB DOOR	C Door-Chk rubber sealing for cracks,dam				
		C Door-Chk lower swingarm assy for damag				
		C Door-Chk 3 roller for loose,rupture,mi				
		C Door-Chk switch assy roller for damage				
		C Door-Check contact point between rolle				
		C Door-Check holdpin on hinge plate in t				
		C Door-Chk hold pin of trans.bracket fo				
		C Door-Chk trans nut for loose,displace				
		C Door-Chk set screw of fully locked swi				
		C Door-Chk door fully closed block for l				
		C Door-Chk lock hook for damage,crack				
		C Door-Chk shaftpin of lockhook for seci				
		CDoor-Chk shaftpin of lockhook for ruptu				
		CDoor-Chk shaftpin of lockhook for loose				
		Check circlip for secure,ruptured,loose				
		C Door-Examine isolation switch assy for				
		C Door-Chk door window glass for damage				
		C Door-Chk Bal roller assy for damage				
		C Door-Chk roller for displaced,rupture,				
		C Door-Chk retaining ring in nut for fit				
		C Door-chk screws at each place for loos				
		C Door-Chk&remove dust on top guide rail				
		CDoor-Chk&remove dust on lowerguide rail				
		C Door-Chk lower retaining pin assembly				
		C Door-If EAD/EED activates				
		C Door-Emergen unlocking switch activate				
		C Door-Open and close door manually				
54	EMERGENCY DOOR	EDoor-Chk leaf&glass for damage,crack				
		EDoor-Chk door leaf rubber for damage				
		EDoor-Chk all ramp fasteners are tighten				
		EDoor-Chk ramp mountingScrew for loosene				
		EDoor-Chk door&ramp lockdevice is normal				
		EDoor-Ensure door & ramp is closed & loc				
55	PARTITION DOOR	P Door-Chk for any damage,door hinge				
		P Door-Chk for lockingdevice,limitswitch				
		P Door-Chk opening/closing by square key				
		P Door-Check sight glass for clear view				
		S Door-Chk assy.parts screws for loose				
		S Door-Visual inspect for any damage				
		S Door-Chk wiring for rub,routing proper				
		S Door-Chk rubber sealing for cracks,dam				
		S Door-Chk lower swingarm assy for damag				
		S Door-Chk 3 roller for missing,rupture,				
		S Door-Chk switch assy roller for damage				
		S Door-Chk contact point between roller				
		S Door-Check holdpin on hinge plate for				
		S Door-Chk holdpin of trans.bracket for				
		S Door-Chk trans nut for loose,displace				
		S Door-Chk set screw of fully locked swi				

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Quarterly service check

SN	System	Description	DM	TC	DM	Remark
56	SALOON DOOR	S Door-Chk door fully closed block for l				
		S Door-Chk door window glass for damage				
		S Door-Chk balance roller Assy for damage				
		S Door-Chk roller for displaced,rupture,				
		S Door-Check retaining ring in nut for f				
		SDoor-chk screws at each place for loose				
		S Door-Chk&remove dust on top guide rail				
		SDoor-Chk&remove dust on lowerGuide rail				
		S Door-Chk lower retaining pin assembly				
		S Door-Chk component in the coving panel				
		S Door-Check Maintenance switch				
		S Door-If EAD/EED activates				
		SDoor-Emergency unlockingSwitch activate				
		S Door-Open and close door manually				
		SDoor-Chk isolation switch Assy for Damage				
		S Door-Operate isolation device after cl				
57	GANGWAY	Gangway-Chk debries b/w footplate&apron				
		Gangwy-Chk side&top panel for abnormalit				
		Gangway-Chk footplate&apron plate forWea				
		Gangway-chk bellow rubbing mark & damage				
		Gangway-Chk bellow for damage fm outside				
		Gangway-Chk bellow for damage fm inside(				
		Gangway-Apply greasing movingparts,if re				
58	CARBODY	Exter CarBody-Chk for rubbing,dent mark,				
		Inter CarBody-Chk for rubbing,dent mark,				
59	PANTOGRAPH UP DN TIME	Pantograph-Chk lifting times,not more th				
		Pantograph-Chk lowering times,not more t				
60	MTR BLOWER AND PUMP	Main Tr-Function Chk Main Tr Oil Flow In				
		MTR-Listen abnormal sound blower motor				
		MTR-Listen abnormal sound oil pump motor				
61	BRAKE FUNCTION TEST	Service brake function test -Apply & rel				
		Emergency brake function test-Test Apply				
		Indirect brake function test-I Apply &				
		Indirect brake function test-II Move dr				
		Indirect brake function test-III Charge				
		Parking Brake Function test-I :Apply by				
		Parking Brake Function test-II :Release				
		Brake-Chk(StaticCondition)during testing				
62		Air dryer unit function check (switchove				
		Oil separators Function check				
		Drain valve Draining function test : Sta				
		WFL function check press test button for				
63	SALOON DOOR FUNCTION TEST	Saloon door obstacle detection Func test				
		Saloon door isolation function check-Ope				
		Saloon door function chk by O/C button				
		Chk working of external indicator lamp				
		S Door-Chk working of internal lamp stri				
		Saloon Door-Chk the door status on TCMS				
		S Door-Chk fault message appears on TCMS				

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Quarterly service check

SN	System	Description	DM	TC	DM	Remark
64	CAB DOOR FUNCTION TEST	Cab door isolation function check-Operat				
		C Door-O/Cmanually&chk working of cabLig				
		C Door-O/C manually&check status on TCMS				
		C Door-Chk fault message appears onTCMS				
65	PARTITION AND EMERGENCY DOOR	P Door-O/Cmanually&chk status onTCMS				
		P Door-Chk for cab light glow when opens				
		Emergency Door-Chk close status on TCMS				
65	TCMS FUNCTION TEST	CCU,Chk TCMS communication status on VDU				
		CCU,Chk 5V DC power on PWA2 byLED status				
		CCU,Chk RunE1&E2 LEDstatus on CPU2-1 PCB				
		CCU,Chk RunE1&E2 LEDstatus on CPU2-2 PCB				
		CCU,Chk Run, E1&E2 LEDstatus on REC PCB				
		CCU,Chk WDT LED status of CPU2-1 PCB				
		CCU,Chk WDT LED status of CPU2-2 PCB				
		CCU,Chk WDT LED status of REC PCB				
		CN1,2Chk TCMS communication status onVDU				
		CN1,2Check E1toE8 LED status on ESW2 PCB				
		CN1,2Check the WDT status on CPU1 PCB				
		CN1,2Check LED status on PWA2 PCB				
		RIO1,2Chk TCMS comunication status onVDU				
		RIO1,2Chk the Run LED status on IFC PCB				
		RIO1,2Chk WDT LED status on IFC PCB				
		RIO1,2Check 5V LED on PWA2				
		RIO1,2Check 24V LED on PWB2				
		Check VDU touch panel operation using Di				
		Check theVDU screen movement				
		Check the TCMS function - Normal				
		Check the Date & time - correct				
		Check fault histry:No major fault record				
		Check Current fault list: No major fault				
66	HVAC FUNCTION TEST	Cab AC-Function chk by selector switch				
		Cab AC-Chk fault message appears on TCMS				
		Cab AC-Chk that wind comes out properly				
		S HVAC-Check operation status on TCMS.				
		Chk F/A damper status - normal on TCMS				
		Chk R/A Damper status - normal on TCMS				
		S HVAC-Check control mode status on TCMS				
		S HVAC-Chk Target ¤tTemp - normal				
		S HVAC-Chk Temperature setting - normal				
		S HVAC-Chk fault message appears on TCMS				
		S HVAC-Check that windcomes out properly				
67	LAMP AND LIGHT FUNCTION TEST	Saloon light-Check ON/OFF status on TCMS				
		S Light-Fun Chk auto brightness control				
		S Light-Fun Chk TCMS brightness adjustme				
		S light-Chk appearance by operating SLS				
		FrontLamp-Chk brightness&working is norm				
		FlasherLight-Chk brightness&working is n				
		Chk the cab main lights work properly				
		Check the console light work properly				

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Quarterly service check

SN	System	Description	DM	TC	DM	Remark
68	PAPIS FUNCTION TEST	PCU,Initiate&check Artificial broadcast				
		PCU,Initiate Manual station broadcasting				
		SCU,Initiate&check emergency function				
		SCU,Initiate&check Artificial broadcast				
		SCU,Initiate Emergency intercom function				
		DVR,view video based on date time CAM ID				
		DVR,check clear video is displaye on MDS				
		DVR,check whether video can be download				
		PIS,Chk on MOP that PIS is Master or not				
		PIS,Chk on VDU that PIS is online or off				
		PIS,Chk on MOP that PIS is online or off				
		SLSP,initiate&check Artificial broadcast				
		CLSP,Initiate cab to cab intercom functi				
		ELSP,Initiate Door closing broadcasting				
		Chk Automatic volume adjustment Noise mo				
		D&TNU,chk it display correct information				
		D&TNU,chk weather screen/Display is Norm				
		Check whether SDU shows the destination				
		SDU,chk weather screen/Display is Normal				
		Check SLCD normally play the programs				
		SLCD,chk weather screen/Display is Norma				
		Check DRM weather screen/Display Normal				
		Check DRM Displays correct information				
		Chk MOP weather screen/Display is Normal				
		Chk AOP weather screen/Display is Normal				
		Check all the function of MOP/AOP				
		Carry out PA test on the MOP/AOP				
		Carry out cab to cab call test				
		Initiate Artificial broadcast by MOP/AOP				
		PECU,Press button&Check indicator light				
		PECU,Chk communication with TO is normal				
		Check alarm in cab when PECU is pressed				
		Check video of active PECU on MDS is ok				
		4 active PECU footage on MDS at a time				
		PECU Initiate emerg intercom function				
		Touch the MDS &chk correct response to r				
		Chk MDS weather screen/Display is Normal				
		Check the IR function of camera (turn of				
		Check switching between TCMS-CCTV is ok				
		Check if MDS light up or not				
		Check CCAM view is clear on MDS				
		CCAM streaming is fluent on MDS				
		Check SCAM view is clear on MDS				
		SCAM streaming is fluent on MDS				
		Check FCAM view is clear on MDS				
		FCAM camera streaming is fluent on MDS				
		Check RCAM view is clear on MDS				
		RCAM streaming is fluent on MDS				
		Check All camera views on TCMS VDU				

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Quarterly service check

SN	System	Description	DM	TC	DM	Remark
		Check recording of all camera working				
		Check whether analog station broadcastin				
69		MCH-Chk Operation from DSD(DeadmanSwitch				
		Horn-Chk operation in Low and High				
		Wiper-Function Chk&water spray is normal				
		Battery-Ensure both batteries are fullyc				
		Battery voltage noted from TCMS				
70	ON BOARD TEST	On Board Test - CI				
		On Board Test - APS				
		On Board Test - BECU				
		On Board Test - DCU				
		On Board Test - HVAC				
		On Board Test - PA & PIS				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Half yearly service check

Job card No.		Date & Time start
Train Set	Kilometer	Date & Time Finish

SN	System	Description	DM	TC	DM	Remark
1	bogie	Bogie frame-Chk bogie parts for damage				
		Bogie frame-Chk bogie part for corrosion				
		Bogie frame-Check for welding defect				
		Inspect safety earth cables for damage				
		Check fasteners tightness and marking				
2	Wheel	Wheel-visual check for any damage				
		Wheel -check for corrosion, overheating				
		Wheel -check tread for scratches marks				
		Wheel-Measure the wheel profile parameter				
		Axle-Inspect for any damage, corrosion				
3	Gear Box	Gear Box-Check surface for any damage				
		Gear Box-Check oil level, top up if low.				
		Gear Box-Check surface for oil leakage				
		Gear Box-Check spherical bearing of torq				
		Tooth gear coupling-Chk for oil leakage				
		Tooth gear coupling-Chk for damage mecha				
4	Axle Box	Axle box-Chk for any abnormalitie,damage				
		Check temperature rising of axel bearing				
5	Suspension	Primary suspension-chk for damage,abnorm				
		Primary suspnsion-chk crack on metal part				
		P suspnsion-chk splicing crack on rubber				
		P suspnsion-chk ozone crack on rubber par				
		Check rubber skin for oil contamination,				
		Check rubber metal bonding surfaces. Deb				
		P suspnsion-Vertical distance between upp				
		Air Spring-Check for abnormalitie,damage				
		Air Spring-Check air bellow for crack,Re				
		Air Spring-Check air bellow for abrasion				
		Air Spring-Check adherence strip,replace				
		Air Spring-Chk tightness of upper plate				
		Air Spring-Carbody measurement- distance				
6	Anti roll bar	AntiRoll bar-Chk for deformation,fastene				
		AR bar-Chk nut connect rod to car body				
		AR bar-Chk nut connect rod to revers arm				
		AntiRoll bar-Chk rubber part for abnormal				
		AntiRoll bar-Chk cracks on metal surface				
7	Traction device	Traction device-Chk installed component				
		Traction device-Chk metal part for damag				
		Trac device-Chk fasteners for tightness				
		Traction device-Central pin bottom part				
		Trac device-Chk crack on rubber surface,				
		Trac device-Rubber surface is tacky,brit				
		Trac device-Chk joint of metal & rubber				
		Trac device-Chk shrink fit of hinge cove				
		Trac device-Chk exterior ring for damage				
		Check rubber surface for damage,crack.Re				
		Check joint of metal&rubber for damage.R				
		Check gap of left&right transverse backs				
		Tranverse damper-Chk for damage				

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SN	System	Description	DM	TC	DM	Remark
8	Damper	Transvrs dmpcr-Chk for severe oil leaks				
		Trans damp-Check for dirt accumulation				
		Trans damp-chk for red oil droplets If p				
		Trans damp-Chk bushing for cut or split.				
		Trans damp-Chk pin for loosening				
		Trans damp-Chk pin rubber for cut/split				
		Trans damp-Chk centring seat for damage				
		Vertical damper-Chk for damage				
		Vertical dmpcr-Chk for severe oil leaks				
		Verti damp-Check for dirt accumulation				
		Verti damp-chk for red oil droplets If f				
		Verti damp-Chk bushing for cut or split.				
		Verti damp-Chk pin for loosening				
		Verti damp-Chk pin rubber for cut/split				
		Verti damp-Chk centring seat for damage				
9	Speed Sensor	Speed sensor Chk for any damage,crack				
		Speed sensor Check for overheating.				
		Speed sensor-inspect the cable condition				
		Speed sensr-chk the tightness of bolts				
		Chk cable for excessive bending,layout				
		speed sensr-chk cable for crack/fracture				
10	WFL	WFL-Remove accumulated dust on Nozzle.				
		WFL-chk position of nozzle The distance				
		WFL-chk installation angle of nozzle Ang				
		WFL-Check fasteners for tightness				
		WFL-Chk pipeline for damage,leakage				
		WFL-Check tank oil level,top up if low				
		WFL-Chk installation seat for crack,weld				
		WFL-Visually inspect controller box				
		WFL-Visually inspect oil store tank				
11	Auto coupler	Auto coupler Check for wear,damage,rust				
		Auto coupler Check for loose,mising part				
		Auto coupler-Clean rusty parts				
		Auto coupler Chk hook plate for damage				
		Auto coupler Chk hook plate for corrosio				
		Cplr Check hook plate for loose fastener				
		Cplr chk spring intactness to hook plate				
		Auto cplr Check couplinglink for damage				
		Cplr Check coupling link for corrosion				
		Check coupling link for loose fastener				
		Chk Uncoupling handle for free movement				
		Autocplr Inspect D.A.Gas cylinder buffer				
		Chk D.A.Gas cylinder buffer-damage, wear				
		D.A.Gas cylinder buffer for oil leakage				
		Cplr chk set screw on front collar-wear				
		Cplr chk set screw on front collar-damag				
		Top of set screws shall be well below th				
		Check the stroke indicator for fixation				
		Check stroke ind on spherical rubber anc				
		Inspect sphere rubberanchor-wear,damage				
		Check redseal paint on release screws in				
		Chk centring rubber spring strut for dam				
		Inspect condition of the rubber springs				

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SN	System	Description	DM	TC	DM	Remark
		Chk all nut,bolt springpin for damage				
		Chk all socket joints for loose parts				
		Autocplr Chk all socket joints for damag				
		MRP& BP valve-damages,leak&missing part				
		MRP& BP valve-front seal deterioration				
		Pneumatic houses-check for slack,leakage				
		Check cable support- for wear & damage				
		Check ground cables for condition,secure				
		Check the red seal on coupler mount bolt				
		Autocplr clean the surface,MR & BP valve				
		Apply lubricate agent-manual uncoupling				
		Apply lubricate agent on link & Bolt				
		Autocplr Apply grease to main pin				
		Autocplr Apply grease to Link Pin				
		greasing of Spherical rubber anchor				
		Greasing Supportingrubber springs struts				
		Greasing centring rubber springs struts				
		greasing of sliding surface of D.A gas c				
		greasing of visible mount interface by b				
		greasing of mouth in hook plate by brush				
		greasing of pin shape front of coupling				
		All unpainted surface treat by spray				
		Auto coupler Measure of Wear- Clean fro				
		Check the adjustment of support¢ring				
		Exercise the Autocoupler vertically- App				
		Test functioning of support & centring.				
		Reset Auto Coupler to operation state				
12	Semi Parmanent Coupler	Semi-permanent coupler Visual inspection				
		semi permnt cplr Visual chk deformations				
		semi permnt cplr Visual chk coupler wear				
		semi cplr Visual chk loose missing part				
		semi cplr Clean rusty parts and protect				
		Chk D.A.Gas cylinder buffer-damage, wear				
		D.A.Gas cylinder buffer for oil leakage				
		Inspect set screws on front collar for w				
		Check stroke indicator for its fixation				
		semi cplr Chk Gangway support for damage				
		semi cplr Chk Gangway supportfor rubbing				
		semi cplr Chk mounting bolt for damage				
		cplr Chk mounting bolts red seal paint				
		cplr Chk Spherical Rubber Anchor-Wear				
		cplr Chk Spherical Rubber Anchor-damage				
		Chk the redseal paint on rubber anchor				
		Chk Socket joints- no loosen or damages				
		Pneumatic-inspect for leakage, damage				
		Pneumatic-inspect loose or missing part.				
		Temporary support- inspect wear,damage(i				
		Cleaning-clean coupler surface with low				
		Semi cplr gresing spherical rubber ancho				
		SM Cplr greasing visible sliding surface				
		SM Cplr greasing visible mount interface				
		SM Cplr-All unpainted surface treat by s				
		brake&pneu Chk equip. in bogie for damage				

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Half yearly service check

SN	System	Description	DM	TC	DM	Remark
13	Brake and Pneumatics equipment	brake&pneu Chk equip in bogie-mounting				
		brake&pneu Chk equip in train for damage				
		brake&pneu Chk equip in train-mounting				
		Hose pipe-visual inspection				
		Hose pipe-chk for any damage.				
		Hose pipe-check leakag on connecting pt.				
		remot control brake reles-chk condition				
		remot brak-chk laypout of cable control				
		chk outer plastic sheath damage				
		chk control cable for damage, if require				
		remot-chk control cbl for ease of mvmnt				
		remot-operat repetedly & chk mvmnt				
14	Brake caliper	brake caliper Chk unit-damage&mounting				
		caliper chk Rubber bellows for damage				
		Caliper chk exhaust port for free pasage				
		brake caliper chk for ease of movement				
		brake pad chk for damage				
		brake pad chk for remaining thickness				
		brakepad measure thickness, limit 5 mm				
		brake pad Fitment of brake pad in holder				
15	Brake disc	brake disc chk for crack,hotspots,wear				
		brake disc chk for flaking				
		brake disc chk for material deposits				
		brakedisc chk for deformation,looseness				
		disc chk cooling ribs for dirt deposits,				
		disc-clean cooling rib with compress air				
		brakedisc chk Hollow wear measurement				
16	Ballcock	ballcocks-Chk all are normal				
		ballcocks-Chk all are sealed with wire				
17	Main compressor	compressor-Chk set for damage & mounting				
		compressor-chk Oil level and oil leakage				
		compressor set-Clean air inlet filters.				
		comp-chk&clean vaccume indicator on inta				
		comp.-chk hose pipe for leakage,damage				
		Clean the cooler &cylinder cooling ribs				
		safety valve-chk for damage, corrosion				
		valve-chk for dirt at discharge port.				
		air dryer-chk silencer drainage is clear				
		microemesh oil filter perform Venting				
		M.mesh oil filter- discharg precipitat				
		oil saperator-drain liquid manually.				
		silencer-Check for clear passage				
		air reservoir-chk for damage& airleakage				
		reservoir-drain & check if water present				
		Air fltr L02-Clean the filter element				
		Air fltr B01-drain th flter & check				
		B01-Cleaning the filter element				
18	Levelling valve	levelling valve-check for damage				
		levelling rod-chk for damage & airleakag				
		rod-chk screw plug for loose or sealing				
		levlling rod-chk hex-bolt for tightness				
		Mean pressure valv- chk for airleakage				
		Mean pressure valve-chk for damage				

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SN	System	Description	DM	TC	DM	Remark
19	Horn	horn(typhoon) inspect for damage				
		Horn check cable for layout				
		Horn-chk EleMgnt valve for any damage				
20	BCU & Governer	BCU-Chk mounting brackets for damage				
		BCU-Chkcover is properly locked & secure				
		BCU-inspect parts from inside damage,loo				
		P valve box-Chk mounting brackets for da				
		P valve box-Chk exterior condition				
21	PEB	PEB-Chkcover is properly locked & secure				
		PEB-Chk all covers and lock for damage				
		PEB-Chk inside of box for damage,loose c				
		PEB-Remove the dirt and foreign material				
22		Inspect MR pressure(8-10 bar)from gauge				
22		gauge-Check the BR pressure				
23	Auc Compressor	chk Aux comp for any damage				
		chk Aux comp for any abnormalities.				
		Chk Aux comp & attend for any leakages				
		Clean Auxiliary compressor surface				
		Reservoir 4L Inspection and Drainage				
24	Converter inverter	C/I box-Visual Inspection				
		C/I-Check visually covers for damage.				
		C/I box check cover locks for damage				
		C/I-Chk cover lock for right operation				
		C/I-check interior for any dust				
		Clean dust gently with dry cotton cloth				
		C/I chk box covers are locked & secured				
		CI chk cooling fins for dust acumulation				
		CI chk mounting,safety braket for damage				
		CI Check Rubber gaskets on box covers, l				
		CI chk box Fasteners if loose or missing				
		CI chk connector & pins for any damage.				
		C/I Chk no cable/wire touching box body				
25	ACCB	ACCB-inspect condition Box exterior				
		ACCbox-chk for corrosion/deformity				
		Inspect cover,locks,Box welds for damage				
		Ensure cover is properly locked & secure				
		ACCB- chk Earth cable for any damage				
		ACCB-chk Fasteners if loose or missing,l				
		ACCB-Inspect interior for dust If dusty,				
		MTR-Check all Mounting Brackets				
		MTR-Chk Underframe for cracks or damage				
		Chk mounting of Blower motor & oil pump				
		MTR-Check Resilient mounting devices, If				
		MTR-Chk loosenes mounting fasteners, If				
		MTR-Chk for crack/damage of Cooling unit				
		MTR-Chk Heavy Dust on painted surfac, If				
		Chk if flaw in lead cabl in Terminl box				
		Check for damage on Dial typeThermometer				
		Check for damage on Oil Flow Relay.				
		MTR Chk for damage to Exhaust,Drain Valve				
		MTR Chk Earth Cables at both sideof assy				
		MTR Chk Earth straps at both sideof assy				
		Chk o/p lead cables of Termi.box for ins				

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SN	System	Description	DM	TC	DM	Remark
26	Main transformer	Chk oil leakage at piping,welded joints				
		Chk oil leakage at tank,gasket of flange				
		MTR Chk presure relief valv for oil leak				
		Check the blockage of filter breather				
		MTR chk silica gel for colour change, i				
		MTR-Clean cooling fins of cooling unit				
		Remove the Eight bolts of filter mesh				
		MTR-Remove filter mesh from cooling unit				
		Clean fins on back side with air Pr.2bar				
		Clean removed filter mesh by air pr.2bar				
		Install the Eight bolts to the filter.				
		Tighten all 8 bolts with 20 Nm torque.				
		MTR-Check if Pressure Relief Valve opera				
		MTR-Chk limit switch of Pr. relief valve				
		MTR-if limit s/w dirty,clean s/w contact				
		Traction motor (TM) Visually inspect				
		TM Chk on motor nose for cracks/damage				
		Check lower mountng points for damage				
		TM-chk lower mounting points for crack				
		TM-chk lead cable for insulation damage				
		TM-chk grease nipple for any leakages				
		TM-chk for signs of oil leakage				
		Clean TM's wire net air filter by air				
		Check on motor for signs of overheating				
		TM-Check for any other heating mark				
		TM-Chk air outlet portion of Bearing Box				
		TM-Check for leakage of bearing oil, If				
		Tighten bearing box bolts if found loose				
		TM-Inspect the fixing bolts				
		TM-Check junction box inside cable				
		Check cable connection in junction box				
		Clean dust frm traction motor vent holes				
		TM-dust blowing of rotor vent holes in b				
27	LTJB & HTJB	LTJB check for any damage.				
		LTJB inspect jumper plug for rust/cracks				
		LTJB inspect receptacle plug for rust				
		LTJB inspect receptacle plug for cracks				
		HTJB check for any damage.				
		HTJB inspect jumper plug for rust/cracks				
		HTJB inspect receptacle plug for rust				
		HTJB inspect receptacle plug for cracks				
		Jumper Cable-chk for any damage				
		Jump cble-chk connector are firmly fitte				
		Jump cable clearnce 210mm above Rail lev				
28	APS	APS-Visual Inspection of APS unit				
		APS clean fins with compressed air/brush				
		Inspect APS's all Electrical connections				
		Inspect complete APS Box exterior				
		APS chk Box interior(gasket,locks,dust)				
		APS-Chk all cover properly fit&closed				
		APS Chk mounting bracket for damage/crak				
		APS Chk safety bracket for damage/cracks				
		Check earth strap is tight & not damage				

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SN	System	Description	DM	TC	DM	Remark
29	Battery	BCB-Visual inspect battery control box				
		BCB inspect cover, locks for damage				
		BCB check mounting brackets for damage				
		BCB chk mounting brackets for crack				
		BCB-Chkcover is properly locked & secure				
		BCB-Chk inside parts for damage,tighten				
		BCB-Clean inside dirt&foreign material				
		Batery box-chk mounting brackets for dam				
		Batery box-Chkcover properly locked & se				
		Battery-Measure the voltage of each cell				
		Battery-Carry out the pressure test				
		Battery-Perform electrolyte topping up				
		Battery-Record amount of water added				
		Battery clean by using vacuum cleaner				
		Battery-Check level of electrolyte				
		Battery-Check terminal covers,change dam				
		Battery-Check for electrolyte leakage,if				
		Battery chk connection torque marking				
		Battery-Chk cell terminals for flashmark				
		30	ACCT	ACCT chk LV connection for looseness		
Check all metal parts for rust/corrosion						
Clean insu. surface with dry cottoncloth						
ACCT Check exterior for any damage						
ACCT Chk 2ndry terminal cable for damage						
ACCT Chk all metal part for deformation						
ACCT chk earthing cable for any damage						
ACCT Check fasteners of ACCT						
ACCT Check mounting brackets of ACCT						
31	EDB	EDB-Visually check EDB for any damage.				
		EDB-Chkcover is properly locked & secure				
		EDB-Check the status of cable in EDB				
		EDB-Remove dust in EDB, if required				
32	Diode box	Diode boxChk mounting brachet for damage				
		Diodebox-Chkcover is properly locked & s				
		Diode box-Chk from inside for abnormalit				
		Diode box-Remove dust frm inside,if requ				
33	Gr S box	Gr S box-Chk mounting brachet for damage				
		Gr S box-Chkcover is properly locked & s				
		Ground switch box-Chk from inside				
		Gr S box-Remove dust frm inside,if requi				
34	SSB	SSB-ChK mounting brackets for damage/cra				
		SSB-Chk earth strap is fitted correctly				
		SSB-Chkcover is properly locked & secure				
35	PEB	PEB-ChK mounting brackets for damage/cra				
		PEB-Chk earth strap is fitted correctly				
		PEB-Chkcover is properly locked & secure				
Roof						
		Pantograph-General inspect for damage				
		Panto CollectorHead-Chk for damage				
		Panto CollectorHead-Chk mount screw for				
		Panto CollectorHead-Chk for free movemen				
		Panto CarbonStrip-chk mounting condition				
		Panto CarbonStrip-chk for any damage/cra				

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SN	System	Description	DM	TC	DM	Remark
36	Panto	Panto-Chk whether strip wearing is even				
		Panto-Chk that carbon strip have no groove				
		Panto-Chk strip is continuous & free of b				
		Panto Carbon Strip-Measure the thickness				
		Panto horns-chk for any damage, crack, wear				
		Pantograph-Visual chk of flex. Connection				
		Panto Insulator-chk for damage, flashing				
		Panto insulator-Clean with water/Ethyl A				
		Panto End Stops Chk for damage/deformation				
		Panto-Chk pneu/air hose pipe for rub mar				
		Panto-Chk air leakage in pneumatic ckt				
		Pantograph-Lubricate moving parts				
		Panto-Lubricate on Chain, Ball joints, wi				
		Panto-Lubricate suspension joint, Damper				
		Panto-Greasing of collector head				
		Panto Damper Assy-Chk for no leakage, crack				
		Panto bellows-Chk for no leakage, crack				
		Panto-Visual inspection of all joints				
		Panto-Visual inspection of lower rod				
		Panto-Chk collector head horizontal posi				
		Panto-measure contact force, Range-70 ± 1				
		Panto suspension-Check function manually				
37	LA	Lightning Arrestor-inspect for damage				
		LA-chk surface for chippings/crack, flash				
		LA-chk earth strap for any damage				
		Chk tightness of Earth strap connection				
		LA-All connection are properly marked, i				
		LA-Clean surface with warm water and sof				
38	PT	Potential TMR-visual inspection				
		PT-inspect HT connection for looseness,				
		PT-Chk for damage, crack, chipping/grazing				
		PT-Check Earth cable for damage, loosnes				
		PT-Clean Insulator surface with cotton d				
39	Bushing	Bushing-Chk for damage, crack, flashing ma				
		Bushing-Clean surface with cloth -If re				
		Bushing-Chk fastner's Torque marking				
		Bushing-Apply grease on surface				
40	VCB	VCB general inspection				
		VCB-chk for damage, crack, chipping & grazin				
		VCB check damage on earthing cable & strap				
		VCB-Check all fastner's Torque marking				
		VCB-Chk Electrical connection are tight				
		Check Earthing studs and lubricate them				
		VCB-clean Insulator surface with Denatur				
		VCB-apply silicon grease on surface				
41	EGS	EGS-chk Knife & contact for burning mark				
		EGS-chk Earthing connections are proper				
		EGS-Apply grease on Knives & contacts				
42		Replace fresh air filter with clean one				
42		Replace mix-air filter with clean one				
Interior check						
		Master Cntr(MC)-Chk cable Insul for Damage				
		Master Cntr(MC)-Chk terminal lug for dama				

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SN	System	Description	DM	TC	DM	Remark
43	MC & MCH	MCH & MS-Check for excessive wearing				
		MastCntr-Chk spring,gear,cams for abnorm				
		MasterCntr(MC)-Chk connectors for tightn				
		MastCntr-Chk for OilLeakage atPotentiome				
		MCH & MS-Chk interlocking as follows				
		MASCON=OFF, MCH=Bmax, MS=OFF				
		Neither MCH nor MS shall be moved				
		When MCH at Bmax,MS can be moved freely				
		When MS=REV check free movement of MCH				
		When MS=FOR check free movement of MCH				
		When MS=SBY MCH can be moved from Bmin t				
		Check spring, replace it if necessary by				
		MasterCntr(MC)-Chk free movement of MCH,				
44	EGS	EGS-Smooth mvmnt of switching mechanism				
		EGS-Locking/unlocking of keys smooth				
		EGS-Chk handle locking/unlocking functio				
		EGS Chk Plastic protection of the handle				
		EGS-Chk all electrical circuit connectio				
		EGS-Chk mechanical parts for damage				
		Ensure key no.&safety box key No are ide				
45	VCB	VCB-Check Pneumatic circuit for leakage				
		VCB-Drain Pressure Regulator				
		VCB-Drain BVAC Tank, check for leakage				
		VCB-chk all seal after complete draining				
46	PWM generator	PWM Generator-Check for any damage				
		PWM-Chk bolts&screws for loosening,If re				
		PWM-Check cable&Connector for damage				
		PWM-Check cable&Connector for loose,If r				
47	Footrest	Footrest -Inspect				
		Footrest-The security of the fixings				
		The footrest functions normally				
48	Seat	Driver Seat-Chk mechanical condition				
		Driver Seat-Chk verticle movements				
		Driver Seat-Chk horizontal movements				
		Driver Seat-Check for any wear or tear				
		Driver Seat-Chk folding/seating conditio				
		Auxiliary Seat-Visual chk for damage,fit				
49		Windscreen-Chk for any damage,crack				
49	wiper	Wiper-Visually check for washer tube,arm				
		Wiper-Chk fixing elements for tightness				
		Wiper-Check washer tank for damage,fitme				
		Wiper-Fill washer tank (RO water),if req				
		Wiper-Visually chk blade for any damage				
		Wiper-Chk nozzle for damage,blockage				
50	Cab accessories	Cab-Chk the sunvisor operation - normal.				
		Cab-Chk firstaid box items not expired.				
		Cab-chk Windscree glass broken,scratch				
		Cab-chk the glazing sealing not damaged				
		Cab-Chk General cab appearance&cleaning.				
		Cab-BPRBB,ATCCS,EBLBB,PBABB are Normal				
		Cab-EBLS-1&2,UMVB,BNRBB & DCBB are Normal				
		Cab-Chk PSS,COMS selector switch in Auto				
		Cab-EHGS-off,WSS-off,Switches,MCB's-Norm				

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SN	System	Description	DM	TC	DM	Remark
		Cab-Chk all push buttons are normal				
		Cab-check All Cover&Panels Closed&Locked				
51	Fire extinguisher	FireExtinguisherCab-Chk available,secure				
		Fire Extinguisher Cab-Chk Pr in GreenZon				
		Fire ExtinguisherCab-Chk for expiry date				
		FireExtinguisherSIn-Chk available,secure				
		Fire Extinguisher SIn-Chk Pr in GreenZon				
		Fire ExtinguisherSIn-Chk for expiry date				
52	Saloon Accessories	Windo draught scren-chk for any damage				
		Windo-chk glazing sealing is not damaged				
		Straphanger-Chk for damage,missing				
		Straphanger-Assy parts screws for loose				
		Straphanger-Chk rubber sealing forDamage				
		GarbPoles-Chk for damage,missing				
		GarbPoles-Assy parts screw for looseness				
53	Light	Saloon light-Check for any damage,crack				
		Front Lamp-Visual inspect for any damage				
		Front Lamp-Chk for dust,water inside gla				
		FrontLamp-Chk for crack,discolouration				
		Flasher light-Visual inspect for damage				
		Flasher light-Chk for dust,water inside				
		Flasher light-Chk for crack,discolourati				
		Ext dor indicator-VisualChk for damage				
		Ext dor indicator-Chk for dust,water ins				
		Ext dor incator-Chk for discolouration,c				
		Cab Main Light-Visual Chk for any damage				
		Console Read Light-Chk for any damage				
54	CCU	CCU-Check tighness of PCB's				
		CCU-Chk connector insulation for damage				
		CCU-Chk condition of pins for any defect				
		CCU-Check connecting cables				
		CCU-Check connectors&frame for dust,If d				
		CCU-Chk external frame for damage/Dent				
55	Cabinet D & H	Cabinet(D&H)-visual inspection				
		Cabinet-Chk frame&equip for dirt,spiderN				
		Cabinet-Chk any loose bunch of cables				
		Cabinet-Chk cable rubbing mark,insul dam				
		Cabinet-Chk cable for loose connection				
		Cabinet-Chk equip connectors for damage				
		Cabinet-Chk equip connectors for tightne				
		Cabinet(D&H)-chk relays, MCB for damage				
56	cabinet R & F	Cabinet(R&F)-visual inspection				
		Cabinet-Chk frame&equip for dirt,spiderN				
		Cabinet-Chk any loose bunch of cables				
		Cabinet-Chk cable rubbing mark,insul dam				
		Cabinet-Chk cable for loose connection				
		Cabinet-Chk equip connectors for damage				
		Cabinet-Chk equip connectors for tightne				
		Cabinet-Chk EBCU,HVAC controller panel				
		Cabinet(R&F)-chk relays, MCB for damage				
		Cabinet(R&F)-chk contactor for abnormali				
		CN1,2-Check tighness of PCB's				
		CN1,2-Chk connector insulation forDamage				

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SN	System	Description	DM	TC	DM	Remark
57	CN	CN1,2-Check condition of pins for defect				
		CN1,2-Chk connecting cables for damage				
		CN1,2-Chk connectors & frame for dust,If				
		CN1,2-Check Ext. frame for damage/Dent				
58	RIO	RIO1,2 -Check tightness of PCB's				
		RIO1,2-Chk connector insulation for Damag				
		RIO1,2-Chk condition of pins for defect				
		RIO1,2-Chk connecting cables for damage				
		Check connectors & frame for dust,If dus				
		RIO1,2-Check Ext. frame for damage/Dent				
59	VDU	VDU-Check screen for damage				
		VDU Chk screen for deformation & cracks				
		Check for water and moisture near VDU				
		VDU-Check Connector condition				
		VDU chk conector insulation for damage				
		VDU Chk condition of pins for any defect				
		chk connector cables for any damage				
		VDU chk mounting screws for any defect				
60	PAPIS	PCU-Check weather wiring is loose				
		PCU-Check if devices have any damages				
		SCU-Check weather wiring is loose				
		SCU-Check if devices have any damages				
		DVR-Check weather wiring is loose				
		DVR-Check if devices have any damages.				
		speaker-chk the surface of all speakers.				
		Speaker-Chk device for any damages.				
		Speaker-check whether the cable loose.				
		MOP Chk weather mic wiring damaged.				
		AOP Chk weather mic wiring damaged.				
61	CCTV	Check CCAM for any damage				
		CCAM clean protecting glasscover if dirt				
		Check SCAM for any damage				
		SCAM clean protecting glasscover if dirt				
		Check FCAM for any damage				
		FCAM clean protecting glasscover if dirt				
		Check RCAM for any damage				
		RCAM clean protecting glasscover if dirt				
62	C door	C Door-Chk assy. parts screws for loose				
		C Door-Visual inspect for any damage				
		C Door-Chk wiring for rub, routing proper				
		C Door-Chk rubber sealing for cracks, dam				
		C Door-Chk lower swingarm assy for damag				
		C Door-Chk 3 roller for loose, rupture, mi				
		C Door-Chk switch assy roller for damage				
		C Door-Check contact point between rolle				
		C Door-Check holdpin on hinge plate in t				
		C Door-Chk hold pin of trans. bracket fo				
		C Door-Chk trans nut for loose, displace				
		C Door-Chk set screw of fully locked swi				
		C Door-Chk door fully closed block for l				
		C Door-Chk lock hook for damage, crack				
		C Door-Chk shaftpin of lockhook for seci				
		CDoor-Chk shaftpin of lockhook for ruptu				

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SN	System	Description	DM	TC	DM	Remark
		CDoor-Chk shaftpin of lockhook for loose				
		Check circlip for secure,ruptured,loose				
		C Door-Examine isolation switch assy for				
		C Door-Chk door window glass for damage				
		C Door-Chk Bal roller assy for damage				
		C Door-Chk roller for displaced,rupture,				
		C Door-Chk retaining ring in nut for fit				
		C Door-chk screws at each place for loos				
		C Door-Chk&remove dust on top guide rail				
		CDoor-Chk&remove dust on lowerguide rail				
		C Door-Chk lower retaining pin assembly				
		C Door-If EAD/EED activates				
		C Door-Emergen unlocking switch activate				
		C Door-Open and close door manually				
63	E door	EDoor-Chk leaf&glass for damage,crack				
		EDoor-Chk door leaf rubber for damage				
		EDoor-Chk all ramp fasteners are tighten				
		EDoor-Chk mounting screws for looseness				
		EDoor-Chk ramp mountingScrew for loosene				
		EDoor-Chk opening&closing of door &ramp				
		EDoor-Chk triggering of switchassy.isOK				
		EDoor-Chk door&ramp lockdevice is normal				
		EDoor-Chk selfAdaptive support is normal				
		EDoor-Chk telescopicSupport leg is norma				
		EDoor-Chk ramp retracting rope for worn,				
		EDoor-Chk ramp expansion impact is norma				
		EDoor-Chk working of rampSupporting stan				
		EDoor-Chk activation of headlight onOpen				
		EDoor-Chk activation of blinker onOpenin				
		EDoor-Ensure door & ramp is closed & loc				
64	Pdoor	P Door-Chk for any damage,door hinge				
		P Door-Chk for lockingdevice,limitswitch				
		P Door-Chk opening/closing by square key				
		P Door-Check sight glass for clear view				
65	S door	S Door-Chk assy.parts screws for loose				
		S Door-Visual inspect for any damage				
		S Door-Chk wiring for rub,routing proper				
		S Door-Chk rubber sealing for cracks,dam				
		S Door-Chk lower swingarm assy for damag				
		S Door-Chk 3 roller for missing,rupture,				
		S Door-Chk switch assy roller for damage				
		S Door-Chk contact point between roller				
		S Door-Check holdpin on hinge plate for				
		S Door-Chk holdpin of trans.bracket for				
		S Door-Chk trans nut for loose,displace				
		S Door-Chk set screw of fully locked swi				
		S Door-Chk door fully closed block for l				
		S Door-Chk door window glass for damage				
		S Door-Chk balance rollerAssy for damage				
		S Door-Chk roller for displaced,rupture,				
		S Door-Check retaining ring in nut for f				
		SDoor-chk screws at each place for loose				
		S Door-Chk&remove dust on top guide rail				

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SN	System	Description	DM	TC	DM	Remark
		SDoor-Chk&remove dust on lowerGuide rail				
		S Door-Chk lower retaining pin assembly				
		S Door-Chk component in the coving panel				
		S Door-Check Maintenance switch				
		S Door-If EAD/EED activates				
		SDoor-Emergency unlockingSwitch activate				
		S Door-Open and close door manually				
		SDoor-Chk isolation switchAssy forDamage				
		S Door-Operate isolation device after cl				
66	Gangway	Gangway-Chk debries b/w footplate&apron				
		Gangwy-Chk side&top panel for abnormalit				
		Gangway-Chk footplate&apron plate forWea				
		Gangway-chk bellow rubbing mark & damage				
		Gangway-Chk bellow for damage fm outside				
		Gangway-Chk bellow for damage fm inside(				
		Gangway-Apply greasing movingparts,if re				
67		Exter CarBody-Chk for rubbing,dent mark,				
67		Inter CarBody-Chk for rubbing,dent mark,				
Function check						
68	HV system	Pantograph-Chk lifting times,not more th				
		Pantograph-Chk lowering times,not more t				
		Main Tr-Function Chk Main Tr Oil Flow In				
		MTR-Listen abnormal sound blower motor				
		MTR-Listen abnormal sound oil pump motor				
69	Brake system	Service brake function test -Apply & rel				
		Emergency brake function test-Test Apply				
		Indirect brake function test- I Apply &				
		Indirect brake function test-II Move dr				
		Indirect brake function test-III Charge				
		Parking Brake Function test-I :Apply by				
		Parking Brake Function test-II :Release				
		Parking Brake Function test-III ;1. Appl				
		Brake-Chk(StaticCondition)during testing				
		Air dryer unit function check (switchove				
		Oil separators Function check				
		Drain valve Draining function test : Sta				
70		WFL function check press test button for				
70		Automatic coupler Function check of UC b				
71	S door	Saloon door obstacle detection Func test				
		Saloon door isolation function check-Ope				
		Saloon door function chk by O/C button				
		Chk working of external indicator lamp				
		S Door-Chk working of internal lamp stri				
		Saloon Door-Chk the door status on TCMS				
		S Door-Chk fault message appears on TCMS				
72	C door	Cab door isolation function check-Operat				
		C Door-O/Cmanually&chk working of cabLig				
		C Door-O/C manually&check status on TCMS				
		C Door-Chk fault message appears onTCMS				
73	P door	P Door-O/Cmanually&chk status onTCMS				
		P Door-Chk for cab light glow when opens				
		Emerg Door-Chk open status on TCMS				
		E Door-Chk application of EB on door ope				

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SN	System	Description	DM	TC	DM	Remark
74	E door	E Door-Chk activation of HeadLight on op				
		E Door-Chk activation blinker on opening				
		Emergency Door-Chk close status on TCMS				
75	RIO/CN/CCU	CCU,Chk TCMS communication status on VDU				
		CCU,Chk 5V DC power on PWA2 byLED status				
		CCU,Chk RunE1&E2 LEDstatus on CPU2-1 PCB				
		CCU,Chk RunE1&E2 LEDstatus on CPU2-2 PCB				
		CCU,Chk Run,E1&E2 LEDstatus on REC PCB				
		CCU,Chk WDT LED status of CPU2-1 PCB				
		CCU,Chk WDT LED status of CPU2-2 PCB				
		CCU,Chk WDT LED status of REC PCB				
		CN1,2Chk TCMS communication status onVDU				
		CN1,2Check E1toE8 LED status on ESW2 PCB				
		CN1,2Check the WDT status on CPU1 PCB				
		CN1,2Check LED status on PWA2 PCB				
		RIO1,2Chk TCMS comunication status onVDU				
		RIO1,2Chk the Run LED status on IFC PCB				
		RIO1,2Chk WDT LED status on IFC PCB				
		RIO1,2Check 5V LED on PWA2				
		RIO1,2Check 24V LED on PWB2				
76	VDU	Check VDU touch panel operation using Di				
		Check theVDU screen movement				
		Check the TCMS function - Normal				
		Check the Date & time - correct				
		Check fault histry:No major fault record				
		Check Current fault list: No major fault				
77	HVAC	Cab AC-Function chk by selector switch				
		Cab AC-Chk fault message appears on TCMS				
		Cab AC-Chk that wind comes out properly				
		S HVAC-Check operation status on TCMS.				
		Chk F/A damper status - normal on TCMS				
		Chk R/A Damper status - normal on TCMS				
		S HVAC-Check control mode status on TCMS				
		S HVAC-Chk Target ¤tTemp - normal				
		S HVAC-Chk Temperature setting - normal				
		S HVAC-Chk fault message appears on TCMS				
		S HVAC-Check that windcomes out properly				
78	Lamps	Saloon light-Check ON/OFF status on TCMS				
		S Light-Fun Chk auto brightness control				
		S Light-Fun Chk TCMS brightness adjustme				
		S light-Chk appearance by operating SLS				
		FrontLamp-Chk brightness&working is norm				
		FlasherLight-Chk brightness&working is n				
		Chk the cab main lights work properly				
		Check the console light work properly				
		PCU,Initiate&check Artificial broadcast				
		PCU,Initiate Manual station broadcasting				
		SCU,Initiate&check emergency function				
		SCU,Initiate&check Artificial broadcast				
		SCU,Initiate Emergency intercom function				
		DVR,view video based on date time CAM ID				
		DVR,check clear video is displaye on MDS				
		DVR,check whether video can be download				

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SN	System	Description	DM	TC	DM	Remark
79	PCU	PIS,Chk on MOP that PIS is Master or not				
		PIS,Chk on VDU that PIS is online or off				
		PIS,Chk on MOP that PIS is online or off				
		SLSP,initiate&check Artificial broadcast				
		CLSP,Initiate cab to cab intercom functi				
		ELSP,Initiate Door closing broadcasting				
		Chk Automatic volume adjustment Noise mo				
		D&TNU,chk it display correct information				
		D&TNU,chk weather screen/Display is Norm				
		Check whether SDU shows the destination				
		SDU,chk weather screen/Display is Normal				
		Check SLCD normally play the programs				
		SLCD,chk weather screen/Display is Norma				
		Check DRM weather screen/Display Normal				
		Check DRM Displays correct information				
		Chk MOP weather screen/Display is Normal				
		Chk AOP weather screen/Display is Normal				
		Check all the function of MOP/AOP				
		Carry out PA test on the MOP/AOP				
		Carry out cab to cab call test				
		Initiate Artificial broadcast by MOP/AOP				
		PECU,Press button&Check indicator light				
		PECU,Chk communication with TO is normal				
		Check alarm in cab when PECU is pressed				
		Check video of active PECU on MDS is ok				
		4 active PECU footage on MDS at a time				
		PECU Initiate emerg intercom function				
80	CCTV system	Touch the MDS &chk correct response to r				
		Chk MDS weather screen/Display is Normal				
		Check the IR function of camera (turn of				
		Check switching between TCMS-CCTV is ok				
		Check if MDS light up or not				
		Check CCAM view is clear on MDS				
		CCAM streaming is fluent on MDS				
		Check SCAM view is clear on MDS				
		SCAM streaming is fluent on MDS				
		Check FCAM view is clear on MDS				
		FCAM camera streaming is fluent on MDS				
		Check RCAM view is clear on MDS				
		RCAM streaming is fluent on MDS				
		Check All camera views on TCMS VDU				
		Check recording of all camera working				
		Check whether analog station broadcastin				
81		MCH-Chk Operation from DSD(DeadmanSwitch				
81		Horn-Chk operation in Low and High				
82		Wiper-Function Chk&water spray is normal				
82		Battery-Ensure both batteries are fullyc				
83		Battery voltage noted from TCMS				
83	OBT	On Board Test - CI				
		On Board Test - APS				
		On Board Test - BECU				
		On Board Test - DCU				
		On Board Test - HVAC				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Half yearly service check

SN	System	Description	DM	TC	DM	Remark
		On Board Test - PA & PIS				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Yearly service check

Job card No.			Date & Time start			
Train Set		Kilometer	Date & Time Finish			
SN	System	Description	DM	TC	DM	Remark
1	Bogie	Bogie frame-Chk bogie parts for damage				
		Bogie frame-Chk bogie part for corrosion				
		Bogie frame-Check for welding defect				
		Inspect safety earth cables for damage				
		Check fasteners tightness and marking				
2	Wheel	Wheel-visual check for any damage				
		Wheel -check for corrosion, overheating				
		Wheel -check tread for scratches marks				
		Wheel-Measure the wheel profile parameter				
		Axle-Inspect for any damage, corrosion				
3	Gear box	Gear Box-Check surface for any damage				
		Gear Box-Check oil level, top up if low.				
		Gear Box-Check surface for oil leakage				
		Gear Box-Check spherical bearing of torq				
		Tooth gear coupling-Chk for oil leakage				
		Tooth gear coupling-Chk for damage mecha				
		Tooth gear coupling-Chk flange connectio				
4	Axle box	Axle box-Chk for any abnormalitie,damage				
		Check temperature rising of axel bearing				
5	Suspension	Primary suspension-chk for damage,abnorm				
		Primary suspnsion-chk crack on metal part				
		P suspnsion-chk splicing crack on rubber				
		P suspnsion-chk ozone crack on rubber par				
		Check rubber skin for oil contamination,				
		Check rubber metal bonding surfaces. Deb				
		P suspnsion-Vertical distance between upp				
		Air Spring-Check for abnormalitie,damage				
		Air Spring-Check air bellow for crack,Re				
		Air Spring-Check air bellow for abrasion				
		Air Spring-Check adherence strip,replace				
		Air Spring-Chk tightness of upper plate				
		Air Spring-Chk deformation of every part				
		Air Spring-Chk the chemical&oil on rubbe				
		Air Spring-Clean the dust of each part e				
		Air Spring-Chk cracking of rubber,metal				
		Air Spring-Chk bonding of rubber,metal p				
		Air Spring-Chk adhesion of rubber,metal				
		Air Spring-Chk pollution of oil/lubricat				
		Air Spring-Carbody measurement- distance				
6	AR bar	AntiRoll bar-Chk for deformation,fastene				
		AR bar-Chk nut connect rod to car body				
		AR bar-Chk nut connect rod to revers arm				
		AntiRoll bar-Chk rubber part forabnormal				
		AntiRoll bar-Chk cracks on metal surface				
		Traction device-Chk installed component				
		Traction device-Chk metal part for damag				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Yearly service check

SN	System	Description	DM	TC	DM	Remark
7	Traction Device	Trac device-Chk fasteners for tightness				
		Traction device-Central pin bottom part				
		Trac device-Chk crack on rubber surface,				
		Trac device-Rubber surface is tacky, brit				
		Trac device-Chk joint of metal & rubber				
		Trac device-Chk shrink fit of hinge cove				
		Trac device-Chk exterior ring for damage				
		Check rubber surface for damage, crack. Re				
		Check joint of metal & rubber for damage. R				
		Check gap of left & right transverse backs				
8	Damper	Tranverse damper-Chk for damage				
		Transvrs dmpsr-Chk for severe oil leaks				
		Trans damp-Check for dirt accumulation				
		Trans damp-chk for red oil droplets If p				
		Trans damp-Chk bushing for cut or split.				
		Trans damp-Chk pin for loosening				
		Trans damp-Chk pin rubber for cut/split				
		Trans damp-Chk centring seat for damage				
		Vertical damper-Chk for damage				
		Vertical dmpsr-Chk for severe oil leaks				
		Verti damp-Check for dirt accumulation				
		Verti damp-chk for red oil droplets If f				
		Verti damp-Chk bushing for cut or split.				
		Verti damp-Chk pin for loosening				
		Verti damp-Chk pin rubber for cut/split				
		Verti damp-Chk centring seat for damage				
9	Speed Sensor	Speed sensor Chk for any damage, crack				
		Speed sensor Check for overheating.				
		Speed sensor-inspect the cable condition				
		Sensor-Measure gap b/w probe & pole whee				
		Speed sensr-chk the tightness of bolts				
		Chk cable for excessive bending, layout				
		speed sensr-chk cable for crack/fracture				
10	Earth Brush	Earth brush-chk wear, damage. Replace afte				
		E, brush-clean Spring & cover (comp air)				
		Remove dust from brushes & brush holder.				
		Chk contact surface for absence of groov				
		Chk contact disc for grease contamination				
11	WFL	Earthbrush-DUBO nylon ring replace				
		WFL-Remove accumulated dust on Nozzle.				
		WFL-chk position of nozzle The distance				
		WFL-chk installation angle of nozzle Ang				
		WFL-Check fasteners for tightness				
		WFL-Chk pipeline for damage, leakage				
		WFL-Check tank oil level, top up if low				
		WFL-Chk installation seat for crack, weld				
		WFL-Visually inspect controller box				
		WFL-Visually inspect oil store tank				
		Auto coupler Check for wear, damage, rust				
		Auto coupler Check for loose, missing part				

MAHARASHTRA METRO RAIL CORPORATION Ltd.

Yearly service check

SN	System	Description	DM	TC	DM	Remark
12	Auto coupler	Auto coupler-Clean rusty parts				
		Auto coupler Chk hook plate for damage				
		Auto coupler Chk hook plate for corrosio				
		Cplr Check hook plate for loose fastener				
		Cplr chk spring intactness to hook plate				
		Auto cplr Check couplinglink for damage				
		Cplr Check coupling link for corrosion				
		Check coupling link for loose fastener				
		Chk Uncoupling handle for free movement				
		Autocplr Inspect D.A.Gas cylinder buffer				
		Chk D.A.Gas cylinder buffer-damage, wear				
		D.A.Gas cylinder buffer for oil leakage				
		Cplr chk set screw on front collar-wear				
		Cplr chk set screw on front collar-damag				
		Top of set screws shall be well below th				
		Check the stroke indicator for fixation				
		Check stroke ind on spherical rubber anc				
		Inspect sphere rubberanchor-wear,damage				
		Check redseal paint on release screws in				
		Chk centring rubber spring strut for dam				
		Inspect condition of the rubber springs				
		Chk all nut,bolt springpin for damage				
		Chk all socket joints for loose parts				
		Autocplr Chk all socket joints for damage				
		MRP& BP valve-damages,leak&missing part				
		MRP& BP valve-front seal deterioration				
		Pneumatic houses-check for slack,leakage				
		Check cable support- for wear & damage				
		Check ground cables for condition,secure				
		Check the red seal on coupler mount bolt				
		Autocplr clean the surface,MR & BP valve				
		Apply lubricate agent-manual uncoupling				
		Apply lubricate agent on link & Bolt				
		Autocplr Apply grease to main pin				
		Autocplr Apply grease to Link Pin				
		greasing of Spherical rubber anchor				
		Greasing Supportingrubber springs struts				
		Greasing centring rubber springs struts				
		greasing of sliding surface of D.A gas c				
		greasing of visible mount interface by b				
		greasing of mouth in hook plate by brush				
		greasing of pin shape front of coupling				
		All unpainted surface treat by spray				
		Auto coupler Measure of Wear- Clean fro				
		Check the adjustment of support¢ring				
		Exercise the Autocoupler vertically- App				
		Test functioning of support & centring.				
		Reset Auto Coupler to operation state				
		Semi-permanent coupler Visual inspection				
		semi permnt cplr Visual chk deformations				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Yearly service check

SN	System	Description	DM	TC	DM	Remark
13	Semi permanent coupler	semi permnt cplr Visual chk coupler wear				
		semi cplr Visual chk loose missing part				
		semi cplr Clean rusty parts and protect				
		Chk D.A.Gas cylinder buffer-damage, wear				
		D.A.Gas cylinder buffer for oil leakage				
		Inspect set screws on front collar for w				
		Check stroke indicator for its fixation				
		semi cplr Chk Gangway support for damage				
		semi cplr Chk Gangway supportfor rubbing				
		semi cplr Chk mounting bolt for damage				
		cplr Chk mounting bolts red seal paint				
		cplr Chk Spherical Rubber Anchor-Wear				
		cplr Chk Spherical Rubber Anchor-damage				
		Chk the redseal paint on rubber anchor				
		Chk Socket joints- no loosen or damages				
		Pneumatic-inspect for leakage, damage				
		Pneumatic-inspect loose or missing part.				
		Temporary support- inspect wear,damage(i				
		Cleaning-clean coupler surface with low				
		Semi cplr gresing spherical rubber ancho				
		SM Cplr greasing visible sliding surface				
		SM Cplr greasing visible mount interface				
		SM Cplr-All unpainted surface treat by s				
14	Brake and pneumatics accessories	brake&pneu Chk equip. in bogie fordamage				
		brake&pneu Chk equip in bogie-mounting				
		brake&pneu Chk equip in train for damage				
		brake&pneu Chk equip in train-mounting				
		Hose pipe-visual inspection				
		Hose pipe-chk for any damage.				
		Hose pipe-check leakag on connecting pt.				
		remot control brake rele-chk condition				
		remot brak-chk laypout of cable control				
		chk outer plastic sheath damage				
		chk control cable for damage, if require				
		remot-chk control cbl for ease of mvmnt				
		remot-operat repetedly & chk mvmnt				
15	Brake caliper	brake caliper Chk unit-damage&mounting				
		caliper chk Rubber bellows for damage				
		Caliper chk exhaust port for free pasage				
		mesure gap-bet break pad and brake disc				
		brake caliper chk for ease of movement				
		brake pad chk for damage				
		brake pad chk for remaining thickness				
		brakepad measure thickness, limit 5 mm				
16	Brake disc	brake pad Fitment of brake pad in holder				
		brake disc chk for crack,hotspots,wear				
		brake disc chk for flaking				
		brake disc chk for material deposits				
		brakedisc chk for deformation,looseness				
		disc chk cooling ribs for dirt deposits,				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Yearly service check

SN	System	Description	DM	TC	DM	Remark
		disc-clean cooling rib with compress air				
		brakedisc chk Hollow wear measurement				
17	Ballcock	ballcocks-Chk all are normal				
		ballcocks-chk for any damage				
		ballcocks-Chk all are sealed with wire				
18	Main Compressor	compressor-Chk set for damage & mounting				
		compressor-chk Oil level and oil leakage				
		compressor set-Clean air inlet filters.				
		comp-chk&clean vaccume indicator on inta				
		comp.-chk hose pipe for leakage,damage				
		Clean the cooler &cylinder cooling ribs				
		compressor-change the compressor oil.				
		compressor-replace dry-type air filter e				
		safety valve-chk for damage, corrosion				
		valve-chk for dirt at discharge port.				
		air dryer-chk silencer drainage is clear				
		Carryout pressure dew point measurement				
		microemesh oil filter perform Venting				
		M.mesh oil filter- discharg precipitat				
		M.mesh oil filter- replace filter elemen				
		oil saperator-drain liquid manually.				
		silencer-Check for clear passage				
		air reservoir-chk for damage& airleakage				
		reservoir-drain & check if water present				
19	Line filter	Air filtr L02-Clean the filter element				
		Air filtr B01-drain th filter & check				
		B01-Cleaning the filter element				
20	Levelling Rod	levelling valve-check for damage				
		levelling rod-chk for damage & airleakag				
		rod-chk screw plug for loose or sealing				
		levlling rod-chk hex-bolt for tightness				
21	Mean pressure valve	Mean pressure valv- chk for airleakage				
		Mean pressure valve-chk for damage				
		Mean pr. Valve- clean venting bore				
22	Horn	horn(typhoon) inspect for damage				
		Horn check cable for layout				
		Horn-chk EleMgnt valve for any damage				
23	BCU	BCU-Chk mounting brackets for damage				
		BCU-Chkcover is properly locked & secure				
		BCU-inspect parts from inside damage,loo				
24	Pressure governer	P valve box-Chk mounting brackets for da				
		P valve box-Chk exterior condition				
25	PEB	PEB-Chkcover is properly locked & secure				
		PEB-Chk all covers and lock for damage				
		PEB-Chk inside of box for damage,loose c				
		PEB-Remove the dirt and foreign material				
26	Guage	Inspect MR pressure(8-10 bar)from gauge				
		gauge-Check the BR pressure				
		chk Aux comp for any damage				
		chk Aux comp for any abnormalities.				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Yearly service check

SN	System	Description	DM	TC	DM	Remark
27	Aux Compressor	Chk Aux comp & attend for any leakages				
		Clean Auxiliary compressor surface				
		compressor's DryerCartridge replacement				
		Reservoir 4L Inspection and Drainage				
		Aux compressor filter replacement				
28	C/I	C/I box-Visual Inspection				
		C/I-Check visually covers for damage.				
		C/I box check cover locks for damage				
		C/I-Chk cover lock for right operation				
		C/I-check interior for any dust				
		Clean dust gently with dry cotton cloth				
		C/I chk box covers are locked & secured				
		CI chk cooling fins for dust acumulation				
		CI chk mounting,safety braket for damage				
		CI Check Rubber gaskets on box covers, I				
		CI chk box Fasteners if loose or missing				
		CI chk connector & pins for any damage.				
		C/I Chk no cable/wire touching box body				
29	ACCB	ACCB-inspect condition Box exterior				
		ACCbox-chk for corrosion/deformity				
		Inspect cover,locks,Box welds for damage				
		Ensure cover is properly locked & secure				
		ACCB- chk Earth cable for any damage				
		ACCB-chk Fasteners if loose or missing,I				
		ACCB-chk CN1/CN2 connector for damage/du				
		ACCB check pins in CN connectors				
		ACCB-Inspect interior for dust If dusty,				
		ACCB-Chk Rubber gaskets on box,covers, I				
		Chk condi. of insulation &terminal lugs				
		ACCB-Check earth cable for damage				
		ACCB-Chk the condition of Relay Panel				
		ACCB-check the condition of CT Panel				
		ACCB-chk sequence relays for dirt				
		ACCB-chk sequence relays for damage				
30	Main transformer	MTR-Check all Mounting Brackets				
		MTR-Chk Underframe for cracks or damage				
		Chk mounting of Blower motor & oil pump				
		MTR-Check Resilient mounting devices, If				
		MTR-Chk loosenes mounting fasteners, If				
		MTR-Chk for crack/damage of Cooling unit				
		MTR-Chk Heavy Dust on painted surfac, If				
		Chk if flaw in lead cabl in Terminl box				
		Check for damage on Dial typeThermometer				
		Check for damage on Oil Flow Relay.				
		MTR Chk for damage to Exhaust,Drain Valve				
		MTR-Check for damage to Shut off Valve				
		MTR Chk Earth Cables at both sideof assy				
		MTR Chk Earth straps at both sideof assy				
		Chk o/p lead cables of Termi.box for ins				
		Chk oil leakage at piping,welded joints				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Yearly service check

SN	System	Description	DM	TC	DM	Remark
		Chk oil leakage at tank,gasket of flange				
		MTR Chk presure relief valv for oil leak				
		Check the blockage of filter breather				
		MTR chk silica gel for colour change, i				
		MTR-Clean cooling fins of cooling unit				
		Remove the Eight bolts of filter mesh				
		MTR-Remove filter mesh from cooling unit				
		Clean fins on back side with air Pr.2bar				
		Clean removed filter mesh by air pr.2bar				
		Install the Eight bolts to the filter.				
		Tighten all 8 bolts with 20 Nm torque.				
		MTR-Check if Pressure Relief Valve opera				
		MTR-Chk limit switch of Pr. relief valve				
		MTR-if limit s/w dirty,clean s/w contact				
31	Traction motor	Traction motor (TM) Visually inspect				
		TM Chk on motor nose for cracks/damage				
		Check lower mountng points for damage				
		TM-chk lower mounting points for crack				
		TM-chk lead cable for insulation damage				
		TM-chk grease nipple for any leakages				
		TM-chk for signs of oil leakage				
		Clean TM's wire net air filter by air				
		Check on motor for signs of overheating				
		TM-Check for any other heating mark				
		TM-Chk air outlet portion of Bearing Box				
		TM-Check for leakage of bearing oil, If				
		Tighten bearing box bolts if found loose				
		TM-Inspect the fixing bolts				
		TM-Check junction box inside cable				
		Check cable connection in junction box				
		Clean dust frm traction motor vent holes				
		TM-dust blowing of rotor vent holes in b				
32	LTJB/HTJB	LTJB check for any damage.				
		LTJB inspect jumper plug for rust/cracks				
		LTJB inspect receptacle plug for rust				
		LTJB inspect receptacle plug for cracks				
		HTJB check for any damage.				
		HTJB inspect jumper plug for rust/cracks				
		HTJB inspect receptacle plug for rust				
		HTJB inspect receptacle plug for cracks				
		Jumper Cable-chk for any damage				
		Jump cble-chk connector are firmly fitte				
		Jump cable clearnce 210mm above Rail lev				
		APS-Visual Inspection of APS unit				
		APS clean fins with compressed air/brush				
		Inspect APS's all Electrical connections				
		Inspect complete APS Box exterior				
		APS chk Box interior(gasket,locks,dust)				
		APS-Chk all cover properly fit&closed				
		APS Chk mounting bracket for damage/crak				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
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SN	System	Description	DM	TC	DM	Remark
33	APS	APS Chk safety bracket for damage/cracks				
		Check earth strap is tight & not damage				
		APS chk CN1,CN2 connectors for rust/dirt				
		Chk APS box Rubber gasket on all covers				
		APS chk bus bars for damages/dicolourin				
		APS chk cable insulation for damage				
		APS chk all cable terminations are tight				
		APS chk insulators for damage/crack				
34	battery	BCB-Visual inspect battery control box				
		BCB inspect cover, locks for damage				
		BCB check mounting brackets for damage				
		BCB chk mounting brackets for crack				
		BCB-Chkcover is properly locked & secure				
		BCB-Chk inside parts for damage,tighten				
		BCB-Clean inside dirt&foreign material				
		Batery box-chk mounting brackets for dam				
		Batery box-Chkcover properly locked & se				
		Battery-Measure the voltage of each cell				
		Battery-Carry out the pressure test				
		Battery-Perform electrolyte topping up				
		Battery-Record amount of water added				
		Battery clean by using vacuum cleaner				
		Battery-Check level of electrolyte				
		Battery-Check terminal covers,change dam				
		Battery-Chk crates correctly connected				
		Battery-Check for electrolyte leakage,if				
		Battery-Check battery charger voltage				
		Battery-Perform battery insulation test				
		Battery chk connection torque marking				
		Battery chk connection tightening torque				
		Battery-Chk cell terminals for flashmark				
		Battery-Clean terminals & connections				
		Battery-Aply grease on block's terminals				
		Battery-Aply grease on block's conection				
		Check torque marking on screws,If misma				
		Battry chk temp sensor as per procedure				
35	ACCT	ACCT chk LV connection for looseness				
		Check all metal parts for rust/corrosion				
		Clean insu. surface with dry cottoncloth				
		ACCT-Remove outer cover				
		Disconnect S1 and S4 terminal of ACCT				
		Check insulation resistance betn 2ndary				
		Reconnect S1 and S4 terminal of ACCT				
		Tighten S1 & S4 M6 nuts with 2.35~3.04Nm				
		Check S2, S3 nut torque.(2.35~3.04Nm)				
		Install cover withTq=5.9Nm(M6)&3.5Nm(M5)				
		ACCT Check exterior for any damage				
		ACCT Chk 2ndry terminal cable for damage				
		Check if 2ndary terminal cable is firm I				
		ACCT Chk all metal part for deformation				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Yearly service check

SN	System	Description	DM	TC	DM	Remark
		ACCT chk earthing cable for any damage				
		ACCT Check fasteners of ACCT				
		ACCT Check mounting brackets of ACCT				
36	EDB	EDB-Visually check EDB for any damage.				
		EDB-Chkcover is properly locked & secure				
		EDB-Check the status of cable in EDB				
		EDB-Remove dust in EDB, if required				
37	Diode Box	Diode boxChk mounting brachet for damage				
		Diodebox-Chkcover is properly locked & s				
		Diode box-Chk from inside for abnormalit				
		Diode box-Remove dust frm inside,if requ				
38	Gr. Switch Box	Gr S box-Chk mounting brachet for damage				
		Gr S box-Chkcover is properly locked & s				
		Ground switch box-Chk from inside				
		Gr S box-Remove dust frm inside,if requi				
39	SSB	SSB-Chk mounting brackets for damage/cra				
		SSB-Chk earth strap is fitted correctly				
		SSB-Chkcover is properly locked & secure				
		SSB-Chk all covers and lock for damage				
		SSB-Chk inside of box for damage,flash m				
		SSB-Chk inside of box for loose connecti				
		SSB-Remove the dirt and foreign material				
40	PEB	PEB-Chk mounting brackets for damage/cra				
		PEB-Chk earth strap is fitted correctly				
		PEB-Chkcover is properly locked & secure				
		PEB-Chk all covers and lock for damage				
		PEB-Chk inside of box for damage,flash m				
		PEB-Chk inside of box for loose connecti				
		PEB-Remove the dirt and foreign material				
41	Pantograph	Pantograph-General inspect for damage				
		Panto CollectorHead-Chk for damage				
		Panto CollectorHead-Chk mount screw for				
		Panto CollectorHead-Chk for free movemen				
		Panto CarbonStrip-chk mounting condition				
		Panto CarbonStrip-chk for any damage/cra				
		Panto-Chk whether strip wearing is even				
		Panto-Chkthat carbonstrip have no groove				
		Panto-Chk strip is continuous& free of b				
		Panto CarbonStrip-Measure the thickness				
		Pantohorns-chk for any damage,crack,wear				
		Pantograph-Visual chk of flex.Connection				
		Panto Insulator-chk for damage,flashing				
		Panto insulator-Clean with water/Ethyl A				
		PantoEnd Stops Chk for damage/deformati				
		Panto-Chk pneu/air hose pipe for rub mar				
		Panto-Chk air leakage in pneumatic ckt				
		Pantograph-Lubricate moving parts				
		Panto-Lubricate on Chain, Ball joints,wi				
		Panto-Lubricate suspension joint, Damper				
		Panto-Greasing of collector head				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
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SN	System	Description	DM	TC	DM	Remark
		Panto Damper Assy-Chk for no leakage,crac				
		Panto bellow-Chk for no leakage,crack				
		Panto-Visual inspection of all joints				
		Panto-Visual inspection of lower rod				
		Panto-Chk collector head horizontal posi				
		Panto-measure contact force,Range-70 ± 1				
		Panto suspension-Check function manually				
		Panto-Lubricate flexible connection, Use				
		Panto-Lubricate levelling rod seating pi				
		Panto-Greasing of all visible screws/nut				
		Panto pneumatic ckt-General inspection				
		Panto pneu. component-Air tightnes test				
		Panto-Function Chk Auto dropdown device				
		Panto-Function Chk Max Extension device				
42	LA	Lightning Arrestor-inspect for damage				
		LA-chk surface for chippings/crack,flash				
		LA-chk earth strap for any damage				
		Chk tightness of Earth strap connection				
		LA-All connection are properly marked, i				
		LA-Clean surface with warm water and sof				
43	PT	Potential TMR-visual inspection				
		PT-inspect HT connection for looseness,				
		PT-Chk for damage,crack,chipping/grazing				
		PT-Check Earth cable for damage,loosnes				
		PT-Clean Insulator surface with cotton d				
44	Bushing	Bushing-Chk for damage,crack,flashing ma				
		Bushing-Clean surface with cloth -If re				
		Bushing-Chk fastner's Torque marking				
		Bushing-Apply grease on surface				
45	VCB	VCB general inspection				
		VCB-chk for damage,crack,chipping&grazin				
		VCB check damage on earthing cable&strap				
		VCB-Check all fastner's Torque marking				
		VCB-Chk Electrical connection are tight				
		Check Earthing studs and lubricate them				
		VCB-clean Insulator surface with Denatur				
		VCB-apply silicon grease on surface				
46	EGS	EGS-chk Knife & contact for burning mark				
		EGS-chk Earthing connections are proper				
		EGS-Apply grease on Knives&contacts				
47	HVAC condensor coil	HVAC-Inspect the power connector				
		HVAC-Inspect the control connector				
		HVAC-Check rubber strip for damage,crack				
		HVAC CC-Open condensation chamber cover				
		HVAC CC-Open compressor chamber cover				
		HVAC CC-Remove debris from coil by soft				
		HVAC CC-Clean the coil by hot/cold water				
		HVAC CC-Straighten bent fins by fin comb				
		HVAC CC -Close covers & recover the unit				
		HVAC EC-Open evaporation chamber cover				

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SN	System	Description	DM	TC	DM	Remark
48	HVAC Evaporator & drainage	HVACEC-Open compressor chamber cover				
		HVAC EC-Remove debris from coil by soft				
		HVAC EC-Clean coil by hot/cold water pre				
		HVAC EC-Straighten bent fins by fin comb				
		HVAC EC-Chk insulation material for dama				
		HVAC EC-Close covers & recover the unit				
		HVAC-Open the evaporation chamber cover				
		HVAC-Chk drainage pipe for blockage,leak				
		HVAC-Cleaning of drainage Pipes				
		HVAC EH-Inspect heater for damage				
		HVAC EH-Check the on-off state of heater				
		HVAC-Close the covers & recover the unit				
49	HVAC PIPE SYSTEM	HVAC pipe sys-Open cover of four nos cha				
		HVAC pipe sys-Chk fastening screw for lo				
		HVAC pipe sys-Chk gasket for damage,miss				
		HVAC pipe sys-Chk screw joints for loose				
		HVAC pipe sys-Close covers&recover unit				
		HVAC-Inspect the leakage of refrigerant				
50	HVAC E FAN	HVAC E Fan-Open evaporation chamber cove				
		HVAC E Fan-Open compressor chamber cover				
		HVAC E Fan-Chk fixing bolts for tightnes				
		HVAC E Fan-Check the connector of fan				
		HVAC E Fan-Check the bearings				
		HVAC E Fan-Check abnormal noise from fan				
		HVAC E Fan-Chk motor blade for tightness				
		HVAC E Fan-Chk motor shaft for tightness				
		HVAC E Fan-Chk motor for obvious deterio				
51		HVAC E Fan-Clean blades with brush/compr				
		HVAC E Fan-Close the covers&recover unit				
52	HVAC C FAN	HVAC C Fan-Open condensation chamber cov				
		HVAC C Fan-Chk fixing bolts for tightnes				
		HVAC C Fan-Check the connector of fan				
		HVAC C Fan-Check the bearings				
		HVAC C Fan-Check abnormal noise from fan				
		HVAC C Fan-Chk motor shaft for tightness				
		HVAC C Fan-Chk motor blade for tightness				
		HVAC C Fan-Chk motor for obvious deterio				
		HVAC C Fan-Clean blades with brush/compr				
		HVAC C Fan-Close the covers&recover unit				
53	HVAC accessories	HVAC Fix COMPR -Chk for damage,mounting				
		HVAC INV COMPR -Chk for damage,mounting				
		HVAC FAD-Chk damper for damage,mounting				
		HVAC RAD-Chk damper for damage,mounting				
		HVAC Pr Switch-Chk for damage,abnormalit				
		HVAC TEMP Sensor-Chk for damage,abnormal				
		HVAC humidity sensor-Chk for damage,abno				
		HVAC Smoke detec-Chk for damage,abnormal				
54	HVAC VVVF	HVAC Level glass-Inspect for damage				
		HVAC VVVF C unit-inspect electrical term				
		HVAC VVVF C unit-Chk electri equipments				

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SN	System	Description	DM	TC	DM	Remark
54	HVAC VVVF	HVAC VVVF C unit-Chk for dust,if required				
		HVAC VVVF control unit-Chk for flash mark				
55		Replace fresh air filter with clean one				
56		Replace mix-air filter with clean one				
57	MS & MCH	MasterCntr(MC)-Chk cable Insul for Damage				
		MasterCntr(MC)-Chk terminal lug for dama				
		MCH & MS-Check for excessive wearing				
		MasterCntr-Chk spring,gear,cams for abnorm				
		MasterCntr(MC)-Chk connectors for tightn				
		MasterCntr-Chk for Oil Leakage at Potentiome				
		MCH & MS-Chk interlocking as follows				
		MASCON=OFF, MCH=Bmax, MS=OFF				
		Neither MCH nor MS shall be moved				
		When MCH at Bmax,MS can be moved freely				
		When MS=REV check free movement of MCH				
		When MS=FOR check free movement of MCH				
		When MS=SBY MCH can be moved from Bmin t				
		Check spring, replace it if necessary by				
		MasterCntr(MC)-Chk free movement of MCH,				
58	EGS	EGS-Smooth mvmnt of switching mechanism				
		EGS-Locking/unlocking of keys smooth				
		EGS-Chk handle locking/unlocking functio				
		EGS Chk Plastic protection of the handle				
		EGS-Chk all electrical circuit connectio				
		EGS-Chk mechanical parts for damage				
		Ensure key no.&safety box key No are ide				
59	VCB	VCB-Check Pneumatic circuit for leakage				
		VCB-Drain Pressure Regulator				
		VCB-Drain BVAC Tank, check for leakage				
		VCB-chk all seal after complete draining				
60	PCU	Panto ctrl unit-Replac airfilter insert				
		PCU-Chk tightnes of pneumatic connection				
		Pneumatic control unit-Air tightness tes				
61	PWM generator	PWM Generator-Check for any damage				
		PWM-Chk bolts&screws for loosening,If re				
		PWM-Check cable&Connector for damage				
		PWM-Check cable&Connector for loose,If r				
62	Footrest	Footrest -Inspect				
		Footrest-The security of the fixings				
		The footrest functions normally				
63	Seat	Driver Seat-Chk mechanical condition				
		Driver Seat-Chk verticle movements				
		Driver Seat-Chk horizontal movements				
		Driver Seat-Check for any wear or tear				
		Driver Seat-Chk folding/seating conditio				
		Auxiliary Seat-Visual chk for damage,fit				
		Windscreen-Chk for any damage,crack				
		Wiper-Visually check for washer tube,arm				
		Wiper-Chk fixing elements for tightness				
		Wiper-Check washer tank for damage,fitme				

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SN	System	Description	DM	TC	DM	Remark
64	Cab equipments	Wiper-Fill washer tank (RO water),if req				
		Wiper-Visually chk blade for any damage				
		Wiper-Chk nozzle for damage,blockage				
		Cab-Chk the sunvisor operation - normal.				
		Cab-Chk firstaid box items not expired.				
		Cab-chk Windscreen glass broken,scratch				
		Cab-chk the glazing sealing not damaged				
		Cab-Chk General cab appearance&cleaning.				
		Cab-BPRBB,ATCCS,EBLBB,PBABB are Normal				
		Cab-EBLS-1&2,UMVB,BNRBB & DCBB are Normal				
		Cab-Chk PSS,COMS selector switch in Auto				
		Cab-EHGS-off,WSS-off,Switches,MCB's-Norm				
		Cab-Chk all push buttons are normal				
		Cab-check All Cover&Panels Closed&Locked				
65	Fire Extinguisher	FireExtinguisherCab-Chk available,secure				
		Fire Extinguisher Cab-Chk Pr in GreenZon				
		Fire ExtinguisherCab-Chk for expiry date				
		FireExtinguisherSIn-Chk available,secure				
		Fire Extinguisher SIn-Chk Pr in GreenZon				
		Fire ExtinguisherSIn-Chk for expiry date				
66	Saloon accessories	Windo draught scren-chk for any damage				
		Windo-chk glazing sealing is not damaged				
		Straphanger-Chk for damage,missing				
		Straphanger-Assy parts screws for loose				
		Straphanger-Chk rubber sealing forDamage				
		GarbPoles-Chk for damage,missing				
		GarbPoles-Assy parts screw for looseness				
67	Lamps	Saloon light-Check for any damage,crack				
		Front Lamp-Visual inspect for any damage				
		Front Lamp-Chk for dust,water inside gla				
		FrontLamp-Chk for crack,discolouration				
		FrontLamp-Chk fixture fasteners are tigh				
		Flasher light-Visual inspect for damage				
		Flasher light-Chk for dust,water inside				
		Flasher light-Chk for crack,discolourati				
		FlasherLight-Chk fixture fasteners are t				
		Ext dor indicator-VisualChk for damage				
		Ext dor indicator-Chk for dust,water ins				
		Ext dor incator-Chk for discolouration,c				
		Ext dor indicator-Chk fixture fasteners				
		Cab Main Light-Visual Chk for any damage				
		Console Read Light-Chk for any damage				
68	CCU	CCU-Check tighness of PCB's				
		CCU-Chk connector insulation for damage				
		CCU-Chk condition of pins for any defect				
		CCU-Check connecting cables				
		CCU-Check connectors&frame for dust,If d				
		CCU-Chk external frame for damage/Dent				
		Cabinet(D&H)-visual inspection				
		Cabinet-Chk frame&equip for dirt,spiderN				

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SN	System	Description	DM	TC	DM	Remark
69	Cabinet D & H	Cabinet-Chk any loose bunch of cables				
		Cabinet-Chk cable rubbing mark,insul dam				
		Cabinet-Chk cable for loose connection				
		Cabinet-Chk equip connectors for damage				
		Cabinet-Chk equip connectors for tightne				
		Cabinet(D&H)-chk relays, MCB for damage				
70	Cabinet R & F	Cabinet(R&F)-visual inspection				
		Cabinet-Chk frame&equip for dirt,spiderN				
		Cabinet-Chk any loose bunch of cables				
		Cabinet-Chk cable rubbing mark,insul dam				
		Cabinet-Chk cable for loose connection				
		Cabinet-Chk equip connectors for damage				
		Cabinet-Chk equip connectors for tightne				
		Cabinet-Chk EBCU,HVAC controller panel				
		Cabinet(R&F)-chk relays, MCB for damage				
		Cabinet(R&F)-chk contactor for abnormali				
71	CN	CN1,2-Check tightness of PCB's				
		CN1,2-Chk connector insulation forDamage				
		CN1,2-Check condition of pins for defect				
		CN1,2-Chk connecting cables for damage				
		CN1,2-Chk connectors & frame for dust,lf				
		CN1,2-Check Ext. frame for damage/Dent				
72	RIO	RIO1,2 -Check tightness of PCB's				
		RIO1,2-Chk connector insulation forDamag				
		RIO1,2-Chk condition of pins for defect				
		RIO1,2-Chk connecting cables for damage				
		Check connectors & frame for dust,lf dus				
		RIO1,2-Check Ext. frame for damage/Dent				
73	VDU	VDU-Check screen for damage				
		VDU Chk screen for deformation &cracks				
		Check for water and moisture near VDU				
		VDU-Check Connector condition				
		VDU chk conector insulation for damage				
		VDU Chk condition of pins for any defect				
		chk connector cables for any damage				
		VDU chk mounting screws for any defect				
74	PAPIS	PCU-Check weather wiring is loose				
		PCU-Check if devices have any damages				
		SCU-Check weather wiring is loose				
		SCU-Check if devices have any damages				
		DVR-Check weather wiring is loose				
		DVR-Check if devices have any damages.				
		speaker-chk the surface of all speakers.				
		Speaker-Chk device for any damages.				
		Speaker-check whether the cable loose.				
		MOP Chk weather mic wiring damaged.				
		AOP Chk weather mic wiring damaged.				
		Check CCAM for any damage				
		CCAM clean protecting glasscover if dirt				
		Check SCAM for any damage				

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SN	System	Description	DM	TC	DM	Remark
75	CCTV	SCAM clean protecting glasscover if dirt				
		Check FCAM for any damage				
		FCAM clean protecting glasscover if dirt				
		Check RCAM for any damage				
		RCAM clean protecting glasscover if dirt				
76	Cab Door	C Door-Chk assy.parts screws for loose				
		C Door-Visual inspect for any damage				
		C Door-Chk wiring for rub,routing proper				
		C Door-Chk rubber sealing for cracks,dam				
		C Door-Chk lower swingarm assy for damag				
		C Door-Chk 3 roller for loose,rupture,mi				
		C Door-Chk switch assy roller for damage				
		C Door-Check contact point between rolle				
		C Door-Check holdpin on hinge plate in t				
		C Door-Chk hold pin of trans.bracket fo				
		C Door-Chk trans nut for loose,displace				
		C Door-Chk set screw of fully locked swi				
		C Door-Chk door fully closed block for l				
		C Door-Chk lock hook for damage,crack				
		C Door-Chk shaftpin of lockhook for seci				
		CDoor-Chk shaftpin of lockhook for ruptu				
		CDoor-Chk shaftpin of lockhook for loose				
		Check circlip for secure,ruptured,loose				
		C Door-Examine isolation switch assy for				
		C Door-Chk long guide rod for crack,loos				
		C Door-Chk short guide rod for crack,loo				
		C Door-Chk door leaf carrier for crack,l				
		C Door-Check hinge base for crack,loose				
		C Door-Chk nut assy for crack on externa				
		C Door-Chk side hanging brkt for crack,l				
		C Door-Chk door window glass for damage				
		C Door-Chk Bal roller assy for damage				
		C Door-Chk roller for displaced,rupture,				
		CDoor-Clean&lubricate balance rollerassy				
		C Door-Chk retaining ring in nut for fit				
		C Door-chk screws at each place for loos				
		C Door-Clean & lubricate driving screw				
		C Door-Chk&remove dust on top guide rail				
		C Door-Clean&lubricate on upperguiderail				
		CDoor-Chk&remove dust on lowerguide rail				
		CDoor-Clean&lubricate on lowerguide rail				
		Cab Door-Clean & lubricate door lock				
		CDoor-Clean&lubricate lockkeeper,locklat				
		C Door-Clean & lubricate rotating shaft				
		CDoor-Clean&lubricate on shortguiding ro				
		CDoor-Clean&lubricate on longguiding rod				
		CDoor-Lubricate linear bearing by leaf c				
		C Door-Lubrication nut torsion				
		CDoor-Clean&lubricate finger prot rubber				
		CDoor-Clean&lubricate on peripheralRubbe				

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SN	System	Description	DM	TC	DM	Remark
		C Door-Chk lower retaining pin assembly				
		C Door-If EAD/EED activates				
		C Door-Emergen unlocking switch activate				
		C Door-Open and close door manually				
77	E Door	EDoor-Chk leaf&glass for damage,crack				
		EDoor-Chk door leaf rubber for damage				
		EDoor-Chk all ramp fasteners are tighten				
		EDoor-Chk mounting screws for looseness				
		EDoor-Chk ramp mountingScrew for loosene				
		EDoor-Chk opening&closing of door &ramp				
		EDoor-Chk triggering of switchassy.isOK				
		EDoor-Chk door&ramp lockdevice is normal				
		EDoor-Chk selfAdaptive support is normal				
		EDoor-Chk telescopicSupport leg is norma				
		EDoor-Chk ramp retracting rope for worn,				
		EDoor-Chk ramp expansion impact is norma				
		EDoor-Chk working of rampSupporting stan				
		EDoor-Clean&lubricate door rubber frame				
		EDoor-Clean&lubricate door lock assy				
		EDoor-Clean&lubricate retain plate				
		EDoor-Clean&Lubricate pinaxis moving par				
		EDoor-Clean&Lubricate buckle connecting				
		EDoor-Clean&Lubricate connecting rodJoin				
		EDoor-Chk activation of headlight onOpen				
		EDoor-Chk activation of blinker onOpenin				
		EDoor-Ensure door & ramp is closed & loc				
78	P Door	P Door-Chk for any damage,door hinge				
		P Door-Chk for lockingdevice,limitswitch				
		P Door-Chk opening/closing by square key				
		P Door-Check sight glass for clear view				
		S Door-Chk assy.parts screws for loose				
		S Door-Visual inspect for any damage				
		S Door-Chk wiring for rub,routing proper				
		S Door-Chk rubber sealing for cracks,dam				
		S Door-Chk lower swingarm assy for damag				
		S Door-Chk 3 roller for missing,rupture,				
		S Door-Chk switch assy roller for damage				
		S Door-Chk contact point between roller				
		S Door-Check holdpin on hinge plate for				
		S Door-Chk holdpin of trans.bracket for				
		S Door-Chk trans nut for loose,displace				
		S Door-Chk set screw of fully locked swi				
		S Door-Chk door fully closed block for l				
		S Door-Chk long guiderod for crack,loose				
		S Door-Chk short guiderod for crack,loos				
		S Door-Chk doorLeafcarrier for crack,loo				
		S Door-Check hinge base for crack,loose				
		SDoor-Chk middleHanging brket for crack,				
		SDoor-Chk nutAssy for crack on ext.surfa				
		S Door-Chk doorLeaf adjustment dimension				

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SN	System	Description	DM	TC	DM	Remark
79	Saloon door	SDoor-Chk side hanging brket for Crack,l				
		S Door-Chk door window glass for damage				
		S Door-Chk balance rollerAssy for damage				
		S Door-Chk roller for displaced,rupture,				
		S Door-Clean&lubricate balance rollerass				
		S Door-Check retaining ring in nut for f				
		SDoor-chk screws at each place for loose				
		S Door-Clean&lubricate driving screw				
		S Door-Chk&remove dust on top guide rail				
		SDoor-Clean&lubricate on upperGuide rail				
		SDoor-Chk&remove dust on lowerGuide rail				
		SDoor-Clean&lubricate on lowerguide rail				
		SDoor-Clean&lubricate middle supportAssy				
		SDoor-Clean&lubricate on ShortGuidingRod				
		SDoor-Clean&lubricate on long guidingRod				
		SDoor-Lubricate Linear bearing by leafCa				
		S Door-Lubrication nut torsion				
		SDoor-Clean&lubricat finger protecRubber				
		SDoor-Clean&lubricat on peripheralRubber				
		S Door-Chk lower retaining pin assembly				
		S Door-Chk component in the coving panel				
		S Door-Check Maintenance switch				
		S Door-If EAD/EED activates				
		SDoor-Emergency unlockingSwitch activate				
		S Door-Open and close door manually				
		SDoor-Chk isolation switchAssy forDamage				
		S Door-Operate isolation device after cl				
80	Gangway	Gangway-Chk debries b/w footplate&apron				
		Gangwy-Chk side&top panel for abnormalit				
		Gangway-Chk footplate&apron plate forWea				
		Gangway-chk bellow rubbing mark & damage				
		Gangway-Chk bellow for damage fm outside				
		Gangway-Chk bellow for damage fm inside(				
		Gangway-Apply greasing movingparts,if re				
81	Carbody	Exter CarBody-Chk for rubbing,dent mark,				
		Inter CarBody-Chk for rubbing,dent mark,				
82	Pantograph	Pantograph-Chk lifting times,not more th				
		Pantograph-Chk lowering times,not more t				
		Pantograph-Measure pressure				
83	Main transformer	Main Tr-Function Chk Main Tr Oil Flow In				
		MTR-Listen abnormal sound blower motor				
		MTR-Listen abnormal sound oil pump motor				
84	Brake function test	Brake-Chk MR Pr gauge in cab b/w 7&10bar				
		Service brake function test -Apply & rel				
		Emergency brake function test-Test Apply				
		Indirect brake function test- I Apply &				
		Indirect brake function test-II Move dr				
		Indirect brake function test-III Charge				
		Parking Brake Function test-I :Apply by				
		Parking Brake Function test-II :Release				

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SN	System	Description	DM	TC	DM	Remark
		Parking Brake Function test-III ;1. Appl				
		Brake-Chk(StaticCondition)during testing				
		Brake-Automatic load braking Functi test				
		Brake-Air suspension equipm FunctionTest				
		Brake-MR Pr leakage test for 20 Min				
		Brake-BP Pr leakage test for 20 Min				
85	Aux Comp	Aux.Compressor ball cock FunctionTest				
		Aux.Compressor Pr switch function test				
86	Ballcock function test	Ballcock-I,FuncTest SRIC1&status onTCMS,				
		Ballcock-I,FuncTest SRIC2&status onTCMS,				
		Ballcock-I,FuncTest EBIC1&status onTCMS,				
		Ballcock-I,FuncTest EBIC2&status onTCMS,				
		Ballcock-I,FuncTest BIC1&status onTCMS,V				
		Ballcock-I,FuncTest BIC2&status onTCMS,V				
		Ballcock-I,FuncTest PBIC1&status onTCMS,				
		Ballcock-I,FuncTest PBIC2&status onTCMS,				
		Ballcock-I,FuncTest ASASIC1&statusOnTCMS				
		Ballcock-I,FuncTest ASASIC2&statusOnTCMS				
		Ballcock-I,FuncTestSTVIC&status OnTCMS,V				
		Ballcock-I,FuncTest DVIC&status OnTCMS,V				
		Ballcock-I,FuncTest ACIC&status OnTCMS,V				
		Ballcock,D06 function check				
		Ballcock-II,Func test MRIC&Chk for vent				
		Ballcock-II,Func test BPIC&Chk for vent				
		Ballcock-II,Func test ASIC&Chk for vent				
		Ballcock-II,FuncTest PantoIC&Chk for ven				
		Ballcock-II,FuncTest CoupriC&Chk for ven				
		Ballcock-II,FuncTest FLubriC&Chk for ve				
		Ballcock-II,FuncTest HornIC&Chk for vent				
		Ballcock-II,FuncTest drain off waterIC&C				
		Ballcock-II,FuncTest Auto ExustIC&Chk fo				
87	Brake & pneumatic	Air dryer unit function check (switchove				
		Air dryer-Carryout Pr dew point measurem				
		Air dryer-Pressure switches operation te				
		Compressor air volume delivery Func test				
		Compressor pressure control FunctionTest				
		Safetyvalve Discharging&function test I				
		Safetyvalve Discharging&function test II				
		Oil separators Function check				
88		Drain valve Draining function test : Sta				
88		WFL function check press test button for				
89		Automatic coupler Function check of UC b				
90	Saloon door	Saloon door obstacle detection Func test				
		Saloon door isolation function check-Ope				
		Saloon door function chk by O/C button				
		Chk working of external indicator lamp				
		S Door-Chk working of internal lamp stri				
		Saloon Door-Chk the door status on TCMS				
		S Door-Chk fault message appears on TCMS				
		Cab door isolation function check-Operat				

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SN	System	Description	DM	TC	DM	Remark
91	Cab Door	C Door-O/Cmanually&chk working of cabLig				
		C Door-O/C manually&check status on TCMS				
		C Door-Chk fault message appears onTCMS				
92	P Door	P Door-O/Cmanually&chk status onTCMS				
		P Door-Chk for cab light glow when opens				
93	E door	Emerg Door-Chk open status on TCMS				
		E Door-Chk application of EB on door ope				
		E Door-Chk activation of HeadLight on op				
		E Door-Chk activation blinker on opening				
		Emergency Door-Chk close status on TCMS				
94	CCU	CCU,Chk TCMS communication status on VDU				
		CCU,Chk 5V DC power on PWA2 byLED status				
		CCU,Chk RunE1&E2 LEDstatus on CPU2-1 PCB				
		CCU,Chk RunE1&E2 LEDstatus on CPU2-2 PCB				
		CCU,Chk Run,E1&E2 LEDstatus on REC PCB				
		CCU,Chk WDT LED status of CPU2-1 PCB				
		CCU,Chk WDT LED status of CPU2-2 PCB				
		CCU,Chk WDT LED status of REC PCB				
95	RIO/CN	CN1,2Chk TCMS communication status onVDU				
		CN1,2Check E1toE8 LED status on ESW2 PCB				
		CN1,2Check the WDT status on CPU1 PCB				
		CN1,2Check LED status on PWA2 PCB				
		RIO1,2Chk TCMS comunication status onVDU				
		RIO1,2Chk the Run LED status on IFC PCB				
		RIO1,2Chk WDT LED status on IFC PCB				
		RIO1,2Check 5V LED on PWA2				
96	VDU	RIO1,2Check 24V LED on PWB2				
		Check VDU touch panel operation using Di				
		Check theVDU screen movement				
		Check the TCMS function - Normal				
		Check the Date & time - correct				
		Check fault histry:No major fault record				
97	HVAC	Check Current fault list: No major fault				
		Cab AC-Function chk by selector switch				
		Cab AC-Chk fault message appears on TCMS				
		Cab AC-Chk that wind comes out properly				
		S HVAC-Check operation status on TCMS.				
		Chk F/A damper status - normal on TCMS				
		Chk R/A Damper status - normal on TCMS				
		S HVAC-Check control mode status on TCMS				
		S HVAC-Chk Target ¤tTemp - normal				
		S HVAC-Chk Temperature setting - normal				
98	Lamps	S HVAC-Chk fault message appears on TCMS				
		S HVAC-Check that windcomes out properly				
		Saloon light-Check ON/OFF status on TCMS				
		S Light-Fun Chk auto brightness control				
		S Light-Fun Chk TCMS brightness adjustme				
		S light-Chk appearance by operating SLS				
		FrontLamp-Chk brightness&working is norm				
		FlasherLight-Chk brightness&working is n				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Yearly service check

SN	System	Description	DM	TC	DM	Remark
99	PAPIS	Chk the cab main lights work properly				
		Check the console light work properly				
		PCU,Initiate&check Artificial broadcast				
		PCU,Initiate Manual station broadcasting				
		SCU,Initiate&check emergency function				
		SCU,Initiate&check Artificial broadcast				
		SCU,Initiate Emergency intercom function				
		DVR,view video based on date time CAM ID				
		DVR,check clear video is displaye on MDS				
		DVR,check whether video can be download				
		PIS,Chk on MOP that PIS is Master or not				
		PIS,Chk on VDU that PIS is online or off				
		PIS,Chk on MOP that PIS is online or off				
		SLSP,initiate&check Artificial broadcast				
		CLSP,Initiate cab to cab intercom functi				
		ELSP,Initiate Door closing broadcasting				
		Chk Automatic volume adjustment Noise mo				
		D&TNU,chk it display correct information				
		D&TNU,chk weather screen/Display is Norm				
		Check whether SDU shows the destination				
		SDU,chk weather screen/Display is Normal				
		Check SLCD normally play the programs				
		SLCD,chk weather screen/Display is Norma				
		Check DRM weather screen/Display Normal				
		Check DRM Displays correct information				
		Chk MOP weather screen/Display is Normal				
		Chk AOP weather screen/Display is Normal				
		Check all the function of MOP/AOP				
		Carry out PA test on the MOP/AOP				
		Carry out cab to cab call test				
		Initiate Artificial broadcast by MOP/AOP				
		PECU,Press button&Check indicator light				
		PECU,Chk communication with TO is normal				
		Check alarm in cab when PECU is pressed				
		Check video of active PECU on MDS is ok				
		4 active PECU footage on MDS at a time				
		PECU Initiate emerg intercom function				
100	MDS & CCTV	Touch the MDS &chk correct response to r				
		Chk MDS weather screen/Display is Normal				
		Check the IR function of camera (turn of				
		Check switching between TCMS-CCTV is ok				
		Check if MDS light up or not				
		Check CCAM view is clear on MDS				
		CCAM streaming is fluent on MDS				
		Check SCAM view is clear on MDS				
		SCAM streaming is fluent on MDS				
		Check FCAM view is clear on MDS				
		FCAM camera streaming is fluent on MDS				
		Check RCAM view is clear on MDS				
		RCAM streaming is fluent on MDS				

MAHARASHTRA METRO RAIL CORPORATION Ltd.
Yearly service check

SN	System	Description	DM	TC	DM	Remark
		Check All camera views on TCMS VDU				
		Check recording of all camera working				
		Check whether analog station broadcastin				
101		MCH-Chk Operation from DSD(DeadmanSwitch				
102		Horn-Chk operation in Low and High				
103		Wiper-Function Chk&water spray is normal				
104	Battery	Battery-Ensure both batteries are fullyc				
		Battery voltage noted from TCMS				
105	OBT	On Board Test - CI				
		On Board Test - APS				
		On Board Test - BECU				
		On Board Test - DCU				
		On Board Test - HVAC				
		On Board Test - PA & PIS				

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
HVAC						
1	Microprocessor based control unit	HVAC	No	2	1	1
2	Set of temperature sensor	HVAC	Set	3	-	-
3	Tube Temperature Sensor	HVAC	No	18	11	9
4	Fresh air temperature sensor, return air temperature sensor, supply air temperature sensor	HVAC	No	54	27	27
5	Humidity Sensor	HVAC	No	3	1	1
6	Smoke Sensor	HVAC	No	3	2	1
7	Fresh & Return air damper motors	HVAC	No		-	-
8	Fresh air damper motors	HVAC	No	2	0	1
9	Return air damper motors	HVAC	No	2	1	1
10	Compressor unit with motor and mounts	HVAC	No		-	-
11	Compressor 1	HVAC	No	2	1	0
12	Compressor 3 (VVVF Compressor)	HVAC	No	2	1	0
13	Condenser & Evaporator fans with motor	HVAC			-	-
14	Condenser Fan	HVAC	No	3	2	1
15	Evaporator Fan	HVAC	No	3	2	1
16	Complete roof mounted package unit	HVAC	No	2	1	0
17	HVAC Filter Frame (mixed return air)	HVAC	No	100	58	49
18	HVAC Filter Frame (Fresh return air)	HVAC	No	50	39	25

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
Brake & Pneumatics						
19	Main Motor Compressor Set for pneumatic system with Starter box /Control box		Set	4	2	2
20	Set of PCB cards for Brake Electronic unit	Electronic Brake Control Unit (EBCU)	Set	1	-	-
21	POWER SUPPLY STN25089/ Set of Power module card (PB03A)	Electronic Brake Control Unit (EBCU)	No	30	12	12
22	CIRCUIT BOARD STN38950 (KSN01A)	Electronic Brake Control Unit (EBCU)	No	24	14	14
23	CIRCUIT BOARD STN39577/201 (LAD01B)	Electronic Brake Control Unit (EBCU)	No	24	13	11
24	CIRCUIT BOARD STN39579/101 (LAD03A)	Electronic Brake Control Unit (EBCU)	No	24	11	12
25	CIRCUIT BOARD STN39580/102 (LAD05A)	Electronic Brake Control Unit (EBCU)	No	24	12	12
26	CIRCUIT BOARD STN39580/103 (LAD06A)	Electronic Brake Control Unit (EBCU)	No	24	10	9
27	Set of input output card	Electronic Brake Control Unit (EBCU)	Set	1	-	-
28	Circuit Board STN39498/00022 (CID 01A)	Electronic Brake Control Unit (EBCU)	No	4	6	6
29	Speed Sensor	Brake & Pneumatics	No	5	4	4
30	Ratchet Wheel	Brake & Pneumatics	No	2	1	1

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
31	Brake Actuator & Cylinder	Brake & Pneumatics	No	8	-	-
32	B05.DM_1 Brake control Unit B05.DM_1	Brake & Pneumatics	No	4	4	0
33	B05.DM_1.1 Counter Connect SE B05.DM_1.1	Brake & Pneumatics	No	2	1	1
34	B05.DM_2 Brake Control Unit B05.DM_2	Brake & Pneumatics	No	4	4	2
35	B05.T 1 Brake control unit B05.T1	Brake & Pneumatics	No	4	0	4
36	B05.T 2 Brake control unit	Brake & Pneumatics	No	4	4	0
37	Wheel M.Brake disc C08	Brake & Pneumatics	No	2	1	1
38	C09 Brake Unit	Brake & Pneumatics	No	27	14	15
39	C09001 Brake pads	Brake & Pneumatics	No	120	76	108
40	C09002 Clamping pin C09002	Brake & Pneumatics	No	20	10	10
41	C10 Parking Brake Unit	Brake & Pneumatics	No	27	14	15
42	C10005 Remote control C10005 (Parking brake lever)	Brake & Pneumatics	No	26	13	13
43	C10006 Remote control C10006(Parking brake lever)	Brake & Pneumatics	No	30	14	14
44	Set of pneumatic valves	Pneumatic System	Set	4	-	-
45	A08 TEST FITTING A08	Pneumatic System	No	12	1	0
46	A15 SILENCER A15	Pneumatic System	No	12	2	2
47	A53 OVERFLOW VALVE A53	Pneumatic System	No	8	2	2
48	A54 Flow Throttle A54	Pneumatic System	No	8	2	2
49	A55 SILENCER A55	Pneumatic System	No	8	2	2
50	B01 AIR FILTER / filter for compressed air lines	Pneumatic System	No	24	21	20

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
51	B02 CHECK VALVE B02	Pneumatic System	No	24	2	2
52	B03001 Screw Plug B03001	Pneumatic System	No	24	10	10
53	B03002 Screw Plug B03002	Pneumatic System	No	24	2	2
54	B12.A DOUBLE CHECK VALVE B12.A	Pneumatic System	No	12	2	2
55	B18 Press.reduc.valve B18	Pneumatic System	No	12	2	2
56	B18001 Support	Pneumatic System	No	12	2	2
57	B18002 Support	Pneumatic System	No	12	2	2
58	B33 Distribution valve	Pneumatic System	No	12	1	1
59	B33.1 Support	Pneumatic System	No	12	2	2
60	B35 Installation of test device	Pneumatic System	No	12	2	2
61	D03 Pressure relief valve	Pneumatic System	No	8	2	2
62	G02 Antiskid valve	Pneumatic System	No	48	2	2
63	G02002 Connecting cable	Pneumatic System	No	24	2	2
64	L02Pipe filter	Pneumatic System	No	12	2	2
65	L07.A Leveling valve	Pneumatic System	No	24	2	2
66	L07.B Leveling valve	Pneumatic System	No	24	1	2
67	L11 Relief valve	Pneumatic System	No	24	2	2
68	L14 Pressure relief valve	Pneumatic System	No	24	2	2
69	L17 Piston valve	Pneumatic System	No	24	2	2
70	Tube bracket	Pneumatic System	No	24	2	2
71	TYFON	Pneumatic System	No	8	2	2
72	TYFON	Pneumatic System	No	8	2	2
73	Set of magnet valves	Pneumatic System	Set	4	-	-
74	B20 Pulse valve	Pneumatic System	No	12	2	2
75	B20001 Connection cabinet device	Pneumatic System	No	24	2	2
76	D07 Solenoid valve	Pneumatic System	No	8	2	2
77	D07.1 Connection cabinet device	Pneumatic System	No	8	1	1
78	D07.2 Screw Plug	Pneumatic System	No	8	2	2
79	Solenoid valve	Pneumatic System	No	44	7	5

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
80	Set of Safety Valves	Pneumatic System	Set	4	-	-
81	A00A03 Safety valve	Pneumatic System	No	8	2	2
82	A00A05 Safety valve	Pneumatic System	No	8	2	2
83	Set of gauges	Pneumatic System	Set	4	-	-
84	Pressure gauge	Pneumatic System	No	16	2	2
85	Connecting cabinet	Pneumatic System	No	16	2	2
86	Set of Sensors	Pneumatic System	Set	4	-	-
87	A20 Pressure regulation / PRESSURE SENSOR (STN33862)	Pneumatic System	No	12	6	5
88	Connecting line	Pneumatic System	No	12	1	1
89	B09.A Pressure sensor / PRESSURE SENSOR (STN29890)	Pneumatic System	No	12	15	15
90	Set of Pressure switches	Pneumatic System	Set	4	-	-
91	B07 Pressure regulation	Pneumatic System	No	8	2	2
92	B31 Pressure regulation	Pneumatic System	No	8	2	2
93	B30 Pressure regulation	Pneumatic System	No	4	2	0
94	B14 Pressure regulation	Pneumatic System	No	4	4	3
95	B10 Pressure regulation	Pneumatic System	No	4	4	3
96	L12 Pressure regulation	Pneumatic System	No	4	4	3
97	Set of pressure governors	Pneumatic System	Set	4	-	-
98	A09 Pressure regulation	Pneumatic System	No	8	2	2
99	A09001 Connecting cabinet	Pneumatic System	No	8	1	1
100	A10 Pressure regulation	Pneumatic System	No	8	2	2
101	A10001 Connecting cabinet	Pneumatic System	No	8	1	1
102	Set of all types of isolating cocks	Pneumatic System	Set	3	-	-
103	A11 Ball valve	Pneumatic System	No	12	2	2
104	B04.1 Ball valve	Pneumatic System	No	24	2	1
105	B04.2 Ball valve	Pneumatic System	No	24	2	2
106	B04.3 Ball valve	Pneumatic System	No	24	2	2
107	B34 Ball valve	Pneumatic System	No	12	2	2
108	D05 Ball valve	Pneumatic System	No	8	2	2
109	D06 Ball valve	Pneumatic System	No	8	2	2
110	L04001 Ball valve	Pneumatic System	No	12	2	2

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
111	L05.A Ball valve	Pneumatic System	No	12	2	2
112	L05.B Ball valve	Pneumatic System	No	12	2	2
113	GCF20S1-20-BDOT Ball valve	Pneumatic System	No	24	4	3
114	GCF20S1-20-BGOT Ball valve	Pneumatic System	No	24	4	3
115	GCF20S1-15-BGOT Ball valve	Pneumatic System	No	12	2	2
116	GCF20S1-08-BGOT Ball valve	Pneumatic System	No	32	5	5
117	GCF20S1-08-BDOT Ball valve	Pneumatic System	No	8	1	1
118	Driver's brake valve (BP backup brake control)	Pneumatic System	No	3	1	1
119	Air dryer	Pneumatic System	No	4	3	1
120	BCU Box Charging Venting Valve	Brake & Pneumatics	No		4	0
121	Dry type Air Filter Housing	Main Compressor	No		2	2
122	Set of Pneumatic Pipe Fittings	-	Set	3	-	-
123	Hose Pipe	Pneumatic System	No	4	4	0
124	Main Compressor Set	Main Compressor	No	2	2	1
125	Main Compressor Filter	Main Compressor	No	100	6	8
126	Unknown Filter	Main Compressor	No	50	25	25
127	Micro Mesh Oil Filter	Brake & Pneumatics	No	4	4	0
128	Oil Separator	Brake & Pneumatics	No	4	2	2
129	Drain Valve	Brake & Pneumatics	No	4	4	0
PA-PIS CCTV						
130	Set of PCB cards	PA/PIS	Set	2	-	-
131	Power Model / Set of Power Module cards	PA/PIS	No	35	29	6
132	Gateway model (L3 Switch)	PA/PIS	No	4	4	2
133	Cab switch model-1 (Cab switch Card)	PA/PIS	No	6	4	1

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
134	IP model	PA/PIS	No	12	8	4
135	I/O model	PA/PIS	No	10	8	2
136	PA controller Model	PA/PIS	No	6	4	2
137	TRDP Model	PA/PIS	No	6	4	2
138	Case (3U)	PA/PIS	No	21	15	6
139	CMCU(cab multimedia control unit)	PA/PIS	Set	20-119	-	-
140	Cab switch model-2	PA/PIS	No	6	4	2
141	MP model	PA/PIS	No	6	4	2
142	NVR model	PA/PIS	No	6	4	2
143	SCU (Saloon control unit)	PA/PIS	Set	2	-	-
144	Saloon switch model	PA/PIS	No	9	7	2
145	Amplifier Model 1	PA/PIS	No	9	7	2
146	Saloon Controller Model (SCU)	PA/PIS	No	9	7	1
147	Amplifier model 1&2 alarm model	PA/PIS	No	9	7	2
148	Decode Model	PA/PIS	No	9	7	2
149	The backplane of saloon multi-function unit	PA/PIS	No	9	7	2
150	Train Number Indicator/ Destination Indicator (Destination & Train Number Unit	PA/PIS	Set	24	16	8
151	Passenger Information Board (External side display board)	PA/PIS	No	24	12	12
152	Amplifier Microphone	PA/PIS	No	8	4	4

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
153	Speaker	PA/PIS	No	-	-	-
154	ELSP (External Loud Speaker)	PA/PIS	No	8	4	4
155	CLSP (Cab Loud Speaker)	PA/PIS	No	8	4	4
156	SLSP (Saloon Loud Speaker)	PA/PIS	No	38	19	19
157	Main operating Panel with Microphone	PA/PIS	No	8	4	4
158	Auxiliary operating panel	PA/PIS	No	4	2	2
159	Passenger emergency activation device	PA/PIS	No	15	7	7
160	Set of PSSS module without cable (MDS)	PA/PIS	Set	2	4	0
161	Dynamic Route Map	PA/PIS	No	34	-1	2
162	Saloon Liquid Crystal Display	PA/PIS	No	28	8	13
163	Saloon and rear view cameras complete with hardware interface's cum control unit	CCTV	Set	1	-	-
164	SCAM (Saloon Camera)	CCTV	No	14	8	6
165	FCAM (Front Camera)	CCTV	No	4	3	1
166	RCAM (Rear Camera)	CCTV	No	4	2	1
167	CCAM (Cab Camera)	CCTV	No	4	3	1
Doors						
168	Door Control Unit	Saloon Door	Set	1	-	-
169	MDCU	Saloon Door	No	6	4	2
170	LDCU	Saloon Door	No	18	10	8
171	Door Leaves	Saloon Door	Set	1	-	-
172	Door Leaves Left	Saloon Door	No	24	13	11
173	Door Leaves Right	Saloon Door	No	24	13	11
174	Door motor including gear mechanism, if any	Saloon Door	Set	24	13	11

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
175	Set of rollers	Saloon Door	set	10	-	-
176	Door leaf carrier Roller	Saloon Door	No.	1920	240	240
177	Balance wheel	Saloon Door	No.	480	240	240
178	Set of sensors/Switches of saloon doors	Saloon Door	set	5	-	-
179	Isolation switch	Saloon Door	No	120	60	60
180	Limit Switch	Saloon Door		480	208	200
Emergency Door						
181	Emergency Door	Emergency Door	No	4	-	-
182	Sealing rubber strip (install around the door frame)	Emergency Door	No	8	8	0
183	Door frame strip(install on the top of door frame)	Emergency Door	No	8	9	0
184	Sealing rubber strip(install around the door leaf)	Emergency Door	No	8	8	0
185	Sealing rubber strip(install between fiberglass and aluminum frame of the door)	Emergency Door	No	8	8	0
186	Air spring(install between door leaf and door frame)	Emergency Door	No	16	15	1
187	Air spring(install on door lock assembly)	Emergency Door	No	8	8	0
188	Buffer (install between the first step pedal assembly and the base frame)	Emergency Door	No	16	15	1
189	Air spring(install on the base frame)	Emergency Door	No	16	15	1
190	Belt	Emergency Door	No	16	15	1
191	Ramp retracting rope	Emergency Door	No	8	7	1
192	Door retracting rope	Emergency Door	No	8	9	0
193	Handle key(for recycling ramp)	Emergency Door	No	16	15	1
194	Handle key(for recycling door)	Emergency Door	No	16	15	1
195	Wire rope assembly 1(extend telescopic support legs)	Emergency Door	No	16	15	1
196	Wire rope assembly 2(retract telescopic support legs)	Emergency Door	No	16	15	1
197	Emergency Door operating mechanism	Emergency Door	No	8	5	2

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
198	Set of sensors / switches of emergency doors	Emergency Door	No	4	-	-
199	Closed switch S4.1	Emergency Door	No.	2	1	2
200	Closed switch S4.2	Emergency Door	No.	2	2	2
201	Cab door with operating & locking mechanism	Cab Door	Set	-	-	-
202	Cab door with operating & locking mechanism Left	Cab Door	No	3	2	1
203	Cab door with operating & locking mechanism Right	Cab Door	No	3	2	1
204	Set of relays, contactors for cab door	Cab Door	Set	6	-	-
205	Isolation switch	Cab Door	No.	24	12	12
Converter/Inverter						
206	Set of PCB cards	Converter/Inverter	Set	1	-	-
207	GCU/2528	Converter/Inverter	No	5	4	1
208	Power module card including IGBT	Converter/Inverter	No	2	-	-
209	1)OVTGD4	Converter/Inverter	No	4	1	1
210	2)EOGI	Converter/Inverter	No	4	1	1
211	3)EOU5	Converter/Inverter	No	8	1	1
212	4)IGD6	Converter/Inverter	No	16	2	2
213	5)GRE	Converter/Inverter	No	16	4	4
214	Set of contactors	Converter/Inverter	No	8	2	2
215	Current transformer	Converter/Inverter	No	3	-	-
216	CT HC-MSLBE10V10B15XPRT	Inverter	No	3	3	0
217	CT HC-MSLBE30V10B15XPRT	Converter	No	3	3	0
218	Potential transformer	Converter/Inverter	No	3	-	-
219	DC PT	Inverter	No	3	2	
220	AC PT	Converter	No	3	2	
221	Power Unit (CI)	Converter/Inverter	Set	3	-	-
222	Converter Unit	Converter/Inverter	No	3	2	0
223	Inverter Unit	Converter/Inverter	No	3	2	1
224	DC link Charging circuit module	Converter/Inverter	No	3	2	1
225	DC link capacitor	Converter/Inverter	No	5	3	2
226	Earthing protection circuit module	Converter/Inverter	No	3	2	1

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
227	CI Unit (Power Converter and Inverter)	Converter/Inverter	No	2	0	1
228	GDU tester, converter-inverter, testing & repair jig and test bench for post repair commissioning	Converter/Inverter	Set	0	0	0
229	Mounting / dismounting trolley & tools	Converter/Inverter	Set	2	0	0
230	LCR Meter	Converter/Inverter	Set	22	0	0
231	Illumination Meter	Converter/Inverter	Set	22	0	0
232	Regulated DC Power Supply (DC137.5V output)	Converter/Inverter	Set	22	0	0
Auxiliary Converter & Propulsion System						
233	Set of PCB cards	Auxiliary Power system	Set	1	-	-
234	GCU Card/2529	Auxiliary Power system	No	2	1	1
235	Power module card including IGBTs	Auxiliary Power system	No	3	2	1
236	Set of contactor	Auxiliary Power system	Set	4	-	-
237	IVK1 SEC 10.10	Auxiliary Power system	Set	8	7	1
238	SIVK SD-400	Auxiliary Power system	Set	8	8	
239	IVK2 SD-N50	Auxiliary Power system	No	8	8	0
240	Battery charger	Auxiliary Power system	No	3	2	1
241	TCMS, BECU, HVAC, APS, CI PTU	Auxiliary Power system	No	10	5	5
242	Auxiliary Converter with Battery Charger (APS)	Auxiliary Power system	No	1	0	0
Transformer						
243	Oil pump	Transformer	No	3	2	1
244	Radiator blower including fan	Transformer	No	3	2	1

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
245	Set of valves and relays	Transformer	Set	3	0	0
246	Oil flow relay (OF-2 57L S326544)	Transformer	No	6	3	3
247	Pressure relief device (PRO-175-100 S326509)	Transformer	No	3	2	1
248	Valve(Drain & Exhaust valve for oil pump)(JFB 5K-15A S326036)	Transformer	No	9	7	2
249	Shut Off Valve (KBM-70 S325754-2)	Transformer	No	3	2	1
250	Shut Off Valve (KBM-70 S325754-3)	Transformer	No	3	2	1
251	Set of sensors / gauges	Transformer	Set	3	-	-
252	Dial Thermometer (BE-HCF S326507)	Transformer	No	3	0	1
253	Temperature Sensor with Transmitter (S326482)	Transformer	No	6	3	3
254	Oil Level Gauge	Transformer	No	3	-	-
255	Cover (S426400-G1)	Transformer	No	3	2	1
256	Plate (S426401-1)	Transformer	No	3	2	1
257	Glass (S425423-1)	Transformer	No	3	2	1
258	Gasket (S425424-1)	Transformer	No	3	2	1
259	Cushion (S425425-2 V7010-2N0)	Transformer	No	3	2	1
260	Cover (Protect cover) (S426402-1)	Transformer	No	3	2	1
261	Bolt M6*16 (S326580-7)	Transformer	No	36	18	18
262	Spring Washer M6(S326580-8)	Transformer	No	36	18	18
263	Screw M4*07*12(S326580-9)	Transformer	No	6	3	3
264	Spring Washer M4(S326580-10)	Transformer	No	6	3	3
265	Nut M4(S326580-11)	Transformer	No	6	3	3
266	Transformer	Transformer	No	1	0	0
267	Dissolved gas analyzer, oil filling equipment	Transformer	Set	3	0	0
268	Oil filtration unit	Transformer	Set	3	0	0

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
TCMS						
269	Set of PCB card	Train Control Management System (TCMS)	Set	2	-	-
270	Central Control Unit (CCU)	Train Control Management System (TCMS)	Set	2	-	-
271	CPU2-1	Train Control Management System (TCMS)	No	4	2	2
272	CPU2-2	Train Control Management System (TCMS)	No	4	2	2
273	REC1 (CCU-R Card)	Train Control Management System (TCMS)	No	4	3	2
274	PWA2	Train Control Management System (TCMS)	No	28	6	6
275	CN(DM&T)	Train Control Management System (TCMS)	Set	4	-	-
276	CPU1	Train Control Management System (TCMS)	No	12	6	6
277	ESW2	Train Control Management System (TCMS)	No	28	10	10
278	TRC1	Train Control Management System (TCMS)	No	20	10	9
279	IDC1	Train Control Management System (TCMS)	No	12	8	8
280	RIO(DM&T)	Train Control Management System (TCMS)	Set	4	-	-
281	IFC1	Train Control Management System (TCMS)	No	12	6	6
282	DIS3	Train Control Management System (TCMS)	No	84	16	16
283	DOS3	Train Control Management System (TCMS)	No	20	12	12
284	AIS1	Train Control Management System (TCMS)	No	12	12	12

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
285	PWB2	Train Control Management System (TCMS)	No	12	6	6
286	TCMS Equipment set	Train Control Management System (TCMS)	Set	1	-	-
287	Central Control Unit(CCU) MS-A2061 No. 2	Train Control Management System (TCMS)	No	2	2	0
288	Communication Node1 (CN) DMC MS-A2062 No. 2	Train Control Management System (TCMS)	No	2	1	1
289	Communication Node2 (CN) DMC MS-A2063 No. 2	Train Control Management System (TCMS)	No	2	1	1
290	Communication Node1 (CN) TC MS-A2064 No. 1	Train Control Management System (TCMS)	No	1	1	0
291	Communication Node2 (CN) TC MS-A2065 No. 1	Train Control Management System (TCMS)	No	1	1	0
292	Video Display Unit(VDU) MS-A2070 No. 2	Train Control Management System (TCMS)	No	2	2	0
293	Remote I/O(RIO) 1 DMC MS-A2066 No. 2	Train Control Management System (TCMS)	No	2	1	1

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
294	Remote I/O(RIO) 2 DMC MS-A2067 No. 2	Train Control Management System (TCMS)	No	2	1	1
295	Remote I/O(RIO) 1 TC MS-A2068 No. 1	Train Control Management System (TCMS)	No	1	1	0
296	Remote I/O(RIO) 2 TC	Train Control Management System (TCMS)	No	1	1	0
297	TCMS Empty Rack (MS-A2061)	Train Control Management System (TCMS)	No	4	4	0
298	TCMS Empty Rack (MS-A2062)	Train Control Management System (TCMS)	No	4	4	0
299	TCMS Empty Rack (MS-A2063)	Train Control Management System (TCMS)	No	4	4	0
300	TCMS Empty Rack (MS-A2064)	Train Control Management System (TCMS)	No	2	2	0
301	TCMS Empty Rack (MS-A2065)	Train Control Management System (TCMS)	No	2	2	0
302	TCMS Empty Rack (MS-A2066)	Train Control Management System (TCMS)	No	4	4	0
303	TCMS Empty Rack (MS-A2067)	Train Control Management System (TCMS)	No	4	4	0
304	TCMS Empty Rack (MS-A2068)	Train Control Management System (TCMS)	No	2	2	0
305	TCMS Empty Rack (MS-A2069)	Train Control Management System (TCMS)	No	2	2	0

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
Master Controller						
306	Set of switches	Master Controller	Set	2	-	-
307	Master Controller Switch	Master Controller	No	4	4	0
308	Potentiometer	Master Controller	No	4	3	1
309	Master Controller & Mode Selector	Master Controller	Set	2	1	1
310	PWM Generator with interface panel	Master Controller	Set	1	1	0
311	Assembly / disassembly tools with calibration and test facilities	Master Controller	Set	1	0	0
Pantograph						
312	Control panel / Pneumatic Control Unit	Pantograph	No	6	4	1
313	Auxiliary motor compressor set	Pantograph	Set	2	0	0
314	Control box having regulator, filter etc.	Pantograph	No	3	-	-
315	Filter assembly	Pantograph	No	3	1	1
316	Solenoid Valve	Pantograph	No	3	1	1
317	Flow regulator	Pantograph	No	3	1	1
318	Pressure regulator	Pantograph	No	3	1	1
319	Air Flow regulator	Pantograph	No	3	1	1
320	Pressure switch	Pantograph	No	4	2	2
321	Overhead detection valve (MED)	Pantograph	No	3	1	1
322	Pantograph pan	Pantograph	No	10	4	4
323	Pantograph carbon skateboard/ Carbon Strip	Pantograph	No	50	21	25
324	Pantograph raising cylinder	Pantograph	No	4	2	2
325	Air feed insulator	Pantograph	No	3	2	1

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
326	Pantograph foot insulator / 318mm 25 KV insulator	Pantograph	No	3	11	10
327	Vacuum Circuit Breaker (VCB)	Pantograph	No	5	2	1
328	Set of Pneumatic hoses	Pantograph	Set	2	-	-
329	Hoses	Coupler	No	2	1	1
330	Hoses	Coupler	No	2	1	1
331	Hoses	Coupler	No	2	1	1
332	25kV cable with HV bushing and connector	Pantograph	Set	2	1	1
333	Pantograph with base insulators and its control panel	Pantograph	No	3	-	-
334	LX1800 PN 030 Pantograph	Pantograph	No	3	2	1
335	Earthing Ground Switch (EGS)	Lighting System	No	10	5	5
336	Lightning Arrester (LA)/ Surge Arrester	Lighting System	No	4	1	1
	Auxiliary Comp. Air Dryer Cartridge	Pantograph	No		5	10
	Air Filter for Auxiliary Compressor	Pantograph	No		15	12
	Piston Compressor (Auxillary Compressor)	Pantograph	No		0	0
Bogie						
337	Reaction rod / traction links / axle box links etc.	Bogie	Set	4	-	-
338	Reaction rod	Bogie	No	24	16	16
339	traction links	Bogie	No	24	12	12
340	Drive gear unit complete with bearings and gear case	Bogie	No.	2	-	-
341	Gear Box	Bogie	No	8	4	4
342	M Car Axle	Bogie	No	8	4	4
343	Axle box bearing adjustable pad (Primary Suspension Shims Upper & Lower)	Bogie	No	200	100	100
344	Highly valve adjustable lever	Bogie	No	36	8	8
345	All kinds of gland	Bogie	No.	24	-	-
346	Gland (AXLE BOX 1)	Bogie	No.	12	6	6

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
347	Gland (AXLE BOX 2)	Bogie	No.	12	6	6
348	Axle box sealing ring	Bogie	No.	12	-	-
349	O ring 10 Ps	Bogie	No.	12	6	6
350	O ring 30 Ps	Bogie	No	12	12	0
351	O ring 50 Ps	Bogie	No	12	0	12
352	Safety Tight wire	Bogie	No	72	16	16
	Safety Tight wire Plate	Bogie	No.	8	4	4
353	lateral stop adjustable pad (BackStop Shims)	Bogie	No	100	50	50
354	Complete Motored Bogie equipped with Traction Motors with power and earthing cables, wheel sets and brake units etc.	Bogie	Set	4	-	-
	WFL Control Box	Bogie	No		0	0
	WFL Tank	Bogie	No		1	1
	WFL Control Box Indicator	Bogie	No		1	1
	Gear Box Drain Plug				4	4
	Gear Box Oil Filling Plug				4	4
355	DM Bogie (With WFL System)	Bogie	No	2	0	1
356	DM Bogie (Without WFL System)	Bogie	No	2	0	1
	T-Car Bogie	Bogie	No.		1	1
357	Air spring/ Secondary Suspension	Bogie	No	24	12	11

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
358	Traction Motor with half coupling	Bogie	No	4	2	0
359	Guide Bolts	Bogie	Set	2	0	0
360	Tool Box	Bogie	Set	2	0	0
361	Suspension testing jig	Bogie	Set	1	0	0
Electrical Items						
362	Set of luminaires of left and right head light	Lighting System	No	12	7	6
363	Set of luminaires of left white marker light	Lighting System	No	4	2	1
364	Set of luminaires of right white Marker light	Lighting System	No	4	3	1
365	Set of luminaires of left red tail light	Lighting System	No	8	5	3
366	Set of luminaires of right red tail light	Lighting System	No	8	5	3
367	Set of luminaires of flasher light	Lighting System	No	4	2	1
368	Flasher light	Lighting System	No	48	24	24
369	Door indicator light	Lighting System	No	48	25	16
370	Power module of left and right head light	Lighting System	No	16	9	7
371	Power module of left white marker light& red tail light	Lighting System	No	8	4	3
372	Power module of right white marker light& red tail light	Lighting System	No	8	4	3
373	Complete headlight with lamp & housing	Cab Control	Set	2	-	-
374	Left front headlight	Cab Control	No	4	2	2
375	Right front headlight	Cab Control	No	4	2	2
376	Set of DC-DC converter	Cab Control	No	2	2	0
377	Saloon LED light module	Lighting System	No	82	82	0
378	Saloon round LED light module/ Grab Pole LED Light	Lighting System	No	12	18	0

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
379	Gangway passage LED light	Lighting System	No	6	0	0
380	Set of Housing/Casing/cover tail light console light flasher light gangway light.	Lighting System	Set	1	-	-
381	A whole structure of left headlight without power module or set of luminaires	Lighting System	No	2	1	1
382	A whole structure of right headlight without power module or set of luminaires	Lighting System	No	2	1	1
383	A whole structure of flasher light without power module or set of luminaires	Lighting System	No	2	1	1
384	Housing/Casing/cover for saloon light	Lighting System	Set	6	0	0
385	Wiper	Wiper	Set	2	-	-
386	Wiper Blade	Wiper	No.		11	5
387	Wiper branch assembly	Wiper	No	4	1	0
388	Scrubber sub assembly Tank	Wiper	No	4	4	2

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
389	Control box assembly	Wiper	No	4	1	0
390	Electric wiper assembly (include Wiper motor)	Wiper	No	4	0	2
Miscellaneous Items						
391	Set of all hardware – mounting, bolts, washers etc. for Converter/Inverter, Auxiliary Converter Unit	Hardware	Set	4+4	-	-
392	Spring Washer M20	Hardware	No	336+336	4	4
393	Nut M20	Hardware	No	672+672	4	4
394	Bolt M20x60	Hardware	No	336+336	4	4
395	Set of all hardware – Pneumatic Compressor	Hardware			-	-
396	Pin 4X36	Hardware	No	16	2	2
397	Washer 16 (Conical)	Hardware	No	16	2	2
398	Washer 16 (Spring)	Hardware	No	16	2	2
399	Nut M16	Hardware	No	16	2	2
400	Bolt M16X50	Hardware	No	16	2	2
401	Set of all hardware – Transformer	Hardware	Set	4	-	-
402	RESILENT MOUNTING DEVICE	Hardware	No	18	18	0
403	M24 DOUBLE END BOLT	Hardware	No	18	17	0
404	STAINLESS WASHER t5	Hardware	No	18	18	0
405	HARD LOCK NUT M24	Hardware	No	18	36	0
406	STAINLESS WASHER t3	Hardware	No	18	18	0
407	M12 SPRING WASHER	Hardware	No	18	72	0
408	M12 NUT	Hardware	No	18	72	0
409	Set of all hardware – Air reservoirs	Hardware	Set	5	-	-
410	Nut M16	Hardware	No	120	3	2
411	Washer 16 (Spring)	Hardware	No	120	3	2
412	Bolt M16X55	Hardware	No	120	3	2
413	Set of all hardware – Valve Boxes	Hardware	Set	6	-	-
414	Nut M12	Hardware	No	36	3	3
415	Bolt M12X40	Hardware	No	36	3	3
416	Washer 12	Hardware	No	36	3	3

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
417	Set of all hardware – Door	Hardware	Set	10	-	-
418	Bolt M10×40	Hardware	No	4800	2400	2400
419	Bolt M10	Hardware	No	5328	2664	2664
420	Washer RS 10	Hardware	No	3360	1680	1680
421	Pad	Hardware	No	3360	1680	1680
422	Screw M5×20	Hardware	No	4800	2401	2400
423	Washer 5	Hardware	No	8640	4321	4320
424	Spring Washer 5	Hardware	No	9360	4680	4680
425	Screw M8×25	Hardware	No	960	480	480
426	Nut M5	Hardware	No	720	360	360
427	Bolt M10×40	Hardware	No	2880	1440	1440
428	Screw M10×35	Hardware	No	720	360	360
429	Screw M4×16	Hardware	No	720	241	241
430	Screw M6×25	Hardware	No	5760	2880	2880
431	Screw M5×16	Hardware	No	720	360	360
432	Screw M5×25	Hardware	No	1920	960	960
433	Washer 8	Hardware	No	1200	600	600
434	Bolt M16×40	Hardware	No	160	156	4
435	Washer 16	Hardware	No	160	156	4
436	Washer 16	Hardware	No	160	156	4
437	Bolt M8×45	Hardware	No	80	76	4
438	Washer 8	Hardware	No	940	913	27
439	Bolt M8×35	Hardware	No	420	410	10
440	Nut M8	Hardware	No	520	507	13
441	Set of all hardware – Air Conditioning Unit	Hardware	Set	3	-	-
442	Fixing Bolt M10×35	Hardware	No	48	24	24
443	Fixing Nut 10	Hardware	No	96	48	48
444	Fixed Pin Spring	Hardware	No	48	24	24
445	Set of all hardware – Traction Motor	Hardware	Set	6	-	-
446	Bolt M24×80	Hardware	No	6	3	3
447	Bolt M24×70	Hardware	No	6	3	3

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
448	Washer 24	Hardware	No	12	6	3
449	Set of all relays with Pins	Hardware	Set	1	-	-
450	Relay(3RU2128-4DCO)	Hardware	No	4+4+3+3	8	6
451	Spring Washer M40	Hardware	No	20	18	0
452	Hex Head Bolt	Hardware	No	20	18	0
453	Set of all Contactors	Hardware	Set	1	-	-
454	Contactor(3RT2026-2XF40-OLA2)	Hardware	No	6	4	2
455	Contactor(3RT2017-2KF42-OLA0)	Hardware	No	10	6	4
456	All electrical monitoring, control and protection panels / cubicles etc. comprising of relays,MCBs, switches, displays, pneumatic gages, sensors duly wired used therein as applicable/ Set of all MCBs with Pins	Electrical Item	Set	1	-	-
457	Mors Smith Relay (ADCR Relay)	Saloon Door	No	50	50	50
458	MCB (S203M-C6)	Cubical Electrical Item	No	2	2	2
459	MCB (S201M-C20 UCV)	Cubical Electrical Item	No	4	4	2
460	MCB (S203M-C13)	Cubical Electrical Item	No	4	4	4
461	MCB (S201M-C2 UCV)	Cubical Electrical Item	No	8	6	6
462	MCB (S201M-C32 UCV)	Cubical Electrical Item	No	6	6	6
463	MCB (S202M-C20)	Cubical Electrical Item	No	6	6	6
464	MCB (S201M-C16 UCV)	Cubical Electrical Item	No	7	8	6
465	MCB (S201M-C3 UCV)	Cubical Electrical Item	No	16	10	10
466	MCB (S202M-C6)	Cubical Electrical Item	No	4	2	2
467	MCB (S202M-C3)	Cubical Electrical Item	No	2	2	2
468	MCB (S202M-C6 UCV)	Cubical Electrical Item	No	4	10	10
469	MCB (S201M-C10 UCV)	Cubical Electrical Item	No	28	10	10
470	MCB (S201M-C4 UCV)	Cubical Electrical Item	No	13	10	10
471	MCB (S201M-C6 UCV)	Cubical Electrical Item	No	34	10	10
Gangway						
472	Gangways (set comprising of single type (used within unit) and two-halves used between unit)	Gangway	Set	1	1	1

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
473	Joint sealing strip	Gangway	No	4	4	0
474	The wear plate for lower frame	Gangway	No	4	4	0
475	Article wear 1	Gangway	No	8	8	0
476	Article wear 2	Gangway	No	8	8	0
477	Article felt	Gangway	No	8	8	0
478	Rubber fender A	Gangway	No	8	8	0
479	Rubber fender (small)	Gangway	No	16	16	0
480	Article wear	Gangway	No	8	8	0
481	Article wear 2	Gangway	No	8	8	0
482	Up balance tension spring	Gangway	No	4	4	0
483	Down balance tension spring	Gangway	No	8	8	0
484	Tension spring	Gangway	No	4	4	0
Glass						
485	Set of glasses of door & window	Interior	Set	15	-	-
486	Door Glass	Interior	No	720	182	174
487	7 Seater Saloon window Glass (1) (NGPE-KC-1000)	Interior	No	306	133	186
488	4 Seater Saloon Window Glass (1)	Interior	No	30(=2*15)	18	14
489	3 Seater Saloon Window Glass (1)	Interior	No	30(=2*15)	20	14
490	Windshield glass	Interior	Set	6	3	2
491	The Outside Monitor Protective Glass	Interior	Nos.	12	6	6
492	Emergency Door Glass	Interior	Nos.		8	4
493	Draught screen	Interior	Set	4	-	-
494	(L) Draught screen	Interior	No	80	1	1
495	(R) Draught screen	Interior	No	80	1	1
496	Rubber Gasket	Interior	No	20	-	-
497	Rubber for Windows (1) -installed on interior	Interior	No	18	10	10
498	Rubber for Windows (2) -installed on interior	Interior	No	2	10	10
499	Rubber for Windows (3) -installed on interior	Interior	No	2	10	10
500	Rubber for Cab front Windows-installed on interior	Interior	No	2	10	10
501	Rubber for saloon seat (1) -installed between seat and sidewall	Interior	No	2	10	10
502	Rubber for saloon seat (2) -installed between seat and sidewall	Interior	No	2	10	10

Total Trains Spare List						
SN	Description	Equipment	Unit	Contract Quantity	Balance Qty	
					Mihan	Hingna
503	Rubber for saloon seat (3) -installed between seat and sidewall	Interior	No	2	10	10
504	Rubber for saloon seat (4) -installed between seat and sidewall	Interior	No	2	10	10
Battery						
505	Battery box	Battery	Set	1	2	1
506	Battery (Cell) Block	Battery	Nos.		29	0
507	EPDM Hose Pipe (Small)	Battery	Nos.		14	0
508	EPDM Hose Pipe (Long)	Battery	Nos.		15	0

APPENDIX 3

Combined Consumables list							
Item No.	Item Name and Application	Brand	Product no. / code	Specification	Area of Use	Unit	Quantity per Train
1	Lubricant oil for Main Compressor set VV120	Shell	Corena S2P-100	-	For Piston lubrication	Ltr.	7.5
2	Drain Plug Washer for Main Air Compressor	Knorr Bremse India Pvt Ltd	Part No: 453820 & 453868	-	Inside compressor	Set	2
3	Micromesh Filter for Main Compressor	Knorr Bremse India Pvt Ltd	Part No: I98554	-	Inside compressor	Nos	2
4	Pipe Inline filter of Brake System	Knorr Bremse India Pvt Ltd	Part No: I99660	-	At Pn air pipe line	Nos	3
5	Filter media for fresh and mix air filter of HVAC	Freudenberg	Type: P15/350 S, Size - 2mx30m, Thickness-14mm ,G3 class as per EN779, Non-woven fabrics	-	For HVAC air filtering, Inside HVAC	Roll	0.14
6	Air Filter for Auxiliary Comperssor	Webtec Corporation	Part No: 155 844 0008	-	Inside compressor	Nos	1
7	Dryer Cartridge for Auxiliary Compressor	Webtec Corporation	Part No: 4324100202	-	Inside compressor	Nos	1
8	Inlet Air Filter for Pantogrph contol unit (PCU)	Webtec Corporation	Part No: F07-KITA05	-	Pantograph control unit	Nos	2
9	Grease for conductive surface of Pantograph	EPMF	CONTACTAL HPG	-	For copper conductor surface	Kg.	0.64
10	Grease for moving part of Pantograph	SKF	LGEP-2	-	For mechanical parts of Pantograph	Kg.	0.64
11	Surface Applicant Grease for VCB / Insulator	NovaGard OR Dow Corning OR Similar	-	Silicon Grease G 661 / Silicon Grease Molycote DC4 Dow Corning	For outer insulator	Kg.	0.4
12	Grease for Emergency Ground Switch	Setral OR Shell OR Similar	-	Setral MISETRAL 7NR / Shell Rhodina LT2	For contact surface og EGS	Kg.	0.5
13	Lubricating Oil for Gear box	Kluber	Klubersynth GE 4 75W-90	-	Gear Box Oil	Ltr.	33
14	Drain Plug Washer for Gear box	Voith Turbo Private Ltd	Part no: H01.004473	-	At drain cock of Gear Case	Nos	8
15	Grease for Coupler	Fuchs	Stabyl LT 50, Synthetic oil-based, lithium-soap special grease	-	For Inside coupler parts	Kg.	0.5

Combined Consumables list							
Item No.	Item Name and Application	Brand	Product no. / code	Specification	Area of Use	Unit	Quantity per Train
17	Lubricating grease for Door	Kangni OR Kluber OR Similar	-	Kangni RT-D / Kluber LDS18	For mechanical parts of Door mechanism	Kg.	2.7
18	Wiper Blade	-	-	Rubber, L=800 mm, Life= 500000 times of Scraping cycle	Front glass wipe during rainy	Nos	2
19	Wheel flange lubricating oil	-	-	BIJUR DELIMON L-WF000,Color -Brown	-	Ltr.	10
20	Petroleum gelly grease (Battery terminal)	-	-	Grease DW33 or Neutral vaseline	-	Kg.	0.12
21	Distilled water for Battery	-	-	Distilled or De-Ionized water	-	Ltr.	30
22	Silica Gel	-	-	-	-	Kg.	0.5
23	Shell Alvania grease	Shell	-		Master Controller	Kg.	0.05
24	Palco-EHT-100 high temperature grease	PALCO	-	PAL-EHT-100 Appearance- Black,Soap type- Bentonite,SoS2 - 10%	Bearing grease	Kg.	1
25	Cotton Cloth	-	-	Single color clean Cotton Cloth Waste	General cleaning purpose	Kg.	As Required
26	Electrical Contact Cleaner	Molykote/ ITW CHEMIE	Molykote S 1002/ EC Clean	Fast evaporating, no residue cleaner for reducing electrical resistance, Reduces electrical resistance, Color: Yellow / Transparent, Content: 400ml Spray can	Eliminates carbon deposit,oil, fat and dust on electrical and electronic equipment like relay, pcb, mcb ...etc.	Bottle (400ml)	As Required
27	Anti-Rust Spray	Pidilite/ Wurth	Pidilite WD-40/ Wurth Rust Remover	Multipurpose metal care Spray, Rust Remover, Lubricant, Stain Remover, Powerful Cleaner and Degreaser,	To remove the rust from nut bolts and parts of machine. Lubricant, Stain Remover, Powerful Cleaner and Degreaser for any machine	Bottle (420ml)	As Required

Combined Consumables list							
Item No.	Item Name and Application	Brand	Product no. / code	Specification	Area of Use	Unit	Quantity per Train
28	Zink Spray paint	Saigao/ Sanpra	Saigao SS_190_N/ Sanpra SS_190_N	Colour code-SS_190_N, Gloss finish,Spray, Acrylic paint	SPRAY PAINT FOR – Coupler face and other Metal part.	Bottle (400ml)	As Required
29	Cable Tie 100 MM (100 X 1.8 MM)	Tibro/ Lockwell/ Newtech	Model No- L 100 X 1.8	size-100 MM (100 X 1.8 MM) Color- Black/white,Material PA 66 UL94V2,Operating temp-10o C to +85o C,High Tensile Strength,Seamless finish	cable ties is common in automotive electrical applications for bundling and securing wiring, cable, wire harness conductors, hoses, and more	Pack (100 Nos)	As Required
30	Cable Tie 150 MM (150 X 2.2 MM)	Tibro/ Lockwell/ Newtech	Model No- L 150 X 2.2	size-150 MM (150 X 2.2 MM) Color- Black/white,Material PA 66 UL94V2,Operating temp-10o C to +85o C,High Tensile Strength,Seamless finish	cable ties is common in automotive electrical applications for bundling and securing wiring, cable, wire harness conductors, hoses, and more	Pack (100 Nos)	As Required

Combined Consumables list							
Item No.	Item Name and Application	Brand	Product no. / code	Specification	Area of Use	Unit	Quantity per Train
31	Cable Tie 200 MM (200 X 2.5 MM)	Tibro/ Lockwell/ Newtech	Model No- L 200 X 2.5	size- 200 MM (200 X 2.5 MM) Color- Black/white,Material PA 66 UL94V2,Operating temp- 10o C to +85o C,High Tensile Strength,Seamless finish	cable ties is common in automotive electrical applications for bundling and securing wiring, cable, wire harness conductors, hoses, and more	Pack (100 Nos)	As Required
32	Cable Tie 450MM, (450 x 2.9MM)	Tibro/ Lockwell/ Newtech	Model No- L 450 x 2.9 MM	size-300 MM (300 x 2.9 MM) Color- Black/white,Material PA 66 UL94V2,Operating temp- 10o C to +85o C,High Tensile Strength,Seamless finish	cable ties is common in automotive electrical applications for bundling and securing wiring, cable, wire harness conductors, hoses, and more	Pack (100 Nos)	As Required
33	PVC Insulation Tape	Steelgrip/ Apex/ Perfect Tape	-	Fire Retardant,ISI Marked product, Strong Adhesion,Self Adhesive, Better Grip, PVC Electrical Insulation Tape. Material-Polyvinyl Chloride,Special Feature-Self-Adhering, size- 1.8 Cm X 7 M X 0.125 Mm	Recommended Uses For Product- Electrical	Box (100 Rolls)	As Required

Combined Consumables list							
Item No.	Item Name and Application	Brand	Product no. / code	Specification	Area of Use	Unit	Quantity per Train
34	Emrey Paper 80 MM Sheet - 22.9 cm x 27.9 cm	Kap/ 3M/ Colorzebra/ Sarrah	-	Sandpaper electro-coated aluminum oxide abrasive paper Grit Material-Silicon Carbide,Silicon,Metal,Emery, Product Dimensions27.9L x 22.9W Centimeters	Suitable for use - carbon strip,roof area, brake block,Metal, Wood, Plastic.	Sheets	As Required
35	Emrey Paper 100 MM Sheet - 27.9L x 22.9W cm	Kap/ 3M/ Colorzebra/ Sarrah	-	Sandpaper electro-coated aluminum oxide abrasive paper Grit Material-Silicon Carbide,Silicon,Metal,Emery, Product Dimensions 27.9L x 22.9W Centimeters	Suitable for use - carbon strip,roof area, brake block,Metal, Wood, Plastic.	Sheets	As Required
36	Brush 10mm	Universal/ Asian Paints/ S2N	-	Material -Animal Hair/Synthetic,Handle Type Fluted Handle,Bristle Type- Flagged Bristle	day by day train maintenance and general purpose	Nos	As Required
37	Brush 25 mm	Universal/ Asian Paints/ S2N	-	Material -Animal Hair/Synthetic,Handle Type Fluted Handle,Bristle Type- Flagged Bristle	day by day train maintenance and general purpose	Nos	As Required
38	Cotton Hand Gloves	Wishbox Retail Inc/ Unisex-adult/ SSWW	-	Special Feature-Free size,Lightweight,Hand Orientation Ambidextrous,Reusable Washable Knitted Cotton Hand Gloves,100% Cotton	day by day train maintenance and general purpose	Pair	As Required
39	Surgical Hand Gloves Natural Rubber Latex Colour Natural White	PARAKIN/ Optika/ Careway	-	Material: powdered smooth latex, Nitrile Hand Glove,Allergy Free,Disposable, size-L	day by day train maintenance and general purpose	Pair	As Required

Combined Consumables list							
Item No.	Item Name and Application	Brand	Product no. / code	Specification	Area of Use	Unit	Quantity per Train
40	Neoprene based Rubber Gloves	Clicktech Retail/ ETS HandPro	-	Electrolyte,Chemical Acid, Alkali oil and Solvant Resistant Proof High performance nitrile compound provides a combination of chemical resistance & strength , puncture & abrasion protection over rubber or neoprene gloves for Cleaning; for heavy-duty cleaning application	day by day train maintenance and special purpose	Pair	As Required
41	General pursose adhesive	Anabond/ QuickFix/ Feviquick/ Pidilite/ Loctite	-	Low Bloom Cynoacrylate Instant Adhesive For Most Plastics and Rubbers High Strength	In depot day by day uses to joint the rubber, plastic.....etc.	Bottle (60 ml)	As Required
42	Metal to Metal Adhesive	Pidilite/ Loctite/ Quick fix/ Anabond	-	Compatible Material- Metal,Special Feature- Strong,Water Resistant	day by day train maintenance and special purpose	Tube- (50 gm)	As Required
43	Heavy Duty Threadlocker	Loctite/MXLOC	Loctite-243/ MXLOC22	High Strength 50 MI Heavy Duty Threadlocker, Sets in 10 minutes; cures in 24 hours,Compatible Material- Metal	Prevents the looseness, leaks and rusting of threads nuts and bolts.	Bottle (60 ml)	As Required

Combined Consumables list							
Item No.	Item Name and Application	Brand	Product no. / code	Specification	Area of Use	Unit	Quantity per Train
44	Rust protection oil 5 LTR	PIDILITE WD-40/sika	WD-40/Rustoff 100	Protecting Equipment from Rust and Corrosion, Penetrating Stuck Parts, Displacing Moisture Maintenance Lube, Multipurpose Lube, Degreaser, Tools Maintenance	-	Can-(05 Lit)	As Required
45	Enamel Oil Paint	Asian Paints/Burger/Nerolac	Apcolite/Synthetic Enamel/Luxol	Red color, Oil based Enamel	-	Can-(200 ml)	As Required
46	Ethanol	Ethenol/Absolute	2905	Ethyl Alcohol	Panto Insulator cleaning	Ltr.	0.1
47	Isopropyl Alcohol	Qualigens	Propan-2-01	Isopropanol	Lightning Arrester Cleaning	Ltr.	0.1

Combined Consumables list							
Item No.	Item Name and Application	Brand	Product no. / code	Specification	Area of Use	Unit	Quantity per Train
48	Sikaflex 265 Sealant	Sikaflex	32141000996511	Polyurethane based,600 ml,black,adhesive sealant	HVAC cable connector mask sealing & cab mask.	PC	2
49	Sikaflex 221 Sealant	Sikaflex	321410009968	Polyurethane based,600 ml,Grey ,adhesive sealant	Door Sealing frame, finger protection rubber, pheripheral rubber	Kg.	1
50	Silicon Sealant Tube	Anabond	GP Clear-3214	Silicon sealant GP,240 ml	general purpose sealing	Tube	0.5
51	Lead Button Seal 12 mm	Metal & Alloy Round lead Seal	-	Lead Sealing Button	Sealing of bypass buttons/selector switches	Kg.	0.25
52	Sealing wire	Aluminium Wire	3921	Thin Flexible 1 mm wire	Sealing of bypass buttons/selector switches	Kg.	0.25
53	Paint Marker Pen (Red/White/Yellow)	Camelin	9608	For Marking on Fixing Bolt & Nut	All Equipments	Nos	As Required
54	Water Proof Insulation Aluminium Foil Tape	-	-	50mm	Insulate Duct	Nos	As Required
55	Battery 9V, General Purpose	SP Electron/ Duracell/ Nippon/ Eveready	-	Constant 9V Output till lasts,Metal Jacket Body, Good Built Quality and hence Leakproof and 0% Mercury and Cadmium. Environment-friendly	HW Battery for Megger/Multimeter/cl ampmeter/Remote and other general purpose use.	Nos	As Required

APPENDIX - 4

SN	Description		Unit*	Qty required
1	Pantograph	Kit for overhauling of pantograph, raising cylinder, various items of pantograph panel and control box	set	1
2	VCB	Kit for overhauling of VCB & its control box	set	1
3	Main transformer	Kit for overhauling of various valves, oil pump and radiator fan	set	1
4	Compressor	Kit for overhauling of Main & auxiliary compressor, Compressor test bench	set	1
5	Pneumatics	Kit for overhauling of all Pneumatic valves & Magnet valves	set	1
6	Axle Boxes	Kit for overhauling of Axle boxes	set	1
7	Drive Gear	Kit for overhauling of Drive gear	set	1
8	Air Condition (cab & saloon)	Kit for overhauling of valves, relays etc.	set	1
9	Door	Kit for overhauling of operating mechanism of door	set	1
10	Bogie	Kit for overhauling of Bogie including bushes, pins etc	set	1
11	Brake	Kit for overhauling of disc brake unit	set	1
12	Master Controller	Kit for overhauling of Master Controller	set	1
13	Coupler	Kit for overhauling of valves.	set	1

**MAHARASHTRA METRO RAIL CORPORATION
LIMITED**

(Nagpur Metro Rail Project)

**Five-year Annual Maintenance Contract of CRRC make Metro
Rolling Stock including Intermediate Overhauling for Nagpur Metro
Rail Project Phase-1 of Maha-Metro.**

TENDER NO: N1-O&M-38/2025

Conditions of the Contract

महा मेट्रो



NAGPUR METRO

Maharashtra Metro Rail Corporation Limited
Metro Bhawan, East High Court Road (VIP Road),
Near Dikshabhoomi, Ramdaspath, Nagpur-440010,
Maharashtra, INDIA

Website: <http://www.metro railnagpur.com>

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SN	Description
6.1	General
6.2	Particular Conditions of Contract

Section-6
Conditions of Contract

6.1. General

6.1.1. Duration of Contract

The contract shall continue for a period of **Five Years** from the date of commencement as instructed by the employer viz., the actual date of deployment of staff & commencement of maintenance work at site by the successful bidder i.e. Contractor. The period of the contract may be further extended for one year on the basis of performance, after completion of contract period, as per discretion of **Maha-Metro**.

6.1.2. Payment Terms & Schedule: -

- (a) Contractor has to submit Monthly bills/ Tax Invoices showing proper tax break up with each bill, in relation to work done / service provided to Maha Metro. The standard terms of payment shall be within 30 days from the date of submission of bills in triplicate along with work completion certificate issued by the competent authority in Maha-Metro. The payment shall be made in Indian Rupees only (INR) through RTGS/NEFT/ECS after due deductions of all statutory payments, taxes, penalties and other deductions applicable. Tax deduction at source from each on- account progress bill shall be made by Maha-Metro as per the provisions of the statutes/acts of statutory bodies/local authorities etc. except when the contractor prior to release of payment submits valid and complete documents for tax exemption.
- (b) No advance payment/ mobilization advance shall be paid to the Contractor.
- (c) Before supply of any tools, spares or consumables, Contractor has to take written permission from Maha-Metro in charge. For payment against utilized consumables, spares, special tools and equipment (which are not in the Appendix 2 & 3 of Scope of work), contractor will submit the monthly report, which will be verified by Maha-Metro staff after going through all individual issue notes and payment will be done accordingly. Contractor shall obtain approval for the specification of the materials and its rate from the Maha-Metro in-charge prior to the procurement.
- (d) It is mandatory to maintain all statutory documents at any point of time and the documents and records should be made available for inspection by Maha-Metro officials or by any other official nominated by Maha-Metro at any point of time. While submission of Bills the contractor shall also submit all the required reports and registers during the billing period.

6.1.3. Deployment, Attendance and Training:

- (a) Upon receipt of LOA, Contractor shall coordinate with all concerned departments of Maha Metro regarding deployment of Manpower for consolidation of data.
- (a) Bio-metric attendance system shall be maintained by contractor at his own cost including required machinery. If required by Maha Metro, Contractor shall integrate this attendance system to existing Maha Metro's attendance system. All employees' attendance details shall be submitted to Maha-Metro on monthly basis along with the bill submission.

- (b) The contractor shall maintain a database for all their employees in electronic form. The relevant equipment required for maintenance of data is under the scope of contractor.
- (c) Contractor needs to inform Maha-Metro immediately in case of any employee leaving its job / absent/ missing / absconding.
- (d) Contractor shall impart competency development training as detailed in scope of work Section-5. Minimum batch strength for competency training shall be 20 nos. Under Special circumstances, batch strength can be reduced by contractor however, Maha-Metro will charge training cost for 20 nos. of batch strength.

6.1.4. Payment of salary by Contractor

- (a) The Contractor shall ensure that the salary to the persons so employed is made by **7th day** of the succeeding month at least @ Minimum wages notified by the Chief Labour Commissioner (Maharashtra state) from time to time.
- (b) The contractor shall abide by and comply with all the relevant laws and Statutory requirements covered under Labour Act, Minimum Wages and Contract Labour, Regulation & Abolition Act of Maharashtra state, EPF etc. with regard to personnel engaged by him for works. It will be the responsibility of the contractor to provide details of personnel deployed by him, in Maha Metro.
- (c) As far as EPF is concerned, it shall be the duty of the Contractor to get PF code UAN number allotted for the staff deployed in Maha-Metro system and shall comply with all legal requirement in this regard.
- (d) At least one-day rest in a week shall be essentially given to the Staff in terms of Contract Labour (R&A) Act.
- (e) In case of any dispute/claims between the personnel deployed by contractor, Maharashtra Metro Rail Corporation Limited shall not be party. Contractor shall be solely responsible for any statutory violation or lapses
- (f) If any Statutory allowance(s) (which is not mentioned in financial bid) paid by the contractor to its employees deployed for Maha-Metro will be reimbursed (subject prior approval from the Maha Metro and submission of sufficient proof of payment by the Contractor) at the minimum rate of specified range of that statutory allowances as per prevailing Government norms.

6.1.5. Income Tax

The Income Tax/TDS and other statutory deductions, as applicable will be deducted from the payment. Tax deduction certificate will be issued to the Contractor by Maha Metro.

6.1.6. Insurance

The contractor shall obtain the following insurance for staff deployed at Maha-Metro work site, at its own cost, & shall submit a copy of the same within 15 days from the issuance of LOA:

- (a) Professional Indemnity Insurance shall be obtained by the Contractor in the joint name of Contractor and Maha-Metro. Insurance limit shall be equal to 6% of the contract value per incident with number of incidences as 4 per year.
- (b) Workman Compensation Insurance (WCI) upto INR 10 lakhs for each staff/employee with an extension of Accidental Medical Insurance upto INR 3 lakhs for each staff.

- (c) Medical Insurance upto INR 5 lacs for each staff those who are not covered under ESIC.
- (d) Insurance Policy for the amount equivalent to the awarded cost of this work shall be obtained by the Contractor at its own cost under the joint name of Contractor & Maha-Metro.

This policy shall cover the following:

- (i) Third Party Liability Insurance upto Rs. 20 Lakhs limit of each incident (number of incidences limited upto 08 per year) and
 - (ii) (ii) any damages occurred to the Maha Metro assets due to the negligence and workmanship of Contractor's employee upto maximum Rs. 2 Crores limit of each incident (number of incidences unlimited).
- (e) All medical expenses / compensation towards the sickness / disability of personal & staff of Contractor shall be arranged by Contractor at his own expenses.

6.1.7. GST (Goods & Services Tax)

- i. The price quoted by bidder is inclusive of all taxes (including GST) as per prevailing rate on Base Date and the bill produced by bidder shall clearly exhibit the breakup of price of services & taxes. Goods & Services Tax (as applicable) shall be mentioned in each bill of Contractor as per GST billing format.
- ii. Any change in rate of GST shall be adjusted both ways (reimbursement or recovery).

6.1.8. Penalty: Please refer to respective parts of Scope of Work.

6.1.9. Damages to Maha-Metro assets

- i. In case of any damages to the Maha-Metro assets as assessed by the Engineer in Charge during the execution of any work, suitable cost will be recovered on actual basis from the forthcoming bills of the contractor or any amount due to the contractor.
- ii. If the recoverable amount exceeds the dues payable to the contractor, the same shall be recovered from the performance Security.

6.1.10. Price & Quantity Variation

- (a) The price quoted by the contractor shall include the administrative charges including profits proportionally distributed into each cost center.
- (b) The contract value can be varied by +25% and Contractor has to execute this varied quantity of work as per the Accepted Rate. There is no limit for negative variation & no compensation toward this negative variation shall be paid to the Contractor. NO claims of Contractor shall be admissible in such circumstances.
- (c) Maha-Metro will inform the contractor in advance of 15 days + Training period for new deployment of Manpower.
- (d) In general, NO Price Variation is admissible in this Contract. However, the provisions stipulated in Section-9: Financial Bid in respective parts of BOQ shall prevail.

6.1.11. Termination of the Contract**A. Termination by Maha-Metro**

The contract may be terminated before the contract period owing to following reasons:

- (a) Force Majeure beyond control of either party (as defined by Public Procurement Dept of Ministry of Finance)
- (b) Maha-Metro can terminate the contract or reduce the scope of work by **giving notice in three months in advance** to the contractor in the event of cessation of requirement of maintenance services, stoppage/shutdown of metro services or due to any statutory directive by local Govt/Govt of Maharashtra/ Govt of India.
- (c) Deficiency in services by Contractor
- (d) Unethical / Illegal/ indiscipline/ Unprofessional behavior of personnel & if contractor refuse a suitable replacement within 15 days.
- (e) If Total deductions (towards penalty & KPI) in any one year of the contract exceeds 25% of annualized value of contract. The Contract is liable to be terminated & contractor is liable to be blacklisted and debarred from participation in any kind of tenders/bids of Maha-Metro.
- (f) Contract may be provisionally terminated if the contractor enters in to a legal dispute with Maha-Metro in any court of India. Maha-Metro shall reserve the right to avail such services by another agency as per its discretion till the verdict of court is delivered.
- (g) If either party to the Agreement is subject to liquidation or insolvency under the applicable law, then the other party may forthwith terminate this Agreement by issuing three months" Notice for termination upon such confirmed events having taken place.
- (h) The parties agree that "Material Breach" for the Contractor shall also mean (other than those instances set forth in this Agreement), the failure to maintain the Performance Levels" and/or any misrepresentation or violation of the commitments set forth in this entire Agreement or in response to the Bid or the breach or non-compliance by Contractor of its fundamental obligations under this Agreement, such that the breach or non-achievement defeats the object and purpose of this Agreement.
- (i) Maha-Metro shall also have, without prejudice to other rights and remedies, the right, in the event of "Material Breach" by the Contractor of any of the terms and conditions of the contract, or due to the Contractor's inability to perform as agreed for any reason whatsoever, to terminate the contract forthwith and get the work done for the un-expired period of the Contract at the „risk and cost" of the Contractor or in the manner Maha-Metro deems fit to recover losses, damages, expenses or costs that may be suffered or incurred by the Maha-Metro. The decision of the Maha-Metro about the breach/failure on the part of the Contractor shall be final and binding on the Contractor and shall not be called into question.
- (j) In the event that the Agreement is terminated, the effective date of termination shall be decided by Maha-Metro. However, the effective date of termination shall not be

more than three months from the date of notice.

- (k) In the event the Agreement is terminated after Commencement Date, then the Contractor acknowledges and undertakes to continue performance of the services under the Agreement until the effective date of termination as confirmed by Maha-Metro, irrespective of whichever party has terminated the Agreement. Further, during the intervening period, the Contractor agrees to provide services on the same terms as it were being provided during the tenure of the Agreement.
- (l) In the event of termination of contract for whatsoever reasons, compensation/prospective loss of profits/ loss of business, shall not be paid to the contractor for the remaining period of contract except the due amount for already executed work certified by Employer.
- (m) Performance Security/Guarantee shall be forfeited by Maha-Metro if termination is done by Maha-Metro due to above reasons except SN (a) & (b).

B. Termination by Contractor

Contractor shall have the right to Terminate the Contract by giving 3 Notices within a period of 90 days, to Maha-metro, in the event of following conditions:

- i. If employer fails to provide worksite within reasonable or mutually agreed time.
- ii. If employer fails to pay the Contractor, amount of bill certified by employer's engineer, within 90 days.
- iii. If employer fails to fulfill his contractual obligations stipulated anywhere in the Bid document.
- iv. Force Majeure beyond control of either party (as defined by Public Procurement Dept of Ministry of Finance).
- v. If either party to the Agreement is subject to liquidation or insolvency under the applicable law, then the other party may forthwith terminate this Agreement by issuing three months' Notice for termination upon such confirmed events having taken place.

6.1.12. Other Statutory Obligations: -

- (a) The Contractor is required to obtain/renewed a valid license from the competent licensing authority under the provisions of Contract Labor (Regulation and Abolition) Act and Contract Labor (Regulation and Abolition), within 60 days or deployment of 20 or more employees whichever is earlier. If the Contractor refuses to apply for license for any reason whatsoever or fails to deposit the license within the stipulated period of 30 days, the contract shall automatically stand terminated unless condoned by Maha Metro and Maha Metro shall be at liberty to recover losses, if any, from the Contractor.
- (b) The Contractor shall be obliged and solely responsible to comply with all statutory requirements in respect of the personnel engaged by him and Maha Metro shall not be a party to any dispute arising out of such deployment by the contractor.
- (c) The antecedents of personnel deployed should have been verified by the contractor from local police authority and an undertaking with verification report shall be submitted to Maha Metro before their deployment in Maha-Metro system.

- (d) The staff/personnel of Contractor shall not be treated as staff on the payroll of Maha-Metro. Any staff/personnel of Contractor shall not impersonate them as a Maha-Metro employee or represent themselves as an employee of Maha-Metro. Payment of all wages, salary, dues shall be the responsibility of the Contractor & none of the staff shall claim directly to Maha-Metro or any statutory authority.

6.1.13. Fraud and Corrupt Practices

- i. The bidder applicant and their respective officers, employees, agents and advisers shall observe the highest standard of ethics during the Bidding Process. Notwithstanding anything to the contrary contained herein, Maha Metro may reject at tender without being liable in any manner whatsoever to the bidder if it determines that the bidder has, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in the Bidding Process.
- ii. Without prejudice to the rights of Maha Metro under Clause-(i) herein above, if a bidder is found by Maha Metro to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice during the Bidding Process, such bidder shall not be eligible to participate in any tender floated by Maha Metro.
- iii. For the purposes of this Clause-(i), the following terms shall have the meaning hereinafter respectively assigned to them:
 - a) "Corrupt practice" means (i) the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the actions of any person connected with the Bidding Process or (ii) save and except as permitted, engaging in any manner whatsoever, whether during the Bidding Process or after the issue of the LOA or after the execution of the Agreement, as the case may be, any person in respect of any matter relating to the Project or the LOA or the Agreement, who at any time has been or is a legal, financial or technical advisor of the Authority in relation to any matter concerning the Project;
 - b) "Fraudulent practice" means a misrepresentation or omission of facts or suppression of facts or disclosure of incomplete facts, in order to influence the Bidding Process;
 - c) "Coercive practice" means impairing or harming or threatening to impair or harm, directly or indirectly, any person or property to influence to any person's participation or action in the Bidding Process;
 - d) "Undesirable practice" means (i) establishing contact with any person connected with or employed or engaged by the Authority with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Bidding Process; or (ii) having a Conflict of Interest; and
 - e) "Restrictive practice" means forming a cartel or arriving at any understanding or arrangement among Applicants with the objective of restricting or manipulating a full and fair competition in the Bidding Process.
 - f) The Service Provider shall ensure that the Personnel deployed by him in Maha-

Metro shall observe good conduct. The Personnel so engaged shall not take part in any kind of demonstration/agitation. The outsourced Personnel shall not make any statement against Maha-Metro on any Social/Political Forum.

6.1.14. LEGAL

- (a) The Contractor shall be responsible for compliance of all statutory provisions relating to Minimum wages, Provident Fund, and Employees State Insurance etc. in respect of the persons deployed by it in Maha Metro. The Contractor shall furnish a certificate in each month that all statutory requirements have been fulfilled along with the bills for payment.
- (b) The Contractor shall also be liable for depositing all taxes, levies, cess etc. on account of service rendered by it to Maha Metro to concerned tax collection authorities from time to time as per extant rules and regulations on the matter.
- (c) The Contractor shall maintain all statutory Registration under the applicable laws. The Contractor shall produce the same, on demand, to the concerned authority of **MAHA METRO RAIL CORPORATION LTD.** or any other authority under law.
- (d) The Tax Deduction at Source (T.D.S.) shall be deducted as per the provisions of Income Tax law, as amended from time to time and a certificate to this effect shall be provided to the Contractor by Maha Metro.
- (e) In case, the tendering Contractor fails to comply with any statutory/ taxation liability under appropriate law and as a result thereof Maha Metro is put to any loss, obligation, monetary or otherwise, Maha Metro will be entitled to get itself reimbursed out of the outstanding bills or the Performance Deposit of the Contractor, to the extent of the loss or obligation in monetary terms.
- (f) Persons deployed by the contractor shall not be less than 18 years of age, which is prohibited & punishable under relevant child labor act. **An affidavit** (Form B-8) stating the above is to be enclosed with the bid.
- (g) The bidder shall also ensure that no case of sexual harassment/abuses take place at his premises / Office with the female employee out sourced to Maha Metro under the above bid and comply the provision of "The sexual Harassment of women at work place (Prevention. Prohibition & redressed act 2013)
- (h) The personal to be hired shall be paid at least at the rate of minimum wages per month as per Chief Labour Commissioner (Maharashtra state)'s Minimum Wages Act plus obligatory payments towards EPF/ESI, as applicable. These all expenses are deemed to be inclusive in accepted cost of services. Contractor shall pay /deposit these statutory payments to concerning authority. Maha Metro shall not reimburse it separately
- (i) The staff & personnel of Contractor shall not be treated as employee of Maha-Metro Rail Corporation Limited and cannot claim an employment with Maha-Metro Rail Corporation Limited irrespective of length of deployment as personnel.
- (j) The contractor shall ensure minimum wages of personnel in accordance with the Minimum Wages Act, 1948. The rates quoted by the bidder shall be inclusive of all statutory requirement i.e. Insurances, medical expenses, PF, ESI & Bonus etc. / all

taxation liabilities as Applicable. The contractor shall abide by and comply with all the relevant laws and statutory requirements covered under Labour Act, Minimum Wages and (Contract Labour, Regulation & Abolition Act), EPF etc. with regard to personnel engaged by him for works.

- (k) The skill level of various manpower required for the Staff (as mentioned in Scope of Work, Section-5) should be ensured & they must be paid by the contractor as per relevant & prevailing Minimum Wages Act of Chief Labour Commissioner (Maharashtra state).
- (l) At no time employee of contractor shall claim to be employee of Maha-Metro. Contractor shall indemnify Maha Metro against all claims of his employees.

6.1.15. Performance Security

- (a) The successful bidder will have to deposit a **Performance deposit @ 10% (Ten Percent)** of the awarded value of the work within 15 days of the receipt of the formal order/LOA before the signing of contract agreement. The performance Security will be furnished in the form of **Bank Guarantee** issued by Scheduled Commercial Bank/Govt Insurance Company (except cooperative banks) having business office in India & drawn in favor of Maharashtra Metro Rail Corporation Ltd. The performance deposit should remain valid for a period of 180 days beyond the date of completion of all the contractual obligations of the Contractor.
- (b) In case of breach of any terms and conditions stipulated in the contract, the Performance Security of the Contractor will be liable to be forfeited by Maha Metro besides annulment of the contract.

6.1.16. Extension of Contract period

The contract shall continue for a period as provided in Bid Data Sheet (Annexure-2A). However, the period of the contract may be further extended for upto one year, after completion of contract period, as per discretion of Maha Metro.

The contractor has to provide his services at the accepted contractual terms & conditions, however the financial terms & condition may be negotiated & agreed upon.

6.1.17. Dispute Resolution

6.1.17.1. Amicable Resolution

i. No Legal action till Dispute Settlement Procedure is exhausted.

Any and all Disputes shall be settled in accordance with the provisions of Article 16. No action at law concerning or arising out of any Dispute shall be commenced unless and until all applicable Dispute Resolution Procedures set out in Article 16 shall have been finally exhausted in relation to that Dispute or any Dispute out of which that Dispute shall have arisen with which it may be or may have been connected.

ii. Notice of Dispute

For the purpose of this Sub-Clause, a Dispute shall be deemed to arise when one party serves on the other party a notice in writing (hereinafter called a "Notice of Dispute") stating the nature of the Dispute provided that no such notice shall be

served later than 30 days beyond the date of contractual completion and extension thereof if any. .

iii. Two Stages for Dispute Resolution

Disputes shall be settled through two stages:

- a) Conciliation procedures as established by “The Arbitration and Conciliation Act-1996” & amended by the Arbitration & Conciliation (Amendment) Act, 2015 and any statutory modification or re-enactment thereof and in accordance with this clause. In the event this procedure fails to resolve the Dispute then;
- b) Arbitration procedures undertaken as provided by “The Arbitration and Conciliation Act-1996” & amended by the Arbitration & Conciliation (Amendment) Act, 2015 and any statutory modification or re-enactment thereof and in accordance with this clause.

iv. Conciliation

Within 60 days of receipt of Notice of Dispute, either party shall refer the matter in dispute to conciliation.

Conciliation proceedings shall be initiated within 30 days of one party inviting the other in writing to Conciliation. Conciliation shall commence when the other party accepts in writing this invitation. If the invitation is not accepted, then Conciliation shall not take place. If the party initiating conciliation does not receive a reply within 30 days from the date on which he sends the invitation, he may elect to treat this as a rejection of the invitation to conciliate and inform the other party accordingly.

The Conciliation shall be undertaken by one Conciliator selected from a panel of Conciliators maintained by the Employer. The Conciliator shall assist the parties to reach an amicable settlement in an independent and impartial manner.

v. Conciliation procedure

The Employer shall maintain a panel of Conciliators, who shall be from serving or retired Engineers of Government Departments, or of Public Sector Undertakings. Out of this panel, a list of three Conciliators shall be sent to the Contractor who shall choose one of them to act as Conciliator and conduct conciliation proceedings in accordance with “The Arbitration and Conciliation Act, 1996” of India & amended by the Arbitration & Conciliation (Amendment) Act, 2015 and any statutory modification or re-enactment thereof. There will be no objection if conciliator so nominated is a serving employee of Maha- Metro who would be Deputy HOD level officer and above. The Employer and the Contractor shall in good faith co-operate with the Conciliator and, in particular, shall endeavor to comply with requests by the Conciliator to submit written materials, provide evidence and attend meetings. Each party may, on his own initiative or at the invitation of the Conciliator, submit to the Conciliator suggestions for the settlement of the dispute. When it appears to the Conciliator that there exist elements of a settlement which may be acceptable to the parties, he shall formulate the terms of possible settlement and submit them to the parties for their observations. After receiving the observations of the parties, the Conciliator may reformulate the terms of a possible settlement in the light of such observations.

If the parties reach agreement on a settlement of the dispute, then may draw up and sign a written settlement agreement. If requested by the parties, the Conciliator may draw up, or assist the parties in drawing up, the settlement agreement. When the parties sign the settlement agreement, it shall be final and binding on the parties and persons claiming under them respectively. The Conciliator shall authenticate the settlement agreement and furnish a copy thereof to each of the parties. As far as possible, the conciliation proceedings should be completed within 60 days of the receipts of notice by the Conciliator.

The parties shall not initiate, during the conciliator proceedings, any arbitral or judicial proceedings in respect of a dispute that is the subject matter of the conciliation proceedings.

vi. Termination of Conciliation proceedings

The conciliation proceedings shall be terminated:

- a) By the signing of the settlement agreement by the parties on the date of agreement; or
- b) By written declaration of the conciliator, after consultation with the parties, to the effect that further efforts at conciliation are no longer justified, on the date of such declaration; or
- c) By a written declaration of the parties to the conciliator to the effect that the conciliation proceedings are terminated, on the date of declaration; or
- d) By a written declaration of a party to the other party and the conciliator, if appointed, to the effect that the conciliation proceedings are terminated, on the date of declaration.

Upon termination of the conciliation proceedings, the conciliator shall fix the costs of the conciliation and give written notice thereof to the parties. The costs shall be borne equally by the parties unless settlement agreement provides for a different apportionment. All other expenses incurred by a party shall be borne by that party.

vii. Arbitration

If the efforts to resolve all or any of the disputes through conciliation fails, then such disputes or differences, whatsoever arising between the parties, arising out of touching or relating to construction/ manufacture, measuring operation or effect of the Contract Agreement or the breach thereof shall be referred to Arbitration in accordance with the following provisions:

- a) Only such dispute(s) or difference(s) in respect of which notice has been made but could not be settled through Conciliation, together with counter claims or set off, given by the employer, shall be referred to arbitration. Other matters shall not be included in the reference.
- b) The Arbitration proceedings shall be assumed to have commenced from the day, a written and valid demand for arbitration is received by Managing Director, Maharashtra Metro Rail Corporation Limited, Nagpur (MD/Maha Metro).
- c) The disputes so referred to arbitration shall be settled in accordance with the Indian

Arbitration & Conciliation Act, 1996 & amended by the Arbitration & Conciliation (Amendment) Act, 2015 and any statutory modification or re-enactment thereof.

Further, it is agreed between the parties as under:

viii. Number of Arbitrations: The Arbitral Tribunal shall consist of:

- i) Sole Arbitrator in cases where the total value of all claims in question added together does not exceed Rs. 2.00 crores;
- ii) 3(Three) Arbitrators in all other cases.

ix. Procedure for Appointment of Arbitrators: The Arbitrators shall be appointed as per following procedure:

- i) In case of Sole Arbitrator: Within 60 days from the day when a written and valid demand for arbitration is received by MD/ Maha Metro, the Employer will forward a panel of 03 names to the Contractor. The Contractor shall have to choose one Arbitrator from the panel of three, to be appointed as Sole Arbitrator within 30 days of dispatch of the request by the Employer. In case the Contractor fails to choose one Arbitrator within 30 days of dispatch of panel of arbitrators by Maha Metro then MD/Maha Metro shall appoint anyone Arbitrator from the panel of 03 Arbitrator as Sole Arbitrator.
- ii) In case of 03 Arbitrators:
 - a) Within 60 days from the day when a written and valid demand for Arbitration is received by MD/Maha Metro, the Employer will forward a panel of 5 names to the Contractor. The Contractor will then give his consent for any name out of the panel to be appointed as one of the Arbitrators within 30 days of dispatch of the request by the Employer.
 - b) Employer will decide the second Arbitrator. MD/ Maha Metro shall appoint the two Arbitrators, including the name of one Arbitrator for whom consent was given by the Contractor, within 30 days from the receipt of the consent for one name of the Arbitrator from the Contractor. In case the Contractor fails to give his consent within 30 days of dispatch of the request of the Employer then MD/Maha Metro shall nominate both the Arbitrators from the panel.
 - c) The third Arbitrator shall be chosen by the two Arbitrators so appointed by the parties out of the panel of 05 Arbitrators provided to Contractor or from the larger panel of Arbitrators to be provided to them by Employer at the request of two appointed Arbitrators (if so desired by them) and who shall act as Presiding Arbitrator. In case of failure of the two appointed Arbitrators to reach upon consensus within a period of 30 days from their appointment, then upon the request of either or both parties, the Presiding Arbitrator shall be appointed by the Managing Director/ Maha Metro, Nagpur.
 - d) If one or more of the Arbitrators appointed as above refuses to act as Arbitrator, withdraws from his office as Arbitrator, or vacates his / their office/ offices or is / are unable or unwilling to perform his functions as Arbitrator for any reason whatsoever or dies or in the opinion of the MD/Maha Metro fails to act without undue delay, the MD/Maha Metro shall appoint new Arbitrator/ Arbitrators to act in his/ their place

except in case of new Presiding Arbitrator who shall be chosen following the same procedure as mentioned in para (ii) (c) above. Such re-constituted Tribunal may, at its discretion, proceed with the reference from the stage at which it was left by the previous Arbitrator(s).

- e) The Employer at the time of offering the panel of Arbitrator (s) to be appointed as Arbitrator shall also supply the information with regard to the qualifications of the said Arbitrators nominated in the panel along with their professional experience, phone nos. and addresses to the Contractor. Qualification and Experience of Arbitrators (to be appointed as per sub- clause above): The Arbitrators to be appointed shall have minimum qualification and experience as under:

Arbitrator shall be; a Working/ Retired Officer (not below E-8 grade in a PSU with which Maha -Metro has no business relationship) of any discipline of Engineering or Accounts/ Finance Department, having experience in Contract Management;

Or

A Retired Officer (retired not below the SAG level in Railways) of any Engineering Services of Indian Railways or Indian Railway Accounts Service, having experience in Contract Management; or a Retired Office who should have retired more than 3 years previously from the date of appointment as Arbitrator (retired not below E-8 grade in Maha Metro or a PSU with which Maha Metro has a business relationship) of any Engineering discipline or Accounts/ Finance Department, having experience in Contract Management or Retired Judge of any High Court or Supreme Court of India or reputed Chartered Accountant & should be member of ICAI, New Delhi No person other than the persons appointed as per above procedure and having above qualification and experience shall act as Arbitrator.

No new claim shall be added during proceedings by either party. However, a party may amend or supplement the original claim or defense thereof during the course of arbitration proceedings subject to acceptance by Tribunal having due regard to the delay in making it.

Neither party shall be limited in the proceedings before such arbitrator(s) to the evidence or arguments put before the Conciliator for the purpose of obtaining his decision. No decision given by the Conciliator in accordance with the foregoing provisions shall disqualify him from being called as a witness and giving evidence before the arbitrator(s) on any matter, whatsoever, relevant to dispute or difference referred to arbitrator/s. Neither party shall be limited in the proceedings before such arbitrators to the evidence.

It is agreed by both the Parties that in the cases where Arbitral Tribunal is consist of sole Arbitrator, their disputes shall be resolved by fast track procedure specified in sub-section (3) of 29Bof the Arbitration and Conciliation (Amendment) Act, 2015 or as amended up to date.

If the Contractor (s) does/do not prefer his/their specific and final claims in writing, within a period of 90 days of receiving the intimation from the Employer/ Conciliator that the final demand is ready, he / they will be deemed to have waived his/their claim(s) and the Employer shall be discharged and released of all liabilities under the Contract Agreement in respect of these claims.

Arbitration proceedings shall be held at Nagpur, India and the language of the arbitration proceedings and that of all documents and communications between the parties shall be in English.

The Arbitral Tribunal should record day to day proceedings. The proceedings shall normally be conducted on the basis of documents and written statements. All Arbitration awards shall be in writing and shall state item wise, the sum and detailed reasons upon which it is based. A model time scheduled for conduct of Arbitration proceedings in a period of 180 days/365 days will be made available to Arbitral Tribunal for their guidance. Both the parties should endeavor to adhere to time scheduled for early finalization of Award.

The Award of the sole Arbitrator or the award by majority of three Arbitrators as the case may be shall be binding on all parties. Any ruling on award shall be made by a majority of members of Tribunal. In the absence of such a majority, the views of the Presiding Arbitrator shall prevail.

A party may apply for correction of any computational errors, any typographical or clerical errors or any other error of similar nature occurring in the award of a tribunal and interpretation of specific point of award to tribunal within 60 days of the receipt of award party may apply to tribunal within 60 days of receipt of award to make an additional award as to claims presented in the arbitral proceedings but omitted from the arbitral award.

x. Interest on Arbitration Award

Where the arbitral award is for the payment of money, interest @ 15% per annum shall be payable on whole or any part of the money for the period it is accrued, till the date on which the award is made.

xi. Cost of Conciliation/ Arbitration

The fees and other charges of the Conciliator/ Arbitrators shall be as per the scales fixed by the Employer from time to time irrespective of the fact whether the Arbitrator(s) is / are appointed by the Employer or by the Court of law unless specifically directed by Hon'ble Court otherwise on the matter, and shall be shared equally by the Employer and the Contractor. However, the expenses incurred by each party in connection with the preparation, presentation will be borne by itself. The latest scale of fee & other charges fixed by Maha -Metro.

6.1.18. Jurisdiction of Court

Where recourse to a Court is to be made in respect of any matter, the Courts at Nagpur shall have the exclusive jurisdiction to hear all disputes between the parties.

6.1.19. Proprietary Rights of OEM:

The contractor will be shared with operation manuals, instructions / guidelines, SOPs, Safety manuals issued by OEM or any statutory authority for compliance of maintenance services. These documents are proprietary items of OEMs & Maha-Metro and should not be reproduced, tampered or shared with any persons without permission of Maha-Metro.

6.1.20. Gender Neutrality:

The contractor is free to induct male or female or transgender as maintenance staff as per the requirement based on the scope of work. However, the nature of work also involves working at odd hours as per the operational and maintenance requirement of Maha-Metro.

6.1.21. Defect Liability Period (DLP)/Warranty Period/Guarantee Period:

The Defect Liability Period towards workmanship shall be 6 months for services and for spares & components as per the OEM policy from the date of successful completion & commissioning of maintenance task of respective part of work detailed in Scope of Work.

The contractor shall be responsible for any Defect or failure attributable to Defective material supplied and/or workmanship and/or improper/ incomplete maintenance during the DLP.

The corrective action/rectification of such defect/failure shall be the Service Provider/Contractor's responsibility and the DLP will start afresh from the date of rectification of defect/failure. The complete cost for this shall be borne by the Service Provider/Contractor.

6.1.22. Work Management Facilities:

- a) **Office space:** The Contractor shall be provided office space at Nagpur Metro depots by Maha-Metro. The office space shall be unfurnished.

The office space & sitting arrangement for the on-duty staff in metro premises will be provided by Maha-Metro in the Station/Depot or wherever available.

- b) **Furniture:** Furniture for the Contractor's administrative office shall be procured by the contractor at his own cost.
- c) **General tools, tackles & other minor consumables:** Contractor have to arrange General tools, tackles & other minor consumables as well as his office consumables, computers etc. at his own cost.
- d) **Special Tools, Spares & major consumables:** All Special Tools and tackles, Spares & major consumables (as per provisions in Scope of Work) required for Maintenance activity will be provided by Maha Metro.

6.1.23. Compensation levied on Contractor under judicial proceedings:

- a) The Contractor shall be liable to pay compensation awarded by any court or tribunal for loss or damage sustained to any passenger/staff of contractor/employee of Contractor due to any act / omission of the contractor or his personnel.

- b) Any statutory liabilities or directives notified by Govt of India or Govt of Maharashtra shall be applicable to Contractor & his staff and it is required to be complied by Contractor without any additional liabilities to Maha-Metro.

6.1.24. Malpractices:

1. The Contractor or any staff/personnel of contractor shall not take bribes/inducement/gift/commission or any kind of favor for recruiting any staff/personnel towards this work. If complaint of this nature is received, Maha Metro reserves the right to terminate the contract.
2. The Contractor & staff/personnel shall take care & preserve the assets of Maha-Metro & stock of spares & consumables issued to them. If found guilty of theft, misuse & damage, the actual cost of loss shall be recovered from the Bill of Contractor as well as appropriate penal action/persecution shall be done as per of Law.
3. The Contractor & staff/personnel shall not take any unauthorized person (who is not on duty) for a free ride in Metro under the pretense of working staff. If found guilty, a spot fine of INR 1000/- per incident shall be levied upon the contractor.
4. The Contractor & staff/personnel shall not engage in any illegal & unlawful activities within Maha-Metro premises. If found guilty, appropriate penal action under the frame of Law shall be taken as well as contract may be terminated in the event of frequent offense committed by the Contractor or his staff/personnel.
5. Use of alcohol, Smoking, use of tobacco or use of any intoxicants is completely prohibited in Maha-Metro premises as well as on duty by Contractor's staff. If found guilty, a spot fine of INR 1000/- per incident shall be levied upon the contractor.
6. Contractor is not permitted to use name & logo of Maha-Metro in its advertisement, recruitment, notices or any other places, unless approved by Maha-Metro.

6.1.25. Other Requirements:

1. The staff/personnel of Contractor should be fluent in speaking Marathi & Hindi.
2. The staff/personnel of Contractor shall always maintain high ethics & etiquettes as per the standards of Maha Metro services. Their level of integrity shall be beyond suspicion.
3. The contractor will provide uniform and Personal Protective Equipment (like Safety Shoe etc.) for all his staff/personnel after due approval from Maha Metro.
4. I-card as approved by Maha Metro shall be provided to all the staff/personnel while on duty.

6.1.26. General operational & professional guidelines (DOs) for Contractor staff:

- (i) In case of fire/anything unusual on OHE equipment or wires, inform the Employer's nominated staff/executives/control at nearby location.
- (ii) Extinguish fire by available fire extinguishers.
- (iii) Ensure no water jet is directed at the fire under any circumstances.
- (iv) Before taking up the work 2 meters near to OHE, the OHE should be switched off and earthed on both sides.
- (v) Keep clear of the track.
- (vi) Special care should be taken while carrying long pipes, poles or ladders through tracks so that it should not come within 2 meters of OHE.
- (vii) Cases of electric shock arising out of contact traction should be reported to the Employer's staff/executives/control.
- (viii) The staff should wear proper PPE when and as required.
- (ix) Staff shall adopt the necessary safety procedures made by the Employer to avoid any type of accidents/incident to staff and material.
- (x) Cleaning work other than that of surface (i.e. of beam, pillars etc.) should be done during block period availing shadow block only.
- (xi) Whenever washing or cleaning using water jets is done, take appropriate power block.
- (xii) Staff shall adopt the necessary safety procedures made by MAHA METRO to avoid any type of accidents/incident to staff and material.
- (xiii) The service provider shall display necessary signage approved by MAHA METRO.
- (xiv) The staff should not allow any person to enter unauthorized area without proper authorization from the Employer.
- (xv) Report any unusual occurrence in their vicinity to the MAHA METRO staff.
- (xvi) To stop/start escalator/lifts in emergency & to help/evacuate commuters stuck up in escalators/lifts & during need.
- (xvii) Special precaution to be taken while working in UPS Room.

6.1.27. General operational & professional guidelines (DONTs) for Contractor staff:

- i) Do not approach within 2 meters of any OHE or live equipment.
- ii) Do not work on or near OHE or any live equipment unless they are made dead, earthed and shut down notices/ permit to work obtained.

- iii) Do not enter switching station or remote control center unless specially permitted.
- iv) Do not touch a person in contact with live OHE Remove/touch only after power supply is switched off and earthed.
- v) Do not touch any OHE fallen on the ground and do not allow anyone else to touch it.
- vi) Do not forget to give artificial respiration to the victim as per the prescribed procedure laid down in shock treatment charts.
- vii) Do not cross in front of energized train.
- viii) Cleaning work with conducting materials like Aluminum/ Steel rods should be avoided at all times when power block is not available.
- ix) Do not lift or raise your tools towards OHE.
- x) Do not damage the plinth continuity, connection to BEC, OPC and handrail continuity.
- xi) Do not use steel tape or metallic tape or tape with woven metal reinforcement in electrified area.

6.1.28. Safety Measures Safety Instructions:

The Employer's premises have High Voltage OHE, High Voltage equipment, movement of Trains in the depot and stations, and other industrial equipment, which can cause major injury, electrocution, and even death to the personnel. Hence, requirements for observing safety are very high. The Contractor's Team Leader/Supervisors/Maintainers will be provided familiarization on the safety aspects and shall be required to train all the personnel deployed. The Contractor shall ensure that the following rules and guidelines are made known to its entire staff and must be followed to ensure safety. An assurance in this regard will be taken in writing by the contractor from the staff deployed.

6.1.29. Preservation of Peace and orderly conduct:

The Contractor shall be fully responsible to ensure the discipline, and orderly conduct among the staff deployed for work. Smoking & Consumption of Tobacco in any form is not allowed. The carrying and consumption of intoxicating liquor, drugs or other substances that may affect the proper performance is strictly prohibited in the depots/Stations.

6.1.30. Resources Report:

The Contractor shall submit to the in charge each month a detailed list by trade classification, of manpower employed during the report period as also a list of all serviceable major items of cleaning machineries / equipment on site.

6.1.31. Accidents:

- a. It shall be the sole responsibility of the Contractor to adopt all the safety measures & deploy Maintenance personnel who are adequately trained in safety.
- b. If any accident occurs within the station area due to maintenance lapse or due to negligence on the part of the Contractor's personnel it shall be the full responsibility of the Contractor.
- c. If any damage occurs to the structures/ material & equipment due to maintenance activities, the cost of damage will be recovered from the Contractor's bill.

6.1.32. Medical Examination:

Contractor shall submit the medical fitness certificate of the proposed staff from recognized medical doctor as per MAHA-Metro Standards. Refer [http://www.metrorailnagpur.com/pdf/NMRC Indicative Medical Standards.pdf](http://www.metrorailnagpur.com/pdf/NMRC_Indicative_Medical_Standards.pdf).

6.1.33. Standard operating Procedures (SOP):

Contractor shall ensure that the SOPs of Operation & Maintenance are safely followed and should plan and educate their staff accordingly.

6.1.34. Rights of Manuals/ training Materials:

The maintenance contractor will be handling maintenance data, maintenance manuals, training material and maintenance records of MAHA-Metro systems. These are proprietary to MAHA-Metro and should not be shared with any one.

6.1.35. Time line:

Total requirement of staff given is minimum. MAHA-Metro will advise the contractor to deploy the required no. of staff in phased manner. The contractor shall mobilize the required staff from 15 days of issue of LOA issued by MAHA-Metro.

6.1.36. Safety, Quality Environment:

- a) All systems of MAHA-Metro are sophisticated with adequate safety provisions inbuilt for maintenance. Various safety measures need to be observed while performing Daily, Preventive & Corrective maintenance. Hence, usage of relevant Personal Protective Equipment (PPE) is mandatory during maintenance. Safety belt for working at height, Helmet, Safety Shoe, cotton gloves, nose mask, face mask and ear plug form a set of PPE. Provisioning and renewal of PPE to maintainers shall be the responsibility of the contractor, at his own cost.
- b) Keeping the healthiness of all systems in fettle for a long period is solely dependent upon the quality of maintenance. It is expected from the contractor to establish a

good quality culture and adopt best practices. The contractor shall strive for continual improvement in quality of maintenance services.

- c) The working environment needs to be maintained with utmost cleanliness. Better maintenance practices need to be followed to avoid spillage of oil, grease and other consumables. Removed packaging materials of spares to be disposed in bins provided in the maintenance shed. All removed spares shall be handed back to stores.

6.1.37. The Contract Price:

- a) The contract price, subject to any adjustment thereto in accordance with contract conditions shall be inclusive of all taxes like GST, duties, levies, royalties etc. or any other taxes prevailing at the time of Bid submission.
- b) The contract price shall be adjusted to take into account any statutory change in taxes, duties, levies or introduction of any new taxes, duty or levy during execution till the completion date or upto further extended contract period.
- c) Contractor will submit the breakup of taxes in the invoices in monthly RA bills. The Contractor shall maintain all records related to payment of taxes at his end for verification any time during the contract. The Contractor shall ensure full compliance with tax laws of India with regard to this contract and shall be solely responsible for the same.

6.2. Particular Conditions of Contract

1. The Contractor shall provide services at two Metro Depots at Nagpur or at any other place as required by MAHA Metro, in the manner and as per the instructions of the Maha-Metro.
2. Contractor, prior to deploying any staff, shall submit their CVs to Maha-Metro for approval. Staff whose CVs have been approved, shall be deployed & permitted to enter the site.
3. Contractor shall promptly remove & replace the personnel who is/are incompetent /under skilled/under qualified in the opinion of Maha-Metro, and instruction received by Contractor in writing by Maha-Metro.
4. If the Contractor removes any personnel for any reason whatsoever, he shall provide an equally suitable, competent, & skilled personnel, promptly so that services remain unaffected. The CV of such replacement shall also be submitted to Maha-Metro for approval.
5. While working at any work site of Maha-Metro, the contractor shall have to coordinate with other interfacing Contractors/employees of Maha-Metro. In such circumstances The Contractor shall communicate & may suitably plan to execute his work with these interfacing Contractors/employees of Maha-Metro.
6. MAHA Metro will supply the special tools and spares (subjected to availability with Maha-Metro) required for scheduled maintenance activities mentioned in Scope of Work, without any cost.
However, if any tools and spares are required & not available with Maha-Metro, it shall be procured by the contractor after approval of Maha-Metro. Maha-Metro shall reimburse the 'Actual Cost + 10% overhead' in such procurement by the Contractor. However, supply of uniforms and PPEs (Personnel Protective Equipment) to their maintenance staff is under the scope of contractor. The Contractor shall at all time maintain a minimum of 10% spare PPEs and safety appliances and proper record for verification by Maha-Metro during the inspections. Failing which, appropriate penalty shall be levied.
7. The contractor shall carry out the maintenance activities as per maintenance check list issued to contractor by Maha-Metro from time to time.
8. One copy of service check sheets (specifications) shall be supplied to the Contractor. The Contractor shall promptly inform Maha-metro of any error, omission, fault and other deficiencies in the Specifications, which are discovered when reviewing the Contract Documents or in the process of execution of the maintenance services. Maha-metro has the rights to revise the check sheets/specifications. The contractor shall carry out the activities accordingly.
9. The contractor's maintenance personnel & staff shall be sufficiently competent & skilled to carry out the maintenance work of Rolling stock at their own i.e. without any assistance from Maha-Metro staff.
10. The train will be handed over by Maha-Metro to the contractor's maintenance personnel at depots for maintenance work and after completing the maintenance work as per stipulated procedures, the Contractor shall handover back the fit train to Maha-Metro with a 'Fit to Run Certificate'.

11. The Job cards for maintenance work shall be issued to only competent Team leader/Manager of Contractor and closing of job cards by contractor's maintenance personnel shall be done after satisfactory completion of maintenance activities.
12. Requirement of Consumables shall be assessed on monthly basis. Contractors shall submit the requirements in advance for approval of Maha-Metro & ensure timely supply of consumables without any delay.
Physical verification of the supplied consumables shall be done by Maha-Metro Engineer & and payment shall be processed thereafter upon submission of bill & copy of prior approval of Maha-Metro.

13. Price Variation

Below PVC formula shall be applicable for AMC works under this contract for all the schedules A, B & C. the Adjustment on Local currency (Indian Rupees) Portion shall be applied to the amount otherwise payable to the Contractor on completion of Works under different milestones as per the following formula:

$$P_n = P_i(0.2 + 0.4(B_n/B_o) + 0.4(C_n/C_o)) - P_i$$

In which:

- P_n = Price adjustment amount (increase/decrease) for corresponding claim in INR portion.
- P_i = Contractual monthly payment (quoted by contractor) calculated by the sum of Schedule A & Schedule B for that particular year divided by 12 (without considering deviation/variation) or contractual payment for Schedule C per train. In case of acceptance of deviation, price quoted for withdrawal of deviation conditions etc. shall not be included in P_i however, variation in quantities in maintenance stage shall be included in P_i
- B_n is current cost index of Labor Index viz. "All India Consumer Price Index for Industrial Workers (CPI-IW) (Base Year: 2016=100)" published by Labour Bureau of Ministry of Labour & Employment, Government of India for period n (to which the particular interim payment certificate relates) for INR portion. B_o refers to the same index as on Last Date of Bid submission
- C_n is current cost index published in Wholesale Price Indices: Base 2011-12: Published by Economic Adviser, Ministry of Commerce & Industry, Government of India for period n (to which the particular interim payment certificate relates) for INR portion. C_o refers to the same index Last Date of Bid submission
- In case the indices as indicated above, changes in composition, it shall be replaced by any index which subsequently substitutes the corresponding indices.
- The Price Adjustment for each monthly payment will be made at the time of payments for Milestones under Schedule A, B & C.

14. PAYMENT TERMS

- 14.1. All the invoices/bills signed by the Authorized signatory shall be submitted on a monthly basis by the contractor to MAHA-METRO. The payment will be processed within 30 days of submission of Contractor's claim every month after due deductions of all statutory payments, taxes, penalties and other deductions if any applicable. No

advances shall be paid to the Contractor. Tax deduction at source from each on-account progress bill shall be made by MAHA-METRO as per the provisions of the statutes/acts of statutory bodies/local authorities etc., except when the contractor prior to release of payment submits valid and complete documents for Income tax exemption.

14.2. The payment will be released on monthly basis against Schedule A & Schedule B. Monthly payment will be equal to 12 equal installments of 80% of annual cost for Schedule A & Schedule B. The remaining 20% payment (in each Monthly bill) shall be linked to KPIs in section scope of work in quarterly manner. The monthly bills shall be paid only if it is accompanied by the adequate proof of the following:

- a. Payment of wages to all the workmen engaged in the provision of the services during the previous month. (self-certification of contractor is required.)
- b. Payment of contributions to PF, ESI etc. to the concerned authorities for the previous month as per the relevant statutes.
- c. Certification from Engineer of Maha-Metro regarding satisfactory performance during the period of the bill.
- d. It is mandatory to maintain all statutory documents at any point of time and the documents and records should be made available for inspection by MAHA Metro officials or by any other official at any point of time.

13.3 Payment to the Schedule C Intermediate Overhauling shall be made trainset wise after satisfactory completion of overhauling of trainset as per section scope of works.

Section VI, Annexure -6 A
Corrupt and Fraudulent Practices Policy

The Employer, the Implementing Agency and the contractors, suppliers or consultants must observe the highest standard of ethics during contract procurement and performance.

By signing the Statement of Integrity (form available as Appendix to Letter of Bid) the contractor, supplier or consultant declares that (i) "it did not engage in any practice likely to influence the contract award process to the Employer's detriment, and that it did not and will not get involved in any anti-competitive practice", and that (ii) "the negotiation, the procurement and the performance of the contract did not and shall not give rise to any act of corruption or fraud".

Moreover, the Agency requires including in the Bidding Documents and Agency- financed contracts a provision requiring that bidders and contractors, suppliers and consultants will permit the Agency to inspect their accounts and records relating to the procurement and performance of the Agency-financed contract, and to have them audited by auditors appointed by the Agency.

The Agency/Maha-Metro reserves the right to take any action it deems appropriate to check that these ethics rules are observed and reserves, in particular, the rights to:

- a) reject a proposal for a contract award if it is established that during the selection process the bidder that is recommended for the award has been convicted of corruption, directly or by means of an agent, or has engaged in fraud or anti-competitive practices in view of being awarded the Contract;
- b) declare mis procurement when it is established that, at any time, the Employer, the contractor, the supplier, the consultant or its representatives have engaged in acts of corruption, fraud or anti-competitive practices during the contract procurement or performance without the Employer having taken appropriate action in due time satisfactory to the Agency to remedy the situation, including by failing to inform the Agency at the time they knew of such practices.

The Agency defines, for the purposes of this provision, the terms set forth below as follows:

- (a) Corruption of a public officer means:
 - i. the act of promising, offering or giving to a public officer, directly or indirectly, an undue advantage of any kind for himself or for another person or entity, for such public officer to act or refrain from acting in his official capacity; or
 - ii. the act by which a public officer solicits or accepts, directly or indirectly, an undue advantage of any kind for himself or for another person or entity, for such public officer to act or refrain from acting in his official capacity.
- (b) A "public officer" shall be construed as meaning
 - i. any person who holds a legislative, executive, administrative or judicial mandate

(within the State of the Employer) regardless of whether that person was nominated or elected, regardless of the permanent or temporary, paid or unpaid nature of the position and regardless of the hierarchical level the person occupies;

- ii. any other person who performs a public function, including for a State institution or a State-owned company, or who provides a public service;
- iii. any other person defined as a public officer by the national laws of the Employer.

(c) Corruption of a private person means:

- i. the act of promising, offering or giving to any person other than a public officer, directly or indirectly, an undue advantage of any kind for himself or for another person or entity, for such person to perform or refrain from performing any act in breach of its legal, contractual or professional obligations; or
- ii. the act by which any person other than a public officer solicits or accepts, directly or indirectly, an undue advantage of any kind for himself or for another person or entity, for such person to perform or refrain from performing any act in breach of its legal, contractual or professional obligations.

(d) Fraud means any dishonest conduct (act or omission), whether or not it constitutes a criminal offence, deliberately intended to deceive others, to intentionally conceal items, to violate or vitiate consent, to circumvent legal or regulatory requirements and/or to violate internal rules in order to obtain illegitimate profit.

(e) Anti-competitive practices means:

- i. any concerted or implied practices which have as their object or effect the prevention, restriction or distortion of competition within a marketplace, especially where they (i) limit access to the marketplace or free exercise of competition by other undertakings, (ii) prevent free, competition-driven price determination by artificially causing price increases or decreases, (iii) restrict or control production, markets, investments or technical progress; or (iv) divide up market shares or sources of supply.
- ii. any abuse by one undertaking or a group of undertakings which hold a dominant position on an internal market or on a substantial part of it.
- iii. any practice whereby prices are quoted or set unreasonably low, the object of which is to eliminate an undertaking or any of its products from a market or to prevent it from entering the market.

In all the above circumstances the EMD & Performance Security of the Bidder / Successful bidder shall be forfeited & either excluded from the bidding process or termination.

MAHARASHTRA METRO RAIL CORPORATION LIMITED
(Nagpur Metro Rail Project)

**Five-year Annual Maintenance Contract of CRRC make
Metro Rolling Stock including Intermediate Overhauling for
Nagpur Metro Rail Project Phase-1 of Maha-Metro**

TENDER NO: N1-O&M-38/2025

Section-7: Bidding & Contract Forms



Maharashtra Metro Rail Corporation Limited
Metro Bhawan, East High Court Road (VIP Road),
Near Dikshabhoomi, Ramdaspath, Nagpur-440010,
Maharashtra, INDIA
Website: <http://www.metro railnagpur.com>

SECTION -7
Bidding & Contract Form
FORMS FOR BIDDING

(Form-B-1 to Form-B-10 is to be submitted by bidder along with the technical bid)

Letter of Bid

To,
(Name & address of Employer)
Name of Work:

Dear Sir,

With reference to your Bid documents/Tender Notification dated _____, I/we, having examined all relevant document and understood their contents, hereby submit our Proposal for “(Name of Work)”. The proposal is unconditional and unqualified.

1. All information provided in the Proposal and in the Appendices, is true and correct and all documents accompanying such Proposal are true copies of their respective originals.
2. This statement is made for the express purpose of appointment as Agency/ for the aforesaid work.
3. I/We shall make available to the Employer any additional information it may deem necessary or required for supplementing or authenticating the Proposal.
4. I/We acknowledge the right of the Employer to reject our application without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.
5. I/We declare that:
 - a. I/We have examined and have no reservations to the Bid Document, including any Addendum issued by the Employer;
 - b. I/We do not have any conflict of interest in accordance with ITB 4.2;
 - c. I/We have not directly or indirectly or through an agent engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, in respect of any tender or request for proposal issued by or any agreement entered into with the Employer or any other Public-Sector enterprise or any government, Central or State; and
 - d. I/We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.
 - e. I/We have not been blacklisted/ debarred, which is in force on the last date of Submission of the Bid,

-
- i. for the reasons like supply of sub-standard material, non-supply of material, abandonment of works, sub-standard quality of works, failure to abide "Bid Securing Declaration" etc. by:
- (a) any Department / PSU / Subordinate Offices under Ministry of Housing and Urban Affairs (MOHUA) or
- (b) any department of Government of Maharashtra
- or
- ii. By Department of Expenditure (DOE), Ministry of Finance, Government of India from participating in any government bidding procedure.
6. I/We understand that you may cancel the Bidding Process at any time and that you are neither bound to accept any Proposal that you may receive nor to select the Bidder, without incurring any liability to the Bidders as per Sub-Clause 9.1 of ITB.
7. I/We certify that in regard to matters other than security and integrity of the country, we or any of our Associates have not been convicted by a Court of Law or indicated or adverse orders passed by a regulatory authority which would cast a doubt on our ability to undertake the Supply or which relates to a grave offence that outrages the moral sense of the community.
8. I/We further certify that in regard to matters relating to security and integrity of the country, we have not been charge-sheeted by any agency of the Government or convicted by a Court of Law for any offence committed by us or by any of our Associates.
9. I/We further certify that no investigation by a regulatory authority is pending either against us or against our Associates or against our CEO or any of our Directors/ Managers/ Employees.
10. I/We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the Employer and/ or the Government of Maharashtra in connection with the selection of Bidder or in connection with the Evaluation/ Selection Process itself in respect of the above-mentioned work.
11. I/We agree and understand that the proposal is subject to the provisions of the Bid Document. In no case, shall I/we have any claim or right of whatsoever nature if the Work is not awarded to me/us or our proposal is not opened or rejected.
12. I/We agree to keep this offer valid for 180 days (One Hundred and Eighty) from the last date of submission of the bid.
13. Power of Attorney in favor of the authorized signatory to sign and submit this proposal and document is attached herewith as Form B-5.

14. In the event of my/our firm/ being selected as the Bidder, I/we agree to enter into an Agreement in accordance with the form at C-2 of the Bid documents. We agree not to seek any changes in the aforesaid form and agree to abide by the same.
15. I/We have studied Bid Document and all other document carefully and also surveyed the Project site. We understand that except to the extent as expressly set forth in the Agreement, we shall have no claim, right or title arising out of any document or information provided to us by the Employer or in respect of any matter arising out of or concerning or relating to the Evaluation Process including the award of the work.
16. I/We, agree and undertake to abide by all the terms and conditions of the Bid Document. In witness thereof, I/we submit this proposal under and in accordance with the terms of the Bid Document.

Yours faithfully
(Signature with name, designation and
stamp of the authorized signatory)

FORM-B-2**(TO BE FURNISHED BY BIDDER ALONG WITH TECHNICAL BID)**

1.	Bidder Type Bidder's Name (Company Name)	(Single Entity/ JV/ Consortium) Bidder Name: <i>(in case of JV/Consortium, Please mention full name of JV/Consortium, number of JV/Consortium members with their capacity (lead member/ other member etc) and % participation)</i>
2.	Registered address and Nationality	
3.	Address of Correspondence	
4.	Name of Proprietor/Director of Company	
5.	Certificate of incorporation/ Statutory Registration/Shop Act License No. and Validity Period/Date. Certificate No & Date supported by copy of certificate. (If applicable)	
6.	Nature of Business & Establishment Year (as mentioned in Incorporation certificate)	
7.	Telephone Nos.	
8.	Fax Nos.	
9.	Mobile No.	
10.	E-mail ID	
11.	Contact Person Name Designation Mobile E-mail	
12.	Organizational Capability (Staff strength)	
13.	PF/ESI Details: Reg. No. PF	

	Reg. No. ESI Reg. No. Service Tax		
14.	PAN Details: PAN No.		
15.	A brief enlistment of Clients with whom your organization has worked (Enclosed the list supported by LOA/WO/Experience Certificate)		
16.	List any arbitration cases/ legal disputes on Current/ previous projects - Mention name of project, reason for dispute, party filing the suit and current status)		
17.	Already established office at Nagpur	YES	NO
18.	If Yes, Complete address with contact no of Nagpur.		
19.	Whether have 'Conflict of Interest' as per Sub Cl. 3.1 Pt. 2 of the Bid Document <i>Marking "Yes" as "✓" will disqualify the bidder</i>	YES	NO
20.	Name & Signature of the person furnishing the above statements		

Notes: -

- Every statement made in the pre-qualification format should be supported by Documentary proof for consideration. Otherwise the tender is liable to be rejected.

FORM-B-2**DECLARATION**

I, _____ Son / Daughter /Wife of
Shri. _____ Proprietor/Director,
authorized signatory of the bidder, mentioned above, is competent to sign this declaration and
execute this tender document;

1. I have carefully read and understood all the terms and conditions of the tender and undertake to abide by them;
2. The information / documents furnished along with the above application are true and authentic to the best of my knowledge and belief. I / we, am/ are well aware of the fact that furnishing of any false information/ fabricated document would lead to rejection of my tender & forfeiture my Bid Security /EMD besides liabilities towards prosecution under appropriate law.

Signature of authorized person

Full Name:

Seal:

Date:

Place

FORM-B3**Average Annual Turnover of the Bidding Agency**

Tender No. and title: _____

Bidder's Name: _____

Annual turnover data (Ref.Section-3) for 5 years		
S. No.	Year	Amount Rs.
1	<i>[indicate year]</i>	<i>[insert amount]</i>
2		
3		
4		
5		
	Average Annual Turnover	

Note: -

1. Attach certified copy of summary of balance sheet by Chartered Accountant for each year mentioned above.
2. Average Annual Turnover (as specified in Eligibility Criteria of Section-3) and Average Annual Turnover should be provided duly certified by Chartered Accountant with UDIN.

Form-B-4A**Similar Work Experience****Tenderer's legal name:****Date:****Member's legal name:****Page of pages**

For works as stipulated under clause 1.2.1 of Section – 3, Eligibility Criteria

Similar Work Experience		
Contract Number ____ out of ____ required	Information	
Contract Identification		
Description of the similarity in accordance with similar work		
Award date: Completion date:		
Employer's Name		
Employer's Address: Telephone / Fax number: E Mail:		
Role in Contract (Individual/ Consortium member)	Single Entity	JV/Consortium Member
Completion Cost/ Value of successfully executed work in case of ongoing work	Currency Exchange Rate	In equivalent INR at [Date] * price level
If JV / Consortium member specifies percentage participation in contract & amount (Please refer Note-1)	% Participation	In equivalent INR at [Date] * price level

Signature of authorized signatory on behalf of Tenderer

Form-B-4B**Summary of Experience**

Bidder's Name: _____

Date: _____

Tender No. and title: _____

Starting Year	Ending Year	Contract Identification
		Name of Work: _____ Name, Address and <i>E-Mail ID</i> of Employer: _____ Contract value (Revised Contract value if any): _____ Status of work: On-Going/ Completed Date of Commencement: _____ Date of Completion: _____ Value of Work Executed (As per Experience Certificate): _____
		Name of Work: _____ Name, Address and <i>E-Mail ID</i> of Employer: _____ Contract value (Revised Contract value if any): _____ Status of work: On-Going/ Completed Date of Commencement: _____ Date of Completion: _____ Value of Work Executed (As per Experience Certificate): _____
		Name of Work: _____ Name, Address and <i>E-Mail ID</i> of Employer: _____ Contract value (Revised Contract value if any): _____ Status of work: On-Going/ Completed Date of Commencement: _____ Date of Completion: _____ Value of Work Executed (As per Experience Certificate): _____

Form-B-5**POWER OF ATTORNEY****(If bid is signed by other than proprietor/owner/Managing Director/Chairman)**

(To be on non-judicial stamp paper of appropriate value as per Stamp Act relevant to place of execution.)

Know all men by these presents, We(name and address of the registered office of the bidder firm, as applicable) do hereby constitute, appoint and authorize Mr./Ms.....S/o-----
 -(name and residential address) who is presently employed with us and holding the position of _____, (name of the post of person in the bidding firm) as our Attorney to sign and execute the Contract Agreement and any other requisite document in our name and our behalf for '.....' _____ [name of the work] for Nagpur Metro Rail Project in response to the Bidding Document dated _____ (Tender No) issued by Maharashtra Metro Rail Corporation Limited (Maha-Metro) (the Employer) and to do all or any of the acts, deeds or things necessary or incidental to the above.

We hereby agree to ratify all acts, deeds and things done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall be binding on us and shall always be deemed to have been done by us.

All the terms used herein but not defined shall have the meaning ascribed to such terms under the Bidding Documents.

Signed by the within named

.....[Insert the name of the executant company]

through the hand of Mr.

duly authorized by the head of the bidding firm to issue such Power of Attorney

Dated this day of

Accepted

Signature of Attorney

(Name, designation and address of the Attorney)

Attested

.....

(Signature of the executant)

(Name, designation and address of the executant)

Common seal of bidding firm..... has been affixed

.....

Signature and stamp of Notary of the place of execution

WITNESS

1.

(Signature)

Name

Designation.....

2.

(Signature)

Name

Designation.....

Notes:

1. The mode of execution of the power of attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and the same should be under common seal of the executant affixed in accordance with the applicable procedure. Further, the person whose signatures are to be provided on the power of attorney shall be duly authorized by the executant(s) in this regard.

2. In the event, power of attorney has been executed outside India, the same needs to be duly notarized by a notary public of the jurisdiction where it is executed.

3. Also, wherever required, the executant(s) should submit for verification the extract of the charter documents and documents such as a board resolution / power of attorney, in favour of the person executing this power of attorney for delegation of power hereunder on behalf of the executant(s).

FORM B-5A**UNDERTAKING**

(In case the bidding firm is proprietorship firm and proprietor is the signatory of bid and this undertaking enclosed in the bid in lieu of POA on letter head of bidding firm.)

I, _____(name), S/O _____ (father's name)
_____(address) is the proprietor of the bidding firm named as _____
(firm's name) and authorize signatory as the owner of the bidding firm.

I undertake and owe the full responsibility of statement and information furnished with this bid and abide by all conditions of this bid.

_____(SIGN)

_____(NAME)

Form B- 5B**(a) Form of Joint Bidding Agreement****(JV/ Consortium Agreement)**

(To be on non-judicial stamp paper of appropriate value as per Stamp Act relevant to place of execution, duly signed on each page and duly notarised by Notary Public. Foreign entities submitting the Bid are required to follow the applicable law in their country, if JV is formed out of India)

JV/Consortium Agreement Between

M/S....., M/S....., and M/S.....

For (Name of Work) vide
Tender No _____ hereinafter referred as "Work"

THIS Consortium Agreement (hereinafter referred to as "Agreement") executed on the..... day of between M/s..... a company incorporated under the laws of and having its Registered Office at (hereinafter called the "Party 1", which expression shall include its successors, executors and permitted assigns),

and

M/s.....a company incorporated under the laws of and having its Registered Office at (hereinafter called the "Party 2", which expression shall include its successors, executors and permitted assigns)

and

M/s.....a Company incorporated under the laws ofand having its Registered Office at(hereinafter called the "Party 3", which expression shall include its successors, executors and permitted assigns)

(The Bidding JV/Consortium should list the name, address of its registered office and other details of all the Consortium Members)

for the purpose of submitting the Bid in response to the Bidding Documents and in the event of selection as Successful Bidder to execute the Contract Agreement and /or other requisite documents, and to carry out the ("Name of Works")..... for Maharashtra Metro Rail Corporation Limited (Name of Project.....) to be awarded by Maharashtra Metro Rail Corporation Limited (hereinafter referred as "Maha- Metro ").

Party 1, Party 2, and Party 3 are hereinafter collectively referred to as the "Parties" or "Members" and individually as a "Party". Or "Member"

WHEREAS Maharashtra Metro Rail Corporation Limited desired to engage a contractor for (Name of the Works)..... for Maharashtra Metro Rail Corporation Limited, (Name of project).....Project.

AND WHEREAS the JV/Consortium of [.....] (insert the names of all the Members) intends to participate for the Bid, against the Bidding Documents issued to [Insert the name of purchaser of Bidding Document]. Or downloaded from E-Tender Portal of "Maha-Metro"

AND WHEREAS Para ITB 4 of the Instructions to Bidder stipulates that the Bidders bidding on the strength of a JV/Consortium shall submit a legally enforceable JV/Consortium Agreement in a format specified in the Bidding Documents.

NOW THEREFORE, THIS INDENTURE WITNESSTH AS UNDER:

In consideration of the above premises and agreement, all the parties in this JV/Consortium do hereby mutually agree as follows:

1. In consideration of the selection of the JV/Consortium as the Successful Bidder by the Maha-Metro, we the Members of the JV/Consortium and Parties to the JV/Consortium Agreement do hereby unequivocally agree that M/s..... (Insert name of the Lead Member), shall act as the "Lead Member" as defined in the Bidding Documents for self and agent for and on behalf of (the names of all the other Members of the Consortium to be filled in here) to do on behalf of the JV/Consortium, all or any of the acts, deeds or things necessary or incidental to the JV/Consortium's Bid for the Contract including submission of the Bid, participating in meetings, responding to queries, submission of information/ documents and generally to represent the JV/Consortium in all its dealings with Maharashtra Metro Rail Corporation Limited or any other Government Agency or any person, in connection with the "Works" until culmination of the process of bidding till the Contract is entered into with Maharashtra Metro Rail Corporation Limited and thereafter till the expiry / Completion of the Contract.
2. The "Lead Member" is hereby authorized by the Members of JV/Consortium and Parties to the JV/Consortium Agreement to bind the JV/Consortium, incur liabilities and receive instructions for and on behalf of all Members. It is agreed by all the Members that entire execution of the Contract including payment shall be carried out exclusively through the "Lead Member".
3. The "Lead Member" shall be liable and responsible for ensuring the individual and collective commitment of each of the Members of the JV/Consortium in discharging all their respective obligations under the Contract with Maharashtra Metro Rail Corporation Limited. Each JV/Consortium Member further undertakes to be individually liable for the performance of its part of the obligations without in any way limiting the scope of collective liability envisaged in this Agreement.
4. In case of any breach of any of the obligations as specified under clause 3 above by any of the JV/Consortium Members, the "Lead Member" shall be liable to fulfil such obligation.

5. It is agreed that sharing of responsibilities hereto among the Consortium members shall not in any way be a limitation of responsibility of the "Lead Member" under these presents.
6. This Consortium Agreement shall be construed and interpreted in accordance with the Laws of INDIA.
7. It is hereby agreed that the Lead Member shall furnish the Bid Security, as stipulated in the Bidding Documents, on behalf of the JV/Consortium.
8. It is hereby agreed that in case of selection of bidding JV/Consortium as the Successful Bidder, the Parties to this JV/Consortium Agreement do hereby agree that the "Lead Member" shall furnish the Performance Security on behalf of the JV/Consortium, as stipulated in the Bidding Documents.
9. It is further expressly agreed that the JV/Consortium Agreement shall be irrevocable and, for the Successful Bidder, shall remain valid over the term of the Contract, unless expressly agreed to the contrary by Maha-Metro.
10. The "Lead Member" is authorized and shall be fully responsible for the accuracy and veracity of the representations and information submitted by the JV/Consortium Members respectively from time to time in response to the Bidding Documents for the purposes of the Bidding.
11. It is expressly understood and agreed between the parties that the responsibilities and obligations of each of the Members of JV/Consortium shall be as follows:
 - (a) Party-1 % Share in proposed JV/ Consortium
Brief description of responsibility
 - (b) Party-2 % Share in proposed JV/ Consortium
Brief description of responsibility
 - (c) Party-3 % Share in proposed JV/ Consortium
Brief description of responsibility
12. It is agreed by the Members that the above sharing of responsibilities and obligations shall not in any way be a limitation of joint and several responsibilities and liabilities of the Members, with regards to all matters relating to the execution of the Works as envisaged in the Bidding Documents and the Contract. The Parties shall be jointly and severally liable for execution of the Works in accordance with the terms of the Contract and the Bidding Documents.
13. It is clearly agreed that the Lead Member shall ensure performance under the Contract and if one or more Consortium Members fail to perform its /their respective obligations under the agreement(s), the same shall be deemed to be a default by all the JV /Consortium Members.
14. It is hereby agreed that in case of selection of the JV/Consortium as the Successful Bidder, [the Lead Member shall furnish the Performance Security on behalf of the Consortium as stipulated in the Bidding Documents] /

Or

[the Performance Security as stipulated in the Bidding Documents shall be furnished by the Members on behalf of the Consortium in such proportion as may be agreed to between us]

15. It is agreed by all the Members that there shall be separate JV/Consortium Bank Account (distinct from the bank accounts of the individual Members) to which the individual Members shall contribute their share capital and / or working capital and the financial obligations of the JV/Consortium shall be discharged through the said JV/Consortium Bank Account only and also all the payments received by the JV/Consortium from the Employer shall be through that account alone.
16. It is hereby expressly agreed between the Parties to this JV/Consortium Agreement that neither Party shall assign or delegate its rights, duties or obligations under this Agreement except with prior written consent of Maha-Metro.
17. We hereby agree to ratify all acts, deeds and things lawfully done by the aforesaid Lead Member pursuant to this Agreement and that all acts, deeds and things done by the aforesaid Lead Member shall and shall always be deemed to have been done by JV/Consortium members collectively.
18. It is agreed by all members of JV/Consortium that the POA (Power Of Attorney) of "Lead Member" shall sign & submit the bid, correspond / negotiate with Employer and act as authorised representative of JV/Consortium to discharged all duties / responsibilities detailed above for the "Lead Member".

This JV/Consortium Agreement

- a. has been duly executed and delivered on behalf of each Party hereto and constitutes the legal, valid, binding and enforceable obligation of each Party,
- b. sets forth the entire understanding of the Parties hereto with respect to the subject matter hereof including the JV/Consortium/Bidder's legal persona and there is or are no other agreements relating to the JV/Consortium/Bidder's incorporation, constitution, powers or organisation which may affect in any way its ability to carry out the Works;
- c. may not be amended or modified except in writing signed by each of the Parties and with prior written consent of Maha-Metro.

IN WITNESS WHEREOF, the Parties to the Consortium Agreement have, through their authorized representatives, executed these presents and affixed common seals of their respective companies on the Day, Month and Year first mentioned above.

Common Seal of For and on behalf of

JV/Consortium Member (Party 1)- Lead Member

M/s.....

has been affixed in my/our presence pursuant to the Board of Director's resolution Dt. _____
(copy enclosed)

.....

(Signature of authorized representative)

Name:

Designation:.....

Place:

Date:

JV/Consortium Member (Party 2) - 2nd Member

M/s.....

has been affixed in my/our presence pursuant to the Board of Director's resolution Dt._____
(copy enclosed)

.....

(Signature of authorized representative)

Name:

Designation

Place:

Date:

JV/Consortium Member (Party 3) – 3rd Member

M/s.....

has been affixed in my/our presence pursuant to the Board of Director's resolution Dt._____
(copy enclosed)

.....

(Signature of authorized representative)

Name:

Designation:.....

Place:

Date:

Witnesses:

1.

(Signature)

Name

Address.....

Contact No.....

2.

(Signature)

Name

Address.....

Contact No.....

3.

(Signature)

Name

Address.....

Contact No.....

Form B-5B**(b) Form of Board Resolution & Power of Attorney for JV/Consortium**

**(To be forwarded on the letterhead of the Bidder or Lead Member of JV/Consortium,
as the case may be)**

**(A) Format for the Board resolution to be passed by “Lead Member” of
JV/Consortium (applicable in case the Bidder is a JV/Consortium)**

The Board, after discussion, at the duly convened Meeting on (Insert date), with the consent of all the Directors present and in compliance of the provisions of the Companies Act, 1956, passed the following Resolution:

RESOLVED THAT pursuant to the applicable provisions of the Companies Act, 1956 and as permitted under the Memorandum and Articles of Association of the Company, approval of the Board be and is hereby accorded to submit a Bid in response to the Bidding Documents dated _____ issued by Maharashtra Metro Rail Corporation Limited i.e Maha-Metro for [Name of the work]..... for Maharashtra Metro Rail Corporation Limited in Consortium with _____ (insert the name and address of the other Consortium members).

FURTHER RESOLVED THAT pursuant to the applicable provisions of the Companies Act, 1956 and as permitted under the Memorandum and Articles of Association of the Company, approval of the Board be and is hereby accorded to execute a JV/Consortium Agreement as per the format annexed to the aforesaid Bidding Documents with _____ (insert the name and address of the other JV/Consortium members).

FURTHER RESOLVED THAT approval of the Board be and is hereby accorded to the Company to accept and act as the Lead Member of the aforesaid JV/Consortium and also as true and lawful attorney to do in the name and on behalf of the JV/Consortium, all such acts, deeds and things necessary in connection with or incidental to submission of JV's/Consortium's Bid in response to the Bidding Documents / Tender No..... dated _____ issued by MAHARASHTRA METRO RAIL CORPORATION LIMITED for '.....' [name of the work] including signing and submission of the Bid and all documents related to the Bid as specified in the Bidding Documents, including but not limited to undertakings, letters, certificates, acceptances, clarifications, guarantees or any other document, which MAHARASHTRA METRO RAIL CORPORATION LIMITED may require us to submit and carrying out the Contract and doing all necessary deeds and things as may be required in respect of the above and also for making representations to MAHARASHTRA METRO RAIL CORPORATION LIMITED and providing information / responses to MAHARASHTRA METRO RAIL CORPORATION LIMITED, representing the Consortium in all matters before MAHARASHTRA METRO RAIL CORPORATION LIMITED, and generally dealing with MAHARASHTRA METRO RAIL CORPORATION LIMITED and/or any other authority in all matters in connection with Consortium's Bid, till completion of the bidding process in accordance with the Bidding Documents and further till the Contract is entered into

with MAHARASHTRA METRO RAIL CORPORATION LIMITED and thereafter till the expiry of the Contract.

FURTHER RESOLVED THAT Mr./Ms....., (insert the name and designation of the concerned official of the Company) be and is hereby authorized to take all the steps required to be taken by the Company for submission of the JV/Consortium's Bid, including in particular, signing the Bid, making changes thereto and submitting amended Bid, signing and executing all the documents related to the Bid, certified copy of this Board resolution or letter or undertakings, etc., required to be submitted to MAHARASHTRA METRO RAIL CORPORATION LIMITED as part of the Bid or such other documents as may be necessary in this regard and to do in the name and on behalf the JV/Consortium all or any of the acts, deeds or things necessary or incidental to submission of said Bid including signing and executing the Contract Documents, making representations to MAHARASHTRA METRO RAIL CORPORATION LIMITED or any other authority, and providing information / responses to MAHARASHTRA METRO RAIL CORPORATION LIMITED, representing the JV/Consortium in all matters before MAHARASHTRA METRO RAIL CORPORATION LIMITED, and generally dealing with MAHARASHTRA METRO RAIL CORPORATION LIMITED in all matters in connection with our Bid till the completion of the bidding process as per the terms of the above said Bidding Documents and further till the Contract is entered into with the Company and thereafter till the expiry of the Contract.

FURTHER RESOLVED THAT a power of attorney as per the draft attached to the Bidding Documents be issued in favour of the above named person, Mr./Ms._____, to be executed by Mr._____. or Mr. _____, Directors of the Company under the Common seal of the Company, affixation thereof to be witnessed by one or both of the above named Directors and by Mr. _____, (insert the name and designation of the concerned official of the Company) or as per the Memorandum and Articles of Association of the Company.

Signature and stamp of Chairman / Managing Director/Directors of Bidding entity

Notes:

1. This certified true copy should be submitted on the letterhead of the Company, signed by the Company Secretary / Managing Director/Directors of the Bidding Entity.
2. The contents of the format may be suitably re-worded indicating the identity of the entity passing the resolution.
3. In the event the Board resolution is from a company incorporated outside India, the same needs to be notarized by a notary in the home country of company passing the resolution and legalized by the Indian Embassy there. However, in case such company is from a country which has signed The Hague Legislation Convention 1961, then the Board Resolution is not required to be legalized by the Indian Embassy if it carries a conforming Apostille certificate.
4. This format may be modified only to the limited extent required to comply with the local regulations and laws applicable to a foreign entity submitting this resolution. For example,

reference to Companies Act 1956 may be suitably modified to refer to the law applicable to the entity submitting the resolution. However, in such case, the foreign entity shall submit an unqualified opinion issued by the legal counsel of such foreign entity, stating that the Board resolutions are in compliance with the applicable laws of the respective jurisdictions of the issuing company and the authorizations granted therein are true and valid.

5. The DIN numbers of signing Director of company to be mentioned on Board Resolution.

(B) Format for the Board resolution to be passed by other Member other than the Lead Member of JV/Consortium (applicable in case the Bidder is a JV/Consortium)

The Board, after discussion, at the duly convened Meeting on (Insert date), with the consent of all the Directors present and in compliance of the provisions of the Companies Act, 1956, passed the following Resolution:

RESOLVED THAT pursuant to the applicable provisions of the Companies Act, 1956 and as permitted under the Memorandum and Articles of Association of the Company, approval of the Board be and is hereby accorded to submit a Bid in response to the Bidding Documents / Tender No.....dated _____ issued by Maharashtra Metro Rail Corporation Limited i.e. Maha-Metro for [name of the work]..... for Maharashtra Metro Rail Corporation Limited in JV/Consortium with _____ (insert the name and address of the other JV/Consortium members).

FURTHER RESOLVED THAT pursuant to the applicable provisions of the Companies Act, 1956 and as permitted under the Memorandum and Articles of Association of the Company, approval of the Board be and is hereby accorded to execute a JV/Consortium Agreement as per the format annexed to the aforesaid Bidding Documents with _____ (insert the name and address of the other JV/Consortium members).

FURTHER RESOLVED THAT approval of the Board be and is hereby accorded to constitute, appoint and authorize M/s _____ (name and registered office address of the Lead Member), which is one of the Members of the JV/Consortium, to act as the Lead Member of the aforesaid JV/Consortium and also as true and lawful attorney, to do in the name and on behalf of the JV/Consortium, all such acts, deeds and things necessary in connection with or incidental to submission of JV's/Consortium's Bid in response to the Bidding Documents /Tender No..... dated _____ issued by MAHARASHTRA METRO RAIL CORPORATION LIMITED for [name of the work]including signing and submission of the Bid and all documents related to the Bid as specified in the Bidding Documents, including but not limited to undertakings, letters, certificates, acceptances, clarifications, guarantees or any other document, which MAHARASHTRA METRO RAIL CORPORATION LIMITED may require us to submit and carrying out the Contract and doing all necessary deeds and things as may be required in respect of the above and also for making representations to MAHARASHTRA METRO RAIL CORPORATION LIMITED and providing information / responses to MAHARASHTRA METRO RAIL CORPORATION LIMITED, representing the JV/Consortium in all matters before MAHARASHTRA METRO RAIL CORPORATION LIMITED, and generally dealing with MAHARASHTRA METRO RAIL CORPORATION LIMITED and/or any other authority in all matters in connection with our Bid, till completion of the bidding process in accordance with the Bidding Documents and further till the Contract is entered into with MAHARASHTRA METRO RAIL CORPORATION LIMITED and thereafter till the expiry of the Contract.

FURTHER RESOLVED THAT a power of attorney as per the draft attached to the Bidding Documents be issued in favour of Mr./Ms....., (insert the name and designation of

the concerned official of the Company) to be executed by Mr. _____ or Mr. _____, Directors of the Company under the Common seal of the Company, affixation thereof to be witnessed by one or both of the above named Directors and by Mr. _____, (insert the name and designation of the concerned official of the Company) or as per the Memorandum and Articles of Association of the Company.

FURTHER RESOLVED THAT Mr./Ms....., (insert the name and designation of the concerned official of the Company) be and is hereby authorized to take all the steps required to be taken by the Company for submission of the aforesaid Bid, including in particular, signing and executing all the documents related to the Bid, certified copy of this Board resolution or letter or undertakings, etc., required to be submitted to MAHARASHTRA METRO RAIL CORPORATION LIMITED as part of the Bid or such other documents as may be necessary in this regard and to do in our name and our behalf all or any of the acts, deeds or things necessary or incidental to give effect to this resolution.

Signature and stamp of Chairman / Managing Director/Directors of Bidding Entity

Notes:

1. This certified true copy should be submitted on the letterhead of the Company, signed by the Company Secretary / Managing Director/Director of the Bidder.
2. The contents of the format may be suitably re-worded indicating the identity of the entity passing the resolution.
3. In the event the Board resolution is from a company incorporated outside India, the same needs to be notarized by a notary in the home country of company passing the resolution and legalized by the Indian Embassy there. However, in case such company is from a country which has signed The Hague Legislation Convention 1961, then the Board Resolution is not required to be legalized by the Indian Embassy if it carries a conforming Apostille certificate.
4. This format may be modified only to the limited extent required to comply with the local regulations and laws applicable to a foreign entity submitting this resolution. For example, reference to Companies Act 1956 may be suitably modified to refer to the law applicable to the entity submitting the resolution. However, in such case, the foreign entity shall submit an unqualified opinion issued by the legal counsel of such foreign entity, stating that the Board resolutions are in compliance with the applicable laws of the respective jurisdictions of the issuing company and the authorizations granted therein are true and valid.
5. The DIN numbers of signing Director of company to be mentioned on Board Resolution.

(C) Format for PoA for Lead Member of JV/Consortium**POWER OF ATTORNEY**

(To be on non-judicial stamp paper of appropriate value as per Stamp Act relevant to place of execution and notarized with Notary Public. Foreign companies submitting Bids are required to follow the applicable law in their country)

Power of Attorney to be provided by the Bidder Company/ Lead Member in favour of its representative as evidence of authorized signatory's authority.

Know all men by these presents, We(name and address of the registered office "Lead Member" of the Bidding JV/Consortium, as applicable) do hereby constitute, appoint and authorize Mr./Ms.....(name and residential address) S/o..... who is presently employed with us and holding the position of (Designation)..... as our Attorney to do in our name and our behalf all or any of the acts, deeds or things necessary or incidental to submission of our Bid for [name of the work]..... for Maharashtra Metro Rail Corporation Limited in response to the Bidding Document of Tender No.....dated _____ issued by Maharashtra Metro Rail Corporation Limited i.e Maha-Metro (the Employer) including signing of JV/Consortium Agreement and signing and submission of the Bid and all other documents related to the bidding, including but not limited to undertakings, letters, certificates, acceptances, clarifications, guarantees or any other document which the Company may require us to submit the bid and also signing and executing the Contract Documents. The aforesaid Attorney is further authorized for making representations to the Company or any other authority, and providing information / responses to the Company, representing us in all matters before the Company, and generally dealing with the Company in all matters in connection with our Bid till the completion of the bidding process as per the terms of the Bidding Documents and further till the Contract is entered into with the Company and thereafter till the expiry of the Contract.

We hereby agree to ratify all acts, deeds and things done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall be binding on us and shall always be deemed to have been done by us.

(Add in the case of a JV/Consortium)

Our firm is a Member /Lead member of the JV/Consortium of _____, _____ and _____

All the terms used herein but not defined shall have the meaning ascribed to such terms under the Bidding Documents.

Signed by the within named

.....[Insert the name of the executant company]

through the hand of

Mr.

duly authorized by the Board to issue such Power of Attorney

Signature of Executant of POA

Dated this day of

Accepted

.....

Signature of Attorney

(Name, designation and address of the Attorney)

Attested

.....

(Signature of the executant)

(Name, designation and address of the executant authorised by board)

.....

Signature and stamp of Notary of the place of execution

Common seal of has been affixed in my/our presence pursuant to Board of Director's Resolution dated.....

WITNESS

1.

(Signature)

Name

Designation.....

2.

(Signature)

Name

Designation.....

Notes:

1. The mode of execution of the power of attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and the same should be under common seal of the executant affixed in accordance with the applicable procedure. Further, the person whose signatures are to be provided on the power of attorney shall be duly authorized by the executant(s) in this regard.

2. In the event, power of attorney has been executed outside India, the same needs to be duly notarized by a notary public of the jurisdiction where it is executed.
3. Also, wherever required, the executant(s) should submit for verification the extract of the charter documents and documents such as a board resolution / power of attorney, in favour of the person executing this power of attorney for delegation of power hereunder on behalf of the executant(s).

(D) Format for PoA for Other Member Of JV/Consortium**POWER OF ATTORNEY**

(To be on non-judicial stamp paper of appropriate value as per Stamp Act relevant to place of execution and notarised with Notary Public. Foreign companies submitting Bids are required to follow the applicable law in their country)

Power of Attorney to be provided by each Member other than the Lead Member in favor of its representative as evidence of authorized signatory's authority to sign JV/Consortium Agreement. (Applicable to JV/Consortium only)

Know all men by these presents, We(name and address of the registered office of the Member of the JV/Consortium, (name of JV/Consortium) do hereby constitute, appoint and authorize Mr./Ms.....(name and residential address) S/o..... who is presently employed with us and holding the position of (Designation)....., as our Attorney to sign bid document, execute the JV/Consortium Agreement and any other requisite document in our name and our behalf for [name of the work].....for Maharashtra Metro Rail Corporation Limited i.e. Maha-Metro (Employer) in response to the Bidding /Tender No dated _____ issued by Maharashtra Metro Rail Corporation Limited and to do all or any of the acts, deeds or things necessary or incidental to the above.

We hereby agree to ratify all acts, deeds and things done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall be binding on us and shall always be deemed to have been done by us.

(Add in the case of a Consortium)

Our firm / company is a Member of the JV/Consortium of _____, _____ and _____ for the above mentioned work

All the terms used herein but not defined shall have the meaning ascribed to such terms under the Bidding Documents.

Signed by the within named

.....[Insert the name of the executant company]

through the hand of

Mr.

Signature of executant

duly authorized by the Board to issue such Power of Attorney (As per board resolution)

Dated this day of

Accepted

.....

Signature of Attorney

(Name, designation and address of the Attorney)

Attested

.....

(Signature of the executant)

(Name, designation and address of the executant)

.....

Signature and stamp of Notary of the place of execution

Common seal of has been affixed in my/our presence pursuant to Board of Director's Resolution dated.....

WITNESS

1.

(Signature)

Name

Designation.....

2.

(Signature)

Name

Designation.....

Notes:

1. The mode of execution of the power of attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and the same should be under common seal of the executant affixed in accordance with the applicable procedure. Further, the person whose signatures are to be provided on the power of attorney shall be duly authorized by the executant(s) in this regard.

2. In the event, power of attorney has been executed outside India, the same needs to be duly notarized by a notary public of the jurisdiction where it is executed.

3. Also, wherever required, the executant(s) should submit for verification the extract of the charter documents and documents such as a board resolution / power of attorney, in favour of the person executing this power of attorney for delegation of power hereunder on behalf of the executant(s).

(E) Joint Statement of JV/Consortium

(To be typed on non-judicial stamp paper and notarized appropriately.)

We *(Name of JV/Consortium)* hereby, authorize Mr/Ms*(Name of POA of Lead Partner)*, S/Do of Mr....., working in the capacity of*(Name of Post)* with M/s*(Name of Lead Partner Company)* to sign, submit & represent to Maha-Metro on behalf of JV/Consortium intended to bid for the work named *(Name of Work)*, Tender no,

Any correspondence, commitment, signing of bid & legal documents by the above mentioned authorized representative shall be legally binding and enforceable to this JV/Consortium member, jointly and severally.

Signed by,

1. JV/Consortium Member 1 POA or Director (with DIN number)
2. JV/Consortium Member 2 POA or Director (with DIN number)

Accepted by,

Lead member POA of JV/Consortium.

Form-B-6**DECLARATION ABOUT FRAUD AND CORRUPT PRACTICES**

(To be typed on Non Judicial Stamped of appropriate value & notarized by Notary Public)

We certify that in the last three years, we have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial authority or a judicial pronouncement or arbitration award, nor been expelled from any project or contract by any public authority nor have had any contract terminated by any public authority due to reasons mentioned and declared below.

We declare that:-

- a) We have not directly or indirectly or through an agent engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in Section B of Fraud and Corrupt Practices of the Terms and Conditions of the document, in respect of any tender or request for proposal issued by or any agreement entered into with the Authority or any other public sector enterprise or any Government, Central or State; and
- b) We have taken steps to ensure that in conformity with the provisions of Section B of Fraud and Corrupt Practices of the Terms and Conditions of the document, no person acting for us or on our behalf has engaged or will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.
- c) We certify that in regard to matters other than security and integrity of the country, we or any of our Associates have not been convicted by a Court of Law or indicted or adverse orders passed by a regulatory authority, which could cast a doubt on our ability to undertake the Project or which relates to a grave offence that outrages the moral sense of the community.
- d) We further certify that in regard to matters relating to security and integrity of the country, we have not been charge-sheeted by any agency of the Government or convicted by a Court of Law.
- e) We further certify that no investigation by a regulatory authority is pending for any kind of fraud & corrupt practices, anti-national activities, terrorist activities and treason either against us or against our CEO or any of our directors / managers / employees.

(Signature of the executant)

(Name, designation and address of the executant)

Common seal of bidding firm

Signature and stamp of Notary of the place of execution

Form-B-7

Affidavit

(To be typed on Non Judicial Stamped of appropriate value & notarized by Notary Public)

This affidavit is executed at (Place) _____ on _____ (Date) by _____ (Name of the authorized person) behalf of _____ (name of the bidding firm), who is bidding for the work _____ (Name of the work), vide tender No _____ invited by Maharashtra Metro Rail Corporation Limited
I/We hereby declare that: -

The bidders _____ (Name of the bidding firm) have not been blacklisted or debarred which is in force on the last date of Submission of the Bid ,

A) for the reasons like supply of sub-standard material, non-supply of material, abandonment of works, sub-standard quality of works, failure to abide "Bid Securing Declaration" etc. by

(i) any Department / PSU / Subordinate Offices under Ministry of Housing and Urban Affairs (MoHUA)

or

(ii) any department of Government of Maharashtra

or

B) By Department of Expenditure (DoE), Ministry of Finance, Government Of India from participating in any government bidding procedure.

Simultaneously We _____ (bidder's Name) have not been listed in exclusion list of **World Bank**

I undertake that the above statement made by me is true & nothing has been concealed. I am aware that my candidature for the above bid shall be terminated by Maharashtra Metro Rail Corporation Limited at any stage of bidding or even after award of the work or the execution stage of the above work, (In case of successful bidder), if the above statement is found false or fabricated.

(Signature of the executant)

(Name, designation and address of the executant)

Common seal of bidding firm

Signature and stamp of Notary of the place of execution

Form-B-8**Affidavit****(To be typed on Non Judicial Stamped of appropriate value & notarized by Notary Public)**

This affidavit is executed at (Place)_____ on _____ (Date) by _____ (Name of the authorized person) behalf of _____ (name of the bidding firm), who is bidding for the work _____ (Name of the work), vide tender No _____ invited by Maharashtra Metro Rail Corporation Limited

I/We hereby declare that: -

1. I / We shall not have deployed any person under the 18 years of age, which is prohibited & punishable under Child Labour (Prohibition & Regulation) Act-1986 & its further amendments.

2. I/ We ensure that no case of sexual harassment/abuses take place at my premises / Office with the female employee out sourced to Maha-Metro as per the provision of above bid, if awarded to me/us. I am aware of the provision of "The sexual Harassment of women at work place (Prevention. Prohibition & redressed act 2013)

I undertake that the above statement made by me is true & nothing has been concealed. I am aware that my candidature for the above bid shall be terminated by **Maharashtra Metro Rail Corporation Limited** at any stage of bidding or even after award of the work ordering the execution stage of the above work. (In case of successful bidder), if the above statement is found false or fabricated or violate the relevant act of Govt. of India and Govt. of Maharashtra, I / We shall be liable for punishment as per relevant act & law of Govt. of India and Govt. of Maharashtra

.....

(Signature of the executant)

(Name, designation and address of the executant)

Common seal of bidding firm..... has been affixed

.....

Signature and stamp of Notary of the place of execution

Form B-9**Form of Bid Security (EMD)****(Demand Guarantee)****Beneficiary:** _____**Invitation for Bids No:** _____**Date:** _____**Bid Guarantee no.:** _____**Guarantor:** _____

We have been informed that _____ (hereinafter called "the Applicant") has submitted or will submit to the Beneficiary its bid (hereinafter called "the Bid") for the execution of _____ under Invitation for Bids No. _____ ("the IFB").

Furthermore, we understand that, according to the Beneficiary's conditions, bids must be supported by a bid guarantee.

At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of _____ (_____) upon receipt by us of the Beneficiary's first demand, supported by the Beneficiary's statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating that either the Applicant:

- (a) has withdrawn its Bid during the period of bid validity set forth in the Applicant's Letter of Bid ("the Bid Validity Period"), or any extension thereto provided by the Applicant; or
- (b) having been notified of the acceptance of its Bid by the Beneficiary during the Bid Validity Period or any extension thereto provided by the Applicant, (i) has failed to execute the contract agreement, or (ii) has failed to furnish the performance security, in accordance with the Instructions to Bidders ("ITB") of the Beneficiary's bidding document.

This guarantee will expire: (a) if the Applicant is the successful bidder, upon our receipt of copies of the contract agreement signed by the Applicant and the performance security issued to the Beneficiary in relation to such contract agreement; or (b) if the Applicant is not the successful bidder, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the bidding process; or (ii) twenty-eight days after the end of the Bid Validity Period.

Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758.

[signature(s)]

Form-B10**Bid-Securing Declaration [Applicable if EMD/Bid Security exemption is availed by Bidder as per BDS/ITB]**

Bidder's Name: _____

Tender No.: _____

Name Of Work: _____

To,

Maharashtra Metro Rail Corporation Ltd (Maha-Metro), hereinafter called "the Employer" acting through Executive Director (Procurement), Maharashtra Metro Rail Corporation Ltd, "Metro Bhawan", VIP Road, Near Dikshabhoomi, NAGPUR, MAHARASHTRA-440010 (INDIA) We, the undersigned, declare that:

We understand that, according to your conditions, Bids must be supported by a Bid-Securing Declaration. We accept that we will automatically be suspended from being eligible for bidding in any contract with the Borrower for the period of time of [insert number of years as indicated in ITB 19.2 of the BDS] starting on the date that we receive a notification from the Employer, if we are in breach of our obligation(s) under the bid conditions, because we

(a) have withdrawn our Bid during the period of bid validity specified in the Letter of Bid; or (b) do not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter "the ITB"); or

(c) having been notified of the acceptance of our Bid by the Employer during the period of bid validity, (i) fail or refuse to execute the Contract, if required; or (ii) fail or refuse to furnish the Performance Security, in accordance with the ITB; or (iii) fail or refuse to furnish a domestic preference security, if required.

We understand that this Bid-Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) 28 days after the expiration of our Bid.

Signed: [insert signature of person whose name and capacity are shown]

In the capacity of [insert legal capacity of person signing the Bid-Securing Declaration]

Name: [insert complete name of person signing the Bid-Securing Declaration] Duly authorized to sign the bid for and on behalf of [insert complete name of the bidder]

Dated on _____ day of _____, _____ [insert date of signing]

Corporate Seal [where appropriate]

Form-B-11**Financial Resources**

Bidder's Name: _____ Tender Number _____ -

Name of Work

Specify proposed sources of financing, such as liquid assets, lines of credit, and other financial, other than any contractual advance payments, net of current commitments, available to meet the cash flow requirement of the subject contract as specified in Section Clause No. _____ (Evaluation and Qualification Criteria)

S. No.	Source of Finance	Amount (In INR)
1	Working Capital	
2	Bank CC & OD	
3	Line of Credit	
4	Any other Sources of Finance	
	Total Financial Resources	

(Signature of the authorized Signatory)

(Name and designation of the authorized Signatory):

.....

..... Seal of Bidder.

Note:

- (i) **Bankers Certificate for sanctioned Line of Credit to be submitted.**
- (ii) **In addition to the above Form, the Bidder shall provide a Certificate from Statutory Auditor certifying the above information.**

Form-B-12**Current Contract Commitments / Works in Progress**

Bidder's Name: _____ Tender Number _____ -

Name _____ of _____ Work _____

Bidders and each member to a JV should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

Current Contract Commitments

S.No.	Name of Contract	Employer Name, address, Contact details, Email	Value of Outstanding work (Eq. INR)	Estimated Completion date	Average monthly invoicing of last six months (INR/monthly)
1					
2					
3					
4					
5					
6					
	Total				

(Signature of the Authorized Signatory)

(Name and designation of the Authorized Signatory):

.....

..... Seal of Bidder.

Note: In addition to the above Form, the Bidder shall provide a Certificate from Statutory Auditor certifying the above information.

Form-B-13**Financial Situation and Performance of Bidder**

Bidder's Name: _____ Tender Number _____

Name of Work

	Historic information for previous 05 Financial years				
Type of Financial Information	2020-21	2021-22	2022-23	2023-24	2024-25
Statement of Financial Position (Information from Balance Sheet)					
Total Assets (TA)					
Total Liabilities (TL)					
Current Assets (CA)					
Current Liabilities (CL)					
Current Ratio (CA/CL)					
Liquid Assets (LA)					
Liquid Liabilities (LL)					
Liquid Ratio (LA/LL)					
Working Capital (WC=CA-CL)					
Net Worth (NW)					
Cash & Cash Equivalent (Including Bank Balance)					
Sundry Debtors					
Information from Income Statement					
Total Revenue/Turnover (TR)					
Profits Before Taxes (PBT)					
Profit After Taxes (PAT)					

* See Section-3, Evaluation and Qualification Criteria

(Signature of the Authorized Signatory):

(Name and designation of the Authorized Signatory):

.....

Seal of Bidder.

Note:

- 1) In addition to the above Form, the Bidder shall provide a Certificate from Statutory Auditor certifying the above information along with valid UDIN.
- 2) Bidder are required to attach Financial Statements of preceding five Financial Year.
- 3) Net Worth (NW) means the aggregate value of the paid-up share capital and all reserves created out of the profits and securities premium account, after deducting the aggregate value of the accumulated losses, deferred expenditures and misc. expenditures not written- of, as per the audited balance sheet but does not include reserves created out of revaluation of assets, write back of depreciation and amalgamation.
- 4) For all annual financial statements, periods mentioned are ending with 2022-23. In case of ending of financial is Month of December then, annual financial statements shall be ending with financial year 2022.

FORMS FOR CONTRACT

(To be used at the time of award of work to successful Bidder)

Form-C-1**Notification of Award****Letter of Acceptance***[Letterhead paper of the Employer Maha-Metro]*

[Date]

To: *[name and address of the Contractor]*

This is to notify you that your Bid dated *[date]* for execution of the *[name of the Contract and identification number, as given in the Contract Data]* for the Accepted Contract Amount *[amount in numbers and words] [name of currency]*, as corrected and modified in accordance with the Instructions to Bidders, is hereby accepted by Maha-Metro.

You are requested to furnish the Performance Security @ 3% of awarded cost within 15 days in accordance with the Conditions of Contract, using for that purpose one of the Performance Security Forms included in Section 7 – Bidding & Contract Forms, of the Bidding Documents

Authorized Signature: _____

Name and Title of Signatory: _____

Name of institution: _____

Attachment: Contract Agreement

Form-C-2**Contract Agreement**

THIS AGREEMENT made the _____ day of _____, _____, between _____ of _____ (hereinafter "the Employer"), of the one part, and _____ of _____ (hereinafter "the Contractor"), of the other part:

WHEREAS the Employer desires that the Works known as _____ should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and the remedying of any defects therein, in the sum of *[insert Contract Price or Ceiling in words and figures, expressed in the Contract currency (ies)]* (hereinafter called "the Contract Price"). The Employer and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.

Section -1. Notice Inviting Tender (NIT)**Section- 2. Instructions to Bidders (ITB)****Annexure-2A. Bid Data Sheet (BDS)****Annexure-2B. Tool Kit of e-tender****Section- 3. Eligibility Criteria****Section- 4. Evaluation Criteria****Section- 5. Scope of Work****Section-6. Condition of Contract and Special Conditions of Contract****Annexure-6-A. Corrupt and Fraudulent Practices****Section -7. Bidding & Contract Forms****Section -8. List of Document to be attached.****Section-9 Financial Bid**

3. In consideration of the payments to be made by the Employer to the Contractor as specified in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.

4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of _____ on the day, month and year specified above.

Signed by _____ (for the Employer)

Signed by _____ (for the Contractor)

Form-C-3**Performance Security**
(Bank Guarantee)**Beneficiary:** _____**Date:** _____**PERFORMANCE GUARANTEE No.:** _____**Guarantor:** _____

We have been informed that _____ (hereinafter called "the Applicant") has entered into Contract No. _____ dated _____ with the Beneficiary, for the execution of _____ (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of _____ (_____),¹ such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of the Beneficiary's first demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire, no later than the Day of, 2...², and any demand for payment under it must be received by us at this office indicated above on or before that date.

¹ The Guarantor shall insert an amount representing the percentage of the Accepted Contract Amount specified in the Letter of Acceptance, less provisional sums, if any, and denominated either in the currency (cies) of the Contract or a freely convertible currency acceptable to the Beneficiary.

² Insert the date twenty-eight days after the expected completion date as described in GC Clause 11.9. The Employer should note that in the event of an extension of this date for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months] [one year], in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

MAHARASHTRA METRO RAIL CORPORATION LIMITED
(Nagpur Metro Rail Project)

Five-year Annual Maintenance Contract of CRRC make Metro Rolling Stock including Intermediate Overhauling for Nagpur Metro Rail Project Phase-1 of Maha-Metro.

TENDER NO: N1-O&M- /2025

Financial Bid



Maharashtra Metro Rail Corporation Limited
Metro Bhawan, East High Court Road (VIP Road),
Near Dikshabhoomi, Ramdaspath, Nagpur-440010,
Maharashtra, INDIA
Website: <http://www.metro railnagpur.com>

ABSTRACT OF SCHEDULES (BID TOTAL)

SN	Description	Year - 1	Year - 2	Year - 3	Year - 4	Year - 5	Total
1	Schedule A						
2	Schedule B						
3	Schedule C						
	Total						

Note :

1. Bidder shall quote the yearly costs in all the 5 years'. PVC shall be applicable on the said costs for all the schedules above. Bidder to quote only in INR.
2. The above costs are brought out from the schedule wise cost as below
3. The above costs shall be inclusive of all taxes, duties, GST on all kinds of goods & services procured through this contract.
4. It will be deemed to include all Taxes including GST, Duties, Octroi, Royalty etc., cost of all tools, plants, labour, supervision, materials, transport, contractor's profit and establishment/ overheads, together all general risks, insurance liabilities, compliance of labour laws and obligations set out or implied in the contracts.
5. The quantity of work may vary as per site requirement during contract period.
6. The Contractor shall submit his 'On Account'' payments on Monthly basis on last day of the month with certification of Engineer of Maha-Metro.

Schedule A : Preventive Maintenance

SN .	Maintenance Schedule	Qty : Nos. of schedules per year	Total Amount for Year - 1	Total Amount for Year - 2	Total Amount for Year - 3	Total Amount for Year - 4	Total Amount for Year - 5	Total for all 5 years
1	Daily Inspection	6969						
2	Weekly Inspection	920						
3	Monthly Inspection	184						
4	3 Monthly Inspection	46						
5	Semi-annual Inspection	23						
6	Annual Inspection	23						
	Total							

Note:

- The above price includes manpower costs, consumables cost, admin/project management costs, key personnel costs, replenishing the utilized spares.

Schedule B : Corrective & Breakdown maintenance

SN.	Personnel	Nos of Man-Months	Total Amount INR Year - 1	Total Amount INR Year - 2	Total Amount INR Year - 3	Total Amount INR Year - 4	Total Amount INR Year - 5	Total Amount INR for 5 years
1	Engineer/ Supervisor	240						
2	Technician	480						

Notes:

- The above quantity of manpower for corrective maintenance is included in the total minimum manpower as defined in tender clause section 5 Clause B. The contractor shall maintain this manpower to attend corrective or breakdown maintenance. These staff can also work in preventive maintenance also.

Schedule C : Intermediate Overhauling Services

	Description	Qty	Unit Price Including taxes	Total
1	Intermediate overhauling as specified in scope of works	23		
Total Cost (Including Taxes)				

Note :

1. Lumpsum payment per train (as quoted above) shall be made.
2. Maha-Metro shall offer the trainsets to Contractor for IOH during the contract period.
3. The above cost includes manpower costs for IOH, supplying IOH spares, IOH consumables