ANNEXURE-4

COMPREHENSIVE MAINTENANCE REQUIREMENTS

Comprehensive Maintenance during DLP and CAMC.

A. In addition to his obligations under the Contract, the Contractor shall provide maintenance services throughout the **2 years of Defect Liability Period (hereafter called as DLP)** for all the Equipment. Maintenance work shall include attendance to all service calls, work described in approved Maintenance Schedule (Monthly, Quarterly, Half yearly, Yearly), which shall be submitted by Contractor for review and acceptance by Engineer/Employer.
B. All defects shall be remedied either when observed on the monthly service call or on an attendance to a service call. Service shall include all work necessary to maintain the entire E&M system in good working order at all times.
C. During the DLP and Comprehensive annual Maintenance Period, the Contractor shall, at its own cost and expense, replace any part or equipment, which may be defective or worn out, by a substitute thereof (the "Spares") which may be necessary for the efficient operation and maintenance of the E&M Work System. The quality and rating of Spares shall be same as of original parts as per OEM.
D. During DLP and CAMC if any E&M equipment's are not available for service more than 24 hrs , Employer may impose a penalty of Rs15,000/- Per day for each such case.
E. The Contractor shall mobilize competent personnel to rectify stoppages at any time during the day or night when being called on by the Employer/Engineer. Repairs shall be carried out on a 24 hours per day, 7 days per week basis until the faulty unit is put back in service.
F. The Contractor shall carry out periodic maintenance, testing and examination of equipment safety devices as may be required. A master schedule of such planned tests shall be submitted to the Employer/Engineer at least two months before commencement of the DLP.
G. Reports: Contractor shall provide Monthly, quarterly, half-yearly and yearly reports on the condition of the equipment in an agreed/approved format with Employer/Engineer.
H. A report in duplicate shall be sent to the Employer/Engineer immediately following every call out, indicating the time of call out visit, cause, remedial action taken, the time that the service was restored, item replaced if any and Cause of failure. The monthly summary of failure report along with the analysis given details of nature of fault, remedial action taken etc. in the approved format shall be provided.
I. Reports on routine visits are not required except where necessary to draw attention to defects, which could not be rectified during the routine visit. Records of each routine visit and call-out visit, together with details of the work done or action taken, shall be entered on a log book which shall be provided by the Contractor and retained in SCR room or Maintenance room or other location as decided by the "Employer/Engineer".
J. The Contractor shall provide a maintenance plan and a major component replacement programme for review and acceptance by the "Employer/Engineer" 90 days before the programmed commencement of the Defects Liability Period.
K. The Maintenance service shall include all Preventive/Scheduled & Corrective/Unscheduled Maintenance. In this context, the Contractor shall submit a PM Schedule and CM procedure for Approval, 3 months before the commencement of the DLP.
L. Based on the Maintenance Requirement Analysis, the Contractor shall indicate in the Maintenance Plan, the final preventive maintenance programme, the proposed skill and

manning level, spares level and special tools require. The proposal shall be fully traceable to the maintenance Requirement Analysis output.

M. Accommodation for Emergency Service Report Centre

An Room of approximately 10 sq.m will be provided by the Employer as the emergency service report Centre. The Premise will be located at one of the stations on each section to be determined by the Employer. Contractor Shall submit their proposal of Service center for effective and efficient taking care of Commissioned Equipment

Employer's Maintenance Strategy

Maintenance Strategy

a. The Contractor shall ensure that the system designed, installed and commissioned is supportable throughout the service life of the System to address, as a minimum, the following:

   i. Design errors in the System;

   ii. Operational changes;

   iii. Environment changes; and

   iv. Changes in infrastructure.

b. According to the maintenance strategy, all equipment and infrastructure supplied for the 'Project' must be designed for minimum or no maintenance. Maintenance activities required must be capable of being performed with little or no impact on the train service. In addition, the maintenance work systems shall ensure safety of personnel and equipment. If any break down happens due to the poor workmanship the penal action shall be initiated against the contractor as per the relevant clause.

Responsibility of Contractor during DLP (Defect Liability Period)

A. During the 2-year Defects Liability Period (DLP), the contractor shall carry out all types of breakdown maintenance and preventive maintenance as per the approved Maintenance Schedule (Monthly, Quarterly, Half-yearly, Yearly). Breakdown maintenance shall be executed immediately whenever a breakdown occurs. The contractor shall post qualified supervisors and maintenance staff at key locations on the stations as determined and directed by the Employer/Engineer. The contractor shall adhere to the following service level benchmarks for attending to and rectifying breakdowns from the time of logging/notification:

B. Non-critical equipment failures, aesthetic defects, localized lighting/leakage issues, or non-disruptive system glitches that do not affect passenger safety or core station operations. Maximum Response Time: **Within 1 hour** of notification. Maximum Attention / Rectification Time **Within 4 hours** (or before start of next operational hours).

C. Major Breakdown Failures affecting passenger safety, core life-safety systems (fire alarms, ventilation, fire fighting etc), or major power supply disruptions . Maximum Response Time : **Within 15 to 30 minutes** of notification Maximum Attention / Rectification Time : **Within 2 hours** (continuous work required until complete restoration)

D. **Note:** Failure to meet the stipulated response and attention times may attract penalties as specified in the contract.

E. Maintenance Management System (MMS) and Maintenance Arrangement

During non-operation time, sections of line will be closed for maintenance work. The minimum time for possession periods is 4 hours. Ideally, this time shall be the free time available for maintenance.

F. Competency of Personnel

During the DLP the Contractor shall depute sufficient trained and competent personnel for maintenance purpose. Such persons shall have their generic competence established and must demonstrate their specific competence and knowledge in the particular systems, environment and procedures.

The Contractor shall provide evidence of specific competence and knowledge, which shall include:

- assessment and certified training in particular applications and operations;

In the event of a failure, the Contractor shall undertake the management and investigation necessary to identify and rectify the cause.

G. Testing and Re-commissioning of System and Equipment

In the event of a failure requiring modifications to the System, the Contractor shall undertake any testing and re-commissioning required. Any such modification shall be submitted for review by the "Employer/Engineer".

H. Temporary Alterations to Restore Service

The Contractor shall undertake any temporary modifications necessary to maintain service. Any such modification shall be submitted for review and acceptance by the "Employer/Engineer".

I. Discrepancies between Installation and Design Records

Should the Contractor discover inconsistencies between the maintenance drawings and documentation and the installed equipment, the Contractor shall correct all such errors within two weeks.

J. Communications

The Contractor shall ensure that adequate communication facilities are provided to its staff during the DLP and CAMC . Call Center (Single Point Reporting Center) shall be maintained by Contractor for GMRCL project during DLP and CAMC on which Employer/Engineer can report the failure and can keep communication for Service calls and status of Failures.

K. Location of Staff

The Contractor shall be responsible for locating staff such that the Contractor meets its obligations.

L. Storage of Equipment and Materials During the Defect Liability Period

The Contractor shall ensure that no equipment is stored along the trackside. The Employer will provide defined storage locations for the support of the different levels of Maintenance.

M. Maintenance Regimes

The Contractor shall produce a maintenance regime for the equipment that shall comprise two constituent parts, corrective and routine/preventative maintenance. Corrective maintenance shall be available 24 hours per day, able to respond to all foreseeable

circumstances. The maintenance regime shall cover all parts and equipment of the system designed, installed and commissioned by the Contractor. The Contractor shall take into account the requirements of the operations and maintenance when determining and proposing its maintenance regime. The regime and structure of corrective maintenance shall be robust in design.

N. Scope and Hours of Coverage

The Contractor shall provide a full 24 hour On-Call coverage and shall be such that initial response and rectification of failure are in accordance with the following:

- assistance for first line corrective maintenance (where adjustment within System is required) within 30 minutes, upon request of first line maintainer;
- 24 hour from notification for second line maintenance where spare parts replacement is involved; and
- within 10 days including transportation time for third line maintenance where replacement or repair of component from factory is involved. Any extension to this time shall be agreed with the "Employer/Engineer" and a replacement provided.

All elements of First Line preventative maintenance shall be carried out and completed during non-traffic hours without interrupting train services.

If the equipment is kept non – functional for more than a week then the DLP may be enhanced proportionately in the multiple of month.

O. Failure Investigations

The Contractor shall conduct failure investigations and submit the Root cause analysis of failure to employer during the DLP and CAMC. Disputes between the Contractor and other Contractors will be resolved by the "Employer/Engineer". Contractor shall make available to the Employer all test and failure data as required.

Software Support

a. General

The Contractor shall submit to the "Employer/Engineer" for review, the software support plan at least 90 days before commencement of software installation. Employer will have the right, for multiple use of the Software. Employer at his discretion may download the software on multiple PCs as per the requirement. For this purpose, no specific password, Key Number etc. should be required from the Contractor / Software firm.

All changes, bug fixes, updates, modifications, amendments, new versions shall not result in any non-conformance with this Specification. The Contractor shall submit all new versions to the "Employer/Engineer" for review at least 2 weeks prior to their installation. The new versions of software shall not degrade the operation of the System.

b. Security Obligations

Within 14 days of the installation of any software into the Permanent Works by the Contractor, the Contractor shall submit to the "Employer/Engineer" for retention by the Employer two backup copies of the software, which shall include any specified development tools required for maintenance of the software, including, but not limited to, editors, compilers and linkers.

Any software item delivered by the Contractor to the "Employer/Engineer" pursuant to the above Paragraph shall not be translated or modified by the Employer without the prior consent of the Contractor unless:

the owner of the software becomes insolvent or has a receiving order made against it or makes an arrangement or assignment or composition with or in favor of its creditors (including the appointment of a committee of inspection) or goes into liquidation or commences to be wound up or has a receiver, liquidator, trustee or similar officer appointed over all or any part of its undertaking or assets or if distress, execution or attachment is levied on, or if an encumberancer takes possession of, any of its assets or any proceeding or step is taken which has an effect comparable to the foregoing in any relevant jurisdiction; or

the owner of the software ceases to trade; or

the owner of the software assigns copyright in the software and the Contractor fails within 60 days of such assignment to procure in favor of the Employer, a license from the new owner in the same terms as that required by the Contract; or

The Contractor is in breach of any of his obligations under the Contract.

c. Error Correction

The Contractor shall inform the "Employer/Engineer" immediately when a fault is discovered within delivered software or documentation. On receipt of a request from the "Employer/Engineer" for identification or further diagnosis of a failure or fault, the Contractor shall provide appropriate resources. The Contractor shall provide written details as to the nature of the proposed correction to the "Employer/Engineer".

d. Routine and Corrective Maintenance Procedures

Routine and corrective maintenance procedures shall be supplied for all equipment. The format shall be as follows:

Uniform format and layout irrespective of equipment supplier;

Colour coding for each activity;

Cross referenced to the Operation and Maintenance Manuals; and

Document control information.

1. General

The Contractor shall supply the following spares:-

2. OEM recommended Spares

A. The Bidder shall provide a OEM recommended list of spares including 'consumables' duly accepted/approved by the GMRCL /GEC for comprehensive maintenance and repairs of E&M equipments as per the format in **Appendix-1** below. Any consumable and spares item if required by the Bidder will be deemed to have been included the overall cost of the Bid and shall be supplied as per the provisions of this contract without any extra financial implication to the Employer..

B.

C. Contractor will be required to supply the requisite quantity of spares as recommended by OEM ,. Employer's decision in determining any particular item(s) as consumable in line with above guideline will be final and binding. List of OEM recommended spares including consumable shall be furnished in the appendix-1 with following information as minimum shall be provided.

   i. Names, addresses, telephone numbers and other particulars of manufacturers and their local representatives;
   ii. Models and part numbers,
   iii. Full description of spares including a note whether it is sealed unit or an assembly or sub-assembly which can be broken down into component parts;
   iv. Quantity installed in the system;
   v. Expected consumption rates;
   vi. Overall dimensions and weight including minimum packing (if any) for shelf space purposes;
   vii. Inter-changeability or otherwise with similar parts;
   viii. Normal manufacturing and shipment lead times; and
   ix. Shelf life.

D. The consumable OEM recommended spare shall be stored at the location agreed to by the Employer/Engineer.

E. Recommended list shall be furnished by the contractor as part of design submission / vendor approval for respective systems and subsystems.

3. Unit Exchange Spares (Mandatory Spares)

A. The Contractor shall submit the list of Mandatory Spares to the Engineer for review and approval. Mandatory Spares shall be handed over 2 months prior to the taking over of 1st Section. The Indicative List as Minimum mandatory spare parts to be handed over. Contract shall review the same and update & submit along with Technical Package**.**

4. OEM recommended Spares

A. The Contractor shall submit the list of OEM recommended Spares to the Engineer for review and approval. The List of OEM recommended Spares shall be as per format **Appendix-1.**

B. The Contractor shall keep the DLP Spares on Site, at his own cost, throughout Defect Liability periods, stocks of spare parts, as per the agreed list to enable rapid replacement of any item found to be defective or in any way in non-conformance with the Specification.

C. Contractor shall not be permitted to remove any working/healthy equipment / components / sub-systems / systems for any reason whatsoever without specific approval in writing from GMRCL Engineer.

D. Spares as per the agreed list shall be supplied at least three months before ROD. Stocks of such spares as available in **Contractor stores** will be jointly checked with Engineer every three

months. Certificate by Engineer confirming availability of the spares in contractor in stations as per agreed list will be a pre-requisite for release of interim payments of the Contractor. However, this condition will not be applicable for six months before the expected expiry of the DLP period. **The Balance DLP spares shall be the property of Employer and Contractor shall hand over the Balance unconsumed spares**.

5. Manufacture, Delivery and Warranty

A. The major spare parts ordered under the Contract shall be manufactured, tested and inspected in accordance with the relevant quality system, suitably packed and labelled. All spares shall be subject to inspection by the Employer/Engineer. In the event that any item is known to be going out of production, then the Contractor shall give advance notice to the Employer/Engineer.

B. The warranty period of 'unit exchange' and 'mandatory spares', delivered shall be:
   - Either 24 months from the date of acceptance or
   - Up to expiry of the defect liability period, whichever is later.

6. Purchase of Spares from Vendors

A. The Contractor shall furnish an undertaking that he has no objection whatsoever to and shall not in any way deter or obstruct the Employer, its licensee or its representative from dealing directly with the Contractor's Vendors for the purchase of the spares during the Contract period. The spares purchased shall be subject to inspection by the Employer/Engineer.

B. Contractor shall obtain an undertaking from vendors, OEMs etc. at detailed design submission stage that they will deal directly with Employer for supply of spares, equipment and/or sub-systems if required .

C. Contractor shall submit technical specifications of the items used in this project for the purpose of purchasing. Engineer's views, if any, shall be suitably incorporated

CAMC - Comprehensive Annual Maintenance Contract for E&M works.

Scope Inclusion: The Comprehensive Annual Maintenance Contract (CAMC) covers all preventive maintenance, breakdown repairs, servicing, labor, overhauling, and replacement of defective/damaged electrical and mechanical components , spare and consumables without any extra cost. (CAMC Rate shall be quoted inclusive of all) to maintain the system healthy.

All defective materials including consumable shall also be replaced free of cost. All price are included in the quoted price in Schedule C-5 The payment shall be made against CAMC after producing the supporting documents such as jointly signed the all types of Maintainace checklist, failure report, updated spare list, fault closer report by the O&M.

Before expiry of DLP period the Contractor shall submit separate insurances as per GMRC policy in seprate bank guarantee for Performance security amounting to 10% of the awarded CAMC value against schedule C5.

Minimum 1 nos Engineer and 1 nos manager 1 nos licenced electrician with helper,1 nos licenced fire safety person shall be deployed 24x7 during DLP and CAMC without violating shift labor law.

Minimum qualification BE+ 7 year experience Diploma + 12 year experience for Mangaer and BE+ 5 year experience Diploma + 10 year experience for Engineer. ITI+2 years experience for electrician and valid safety certificate+2 years experience for fire safety officer.

Escalation Clause: Rates quoted for 5 year CAMC are fixed and firm. No escalation due to market variations or inflation will be entertained beyond the quoted schedule.

A. CAMC (Comprehensive Annual Maintenance Contract) is part of Tender. The Contractor shall provide comprehensive maintenance services throughout the duration specified in contract for complete E & M system after completion of DLP period.
B. The contract shall be comprehensive in nature wherein preventive as well as break down maintenance of all equipment to be covered under this contract including the arrangement of office set-up, spares, tools, consumables, technical expertise, communication system and manpower.
C. The scope of comprehensive annual maintenance contract sh all include:
   a) Preventive maintenance as per the approved maintenance schedule.
   b) Breakdown and corrective maintenance.
   c) Replacement of defective components and spare parts including consumables, as specified in the contract free of cost..
   d) Labour, tools, tackles and testing equipment.
   e) Periodic inspection and performance monitoring.
   f) Maintaining equipment availability and reliability.
   g) Submission of maintenance reports and records.
   h) Submission of root cause analysis.
D. In case of failure of any of the equipment covered under comprehensive annual maintenance contract, it shall be repaired or replaced within reasonable time then penalty shall be imposed as defined in contract . This will adjusted against the Performance Security (CAMC).
E. The Contractor shall handover the equipment under CAMC all spares in a working condition to the Employer after expiry of CAMC period.
F. Strategies mentioned in Maintenance section is applicable for CAMC.

CAMC Management Plan

The Contractor shall submit for review by the Employer's Representative an Comprehensive Annual Maintenance Contract Management Plan to repair, replace and perform any item upon the Works identified by the Employer's Representative during the Comprehensive Annual Maintenance Contract (CAMC). The first submission of this plan is required before the 4 months of expiry of the DLP and 4 months before commencement of the CAMC period for complete E & M System.

CAMC - Comprehensive Annual Maintenance Contract

A. The Contractor shall keep sufficient stocks of Spare Parts in an off-site location in Ahmedabad throughout the CAMC Periods to enable rapid replacement of any item in the Permanent Works found to require replacement as part of the Contractor's obligations during the CAMC Periods
B. The Contractor shall supply and deliver the CAMC Spares at least 3 months before the commencement of the CAMC period.
C. During the 5-year CAMC after the successfully completion of Defects Liability Period (DLP), the contractor shall carry out all types of breakdown maintenance and preventive maintenance as per the approved Maintenance Schedule (Monthly, Quarterly, Half-yearly, Yearly) to maintain the system healthy. Breakdown maintenance shall be executed immediately

whenever a breakdown occurs. The contractor shall post qualified supervisors and maintenance staff at key locations on the stations as determined and directed by the Employer/Engineer. The contractor shall adhere to the following service level benchmarks for attending to and rectifying breakdowns from the time of logging/notification:

D. Non-critical equipment failures, aesthetic defects, localized lighting/leakage issues, or non-disruptive system glitches that do not affect passenger safety or core station operations. Maximum Response Time: **Within 1 hour** of notification. Maximum Attention / Rectification Time **Within 4 hours** (or before start of next operational hours).

E. Major Breakdown Failures affecting passenger safety, core life-safety systems (fire alarms, ventilation, fire fighting etc), or major power supply disruptions . Maximum Response Time : **Within 15 to 30 minutes** of notification Maximum Attention / Rectification Time : **Within 2 hours** (continuous work required until complete restoration)

F. **Note:** Failure to meet the stipulated response and attention times may attract penalties as specified in the contract.

Appendix -1

List of OEM recommended Spares.

S.No.	Description	Quantity