Jabalpur City Transport Services Limited

REQUEST FOR PROPOSAL (RFP) FOR SELECTION OF BUS OPERATOR FOR PROCUREMENT, OPERATION AND MAINTENANCE OF AC FULLY BUILT ELECTRIC BUSES AND ALLIED ELECTRICAL & CIVIL INFRASTRUCTURE ON GROSS COST CONTRACT BASIS FOR 50 BUSES

Volume 1: Instructions to Bidders
September, 2019

Jabalpur M.P

DISCLAIMER

It is hereby clarified that this RFP is not an agreement and is not an offer or invitation by **Jabalpur City Transport Services Limited** (hereby referred as "Authority") to any party hereunder. The purpose of this RFP is to provide the Bidder(s) with information to assist in the formulation of their Bid/ Eligibility and Qualification submission. This RFP document does not purport to contain all the information Bidders may require. This RFP document may not be appropriate for all persons, and it is not possible for Authority to consider particular needs of each Bidder. Each Bidder should conduct its own investigation and analysis, and should check the accuracy, reliability and completeness of information in this RFP document and obtain independent advice from appropriate sources. Authority and their advisors make no representation or warranty and shall incur no liability financial or otherwise under any law, statute, rules or regulations or otherwise as to the accuracy, reliability or completeness of the RFP document.

Authority may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information in this RFP document.

The Authority reserves the right not to proceed with the selection process or to change the process or procedure to be applied. It also reserves the right to decline to discuss the process further with any party submitting a Bid. No reimbursement of cost of any type shall be paid to persons, entities submitting a Bid/Eligibility and Qualification Submission.

Authority shall not be responsible for any costs or expenses incurred by the Proposers in connection with the preparation and delivery of Proposals, including costs and expenses related to visits to the sites. Authority reserves the rights to cancel, terminate, change or modify this procurement process and/or requirements of bidding stated in the RFP, without assigning any reason or providing any notice and without accepting any liability for the same.

The qualified Proposers would be selected based on the criteria herein mentioned. The Proposers are required to submit the qualification documents and other information as specified in relevant sections of this RFP. Only the Price Proposals of Qualified Proposers would be opened. The date of opening of Price Proposals will be communicated to qualified Proposers at a later date.

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JABALPUR CITY TRANSPORT SERVICES LIMITED
Cabin No 3 Transport Cell Jabalpur Smart City Office
Manas Bhawan Wright Town Jabalpur M.P.
Telephone No. 0761- 4014501, 8085922322 E-mail info@jctsl.org www.jctsl.org

NOTICE INVITING E-TENDERS

Sr. No. 234/007/167/jctsl/2019 **Date 09/09/2019**

JCTSL is a special purpose vehicle in the form of a Public Limited Company setup to operate and manage Public Transport in the city of Jabalpur. JCTSL invites online tenders from reputed Transit operating companies/ firms/ agencies/ OEMs either in consortium / JV having similar experience. JCTSL Invites Online tender For **"selection of bus operator for procurement, operation and maintenance of ac fully built electric buses and allied electrical & civil infrastructure on gross cost contract basis for 50 buses"**

Tender document purchase, submission, detailed terms and conditions, specification and other eligibility criteria details shall be available on **Website :- www.mptenders.gov.in.** Amendment to NIT if any, would be published on website only. Not in news paper. JCTSL reserves to itself the right to reject any or all the tenders or extend the date and time of its sale, submission or opening under it sole discretion without assigning any reason whatsoever.

Managing Director JCTSL, Jabalpur

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Name of work	**REQUEST FOR PROPOSAL (RFP) FOR SELECTION OF BUS OPERATOR FOR PROCUREMENT, OPERATION AND MAINTENANCE OF AC FULLY BUILT ELECTRIC BUSES AND ALLIED ELECTRICAL & CIVIL INFRASTRUCTURE ON GROSS COST CONTRACT BASIS FOR 50 BUSES**
Start date of tender purchase	**14/09/2019**
Pre-bid date at JCTSL Office	**27/09/2019 3.30 PM at Jabalpur Smart City Office Jabalpur M.P**
Last date for online purchase of E-tender document.	**14/10/2019**
Start Date of Tender submission online	**09/10/2019**
Last date for online submission of E-tender technical and financial document	**14/10/2019**
Earnest money and technical bid will be opened online.	**15/10/2019**
Last date for submission of hard copy tender with technical bid submission.	**16/10/2019**

1. Tender document purchase, submission, detailed terms and conditions, specification and other eligibility criteria details shall be available on **Website :- www.mptenders.gov.in** and
2. Cost of tender form Rs. 25,000/- (non-refundable). To be purchase online.
3. Earnest money deposit Rs. 25,00,000/- (Rs. Twenty Five Lakhs only) via online method.
4. The bidder fulfilling the criteria as per NIT are eligible to participate in the tenders.

JCTSL reserves to itself the right to reject any or all the tenders or extend the date and time of its sale, submission or opening under its sole discretion without assigning any reason whatsoever.

sd
Managing Director
Jabalpur City Transport Services Limited

1. Definitions & Abbreviations

In this RFP, the following word (s), unless repugnant to the context or meaning thereof, shall have the meaning(s) assigned to them herein below:

"Authority" means the **Jabalpur City Transport Services Limited** or its authorized representatives who has invited Bids from competent and interested parties for Bus Procurement, Operation and Maintenance of Electric AC Buses on Gross Cost Contract Basis.

"Applicable Law" means all the laws, acts, ordinances, rules, regulations, notifications, guidelines or bye-laws, in force and effect, as of the date hereof and which may be promulgated or brought into force and effect hereinafter in India, including judgments, decrees, injunctions, writs or orders of any court of record, as may be in force and effect during the subsistence of this Contract, and applicable to the Project.

"Authorized Signatory" means the Person Authorized by the bidder firm to sign the bid, correspond with the Authority, make representation to the Authority as part of bidding process and sign the contract on behalf of the bidding firm through valid Authorization document in his/her favour.

"Associates criteria" –

(i) While aggregating the financial and technical capability of any Associates of the Bidder for the purpose of meeting the respective Qualifications Criteria required by the Bidder shall be permitted.

(ii) For the purpose hereof, the word "Associate" shall mean, in relation to the Bidder, a firm which controls the Bidder (i.e. Parent) or is controlled by the Bidder (i.e. subsidiary), or is under the common control with the Bidder (i.e. sister concern).

As used here, the expression "control" means, with respect to bidding firm which is a company, the ownership of common shareholders, directly or indirectly, of at least 50% of the voting shares/shareholding of the firm in question or the right to appoint majority of the directors or to control the management or policy decisions exercisable by a person or persons acting individually or in concert, directly or indirectly, including by virtue of their shareholding or management rights or shareholders agreements or voting agreements or in any other manner.

As used here, the expression "control" means, with respect to bidding firm which is a partnership, the rights of common partners to at least 50% of the profits of the firm in

question. In case the bidding firm is a Proprietorship, the expression "control" shall mean, (i) holding of at least 50% of the voting shares by the Proprietor in the company from which it is taking Associate credit and /or

(ii) status as a Partner in the Partnership firm from which its taking credit with at least 50% share in the profits of such Partnership firm. (iii) Any claims of credit from Associate firm must be accompanied by a certificate by a registered chartered accountant clearly explaining how the Associate firm meets the above definition of the Associate firm.

"Bus" means a Passenger Bus unit that meets the Technical Specifications. In relation to this, **"Contracted Buses"** shall mean all the Buses for the Procurement, operation and maintenance of which the Operator has been contracted through this Agreement.

"Bus Kilometer" means a Kilometer travelled by a Contracted Bus of the Fleet as part of its operations as per the terms and Conditions of Bidding Documents.

"Bus Service" means the service of operating and maintaining the Buses as part of the AUTHORITY services on gross cost contract basis, in accordance with this Contract/Agreement, including providing public carriage in accordance with the performance standards stipulated by Authority.

"Bid" means the Price Bid, EMD and any other document submitted by the Bidder(s) in response to RFP to be issued to pre- Qualified and Shortlisted Bidders as per the provisions of this RFP.

"Bidder" means any firm, including a sole proprietor or a partnership firm or a company, who submits a Bid/ Eligibility and Qualification Submission along with RFP Fees under this RFP within the stipulated Due Date and Time of Submission.

"Bidding Documents" means document comprising RFP, RFP, Bus Operator Agreement, its Annexure and schedule thereof.

"Bid Process/ Selection Process" means the process of selection of the Successful Bidder through single stage competitive bidding process which includes submission of Bids, Price Bid EMD, scrutiny and evaluation of such Bids and Bids as set forth in the Bidding Document.

"Bid Security" or "Earnest Money Deposit (EMD)" means Security to be furnished by the Bidder at RFP stage in accordance with provisions of RFP.

"Bus Operator Agreement" means the Agreement including, without limitation, any and all Annexure/Schedule thereto which will be entered into between Authority and the Successful Bidder through which Authority shall grant the rights to the Successful Bidder to operate and maintain the buses during the Contract Period against payment of consideration. Draft Bus Operator Agreement shall be provided at RFP Stage.

"Consortium" shall mean the group of legally constituted entities, who have come together to participate in captioned project as per provision of RFP.

"Commercial Operations Date/COD". The COD shall be the date which is 45 days from Date of LOA or date of deployment of each Contracted Bus, whichever is earlier. The Deployment shall be considered achieved after the completion of Training Period.

"Contracted Buses" or "Contracted Fleet" means one or more of the passenger bus units for the Bus procurement, operation and maintenance in AUTHORITY services and for which the Operator has been contracted in accordance with the terms of Bus Operator Agreement.

"Conflict of Interest" shall have a meaning specified in clause 16 of this RFP.

"Fleet" means the total number of Buses that are contracted to Operator for Bus procurement, operation and maintenance in accordance with the provisions of Bidding Documents.

"Kilometer Charge" refers collectively to the Base Kilometre Charge for Buses.

"Letter of Acceptance" or "LOA" means the letter issued by Authority to the Successful Bidder to provide buses under the Bus Operator Agreement for the AUTHORITY services in conformity with the terms and conditions set forth in the Bidding Documents.

"Operator/Service Provider" means the successful bidder(s) selected under pursuant to competitive Bidding Process with whom Authority has entered into a Bus Operator Agreement.

"Preferred Bidder" shall mean the Bidder who qualifies the RFP (meeting Eligibility and Qualification Criteria and whose Bid is responsive as per clause 8.5 of RFP and price bid turned out to be Lowest and Responsive in each part as per the provisions of RFP.

"Routes" means the routes within the Bus Service Area determined exclusively notified by the Authority in this tender & modified from time to time as per the feasibility, and the Contracted Buses under this Agreement shall operate only on such Routes.

"RFP" and / or "RFP Document" means RFP document along with Annexure attached issued for the purpose of selecting an Operator for the Project.

"STA" means the State Transport Authority of Madhya Pradesh.

"Successful Bidder" shall have meaning as specified in clause 9 (a) of this RFP

"Scope of Project/Work" shall have a meaning specified in volume 2 of this RFP.

Any other term(s), not defined herein above but defined elsewhere in this RFP shall have the meaning(s) ascribed to such term(s) therein and shall be deemed to have been included in this Section.

1.(A)Introduction &Scope of Work

Authority intends to use Electric Buses for its operations for promoting clean and green shared mobility on a Gross Cost Contract (GCC) basis through appointment of Electric Bus Fleet Operator. Towards this end, this Request for Proposal (RFP) is being hereby published for inviting proposals for procurement, operation and maintenance of 5 Nos of 9 M/ 12 M Standard AC Electric Buses and Allied Electrical & Civil Infrastructure with an Annual fleet level assured operation of 200 kilometre per day per bus. Operator may use any type of technology for top up charge i.e. it could be swapping, flash charging, fast charging etc. The selected Operator shall also establish complete charging Infrastructure including Electric Transformer infrastructure, Electric connection and allied Civil Infrastructure at the depots identified by Authority on GCC model with Annual fleet level Guaranteed operations of 200 kms per Bus per day for the period of 7 years which may be further extended up to 3 or more Years at the behest of Authority subject to review of performance and inspection of Electric Buses by investigation of Authority.

Authority intends to deploy Electric buses for Public transport services with in the Cities and their nearby satellite towns as per the tentative routes provided in the tender by the Authority. Below are the cities selected for deployment of Electric bus services.

City	Quantity
Jabalpur	50

Detailed Scope of the Operator broadly includes

i. Manufacture/ procure Electric buses, carryout preventive and breakdown maintenance of buses and operate buses on routes specified by Authority.

Develop Charging infrastructure including Development, Supply and Erection of Transformers and all Necessary Electrical systems, sub-systems, accessories and parts as required for charging Infrastructure, Provide Chargers and maintain complete charging infrastructure including civil infrastructure for undertaking preventive and breakdown maintenance.

ii. Electricity cost for charging of buses will be borne by the operator. Even all the charges towards the electric connection shall be borne by the operator only.

iii. Electricity charges for office and maintenance activities of the Operator shall be borne by the Operator.

iv. After completion of Contract Period, the immovable infrastructure established at various depots for charging of Electric Buses will become the property of Authority solely for its further usage by Authority. The Operator will not have any right on this immovable Infrastructure after completion of Contract Period. The Civil Infrastructure established will become the property of Authority and the Operator will not have any right on civil Infrastructure. The Operator shall handover all the above facilities in sound and working condition and an undertaking to this effect shall be submitted as per the format enclosed in the Annexures.

v. Of the total fleet, the Operator is expected to make 50 Nos. Electric AC buses for operations with 96% fleet availability excluding 2 days in a month for maintenance. The Operator is expected to keep spare fleet to meet this requirement. The bidder may refer Volume 2 of the RFP regarding Fines/Damages.

vi. This RFP is divided into three Volumes namely 1) Instructions to Bid, 2) Bus Operator Agreement 3) 9m/ 12 MElectric AC Bus Specifications.

vii. Volume 1 deals with Background, instructions and process of bidding. Volume 2 is the draft format of the Agreement that will be signed between the Authority and the Operator. It contains all conditions of the contract. Volumes 3 is Technical Specifications of the Buses. Prospective Bidder is advised to read all volumes thoroughly as any items, provisions or stipulations may influence his costs, revenues, and risks and hence may affect his bidding. Some of the Key terms are summarized in the next section.

viii. The charging mechanism/ type of chargers/ no. of chargers is not provided in this tender. The bidder shall have the complete opportunity to use any of the available technology for bus charging. The specified routes shall be provided for the better understanding.

ix. In this bus operations all the necessary charging infrastructure like transformers, 11 KV/ 33 KV line, Electric connection are in the scope/ responsibility of the bidder.

x. For intercity-bus operations minimum battery range in one charge is 200 + 20 % contingency KMs (with 80% SOC) with AC, Passenger Load and under traffic conditions. One tender shall be published for one city in which intra-city & intercity shall be incorporated.

2. Key Terms

The following are some of the key terms:

Authority will be facilitating FAME subsidy for theses Electric buses and the successful bidder shall comply with all guidelines as per FAME II. Subsidy will be released to the successful bidder as and when received from DHI subject to submission of Subsidy Bank Guarantee for the equivalent Amount with a validity for minimum 5 years. The bidder has to bear the entire initial cost of the Electric bus and the subsidy will be subsequently transferred to the bidder.

Authority proposes to operate the Buses from a specified depot in the city. Typical average speeds for bus operations are around 20-25 km/hr depending on route conditions. Authority operation hours are 05.30 AM to 11:00 PM. Vehicle shall run for minimum 200 Km in a day (On actual condition with Passengers, GVW and AC, 18 hours continuously) – It should be as per the Annexure 4 of the routes & fleet details.Land for Charging, parking and Bus Maintenance Spaces will be provided at a depot in the city. Details and layouts of the depot facilities will be shared. The land may be provided (in case if available) for the Swapping/ fast charging/ opportunity charging by Authority at Terminals and rest all the infrastructure shall be developed and maintained by the operator for the bus charging & operations.

Authority will assist the operator to take 11/22KV power supply line at the Depotin the city. Operator will arrange for site level distribution of power to its charging points along with related equipment and infrastructure for charging including any civil and other ancillary work required for parking, charging and maintenance. The decision on number of chargers to be provided is left to the Operator according to his solution. The Operator is expected to pay for the power itself for all the activities in the depot and even on the route if charging stations/ swapping stations are installed. Information regarding Electricity Rates applicable may be obtained directly from concerned authority. Operator will present the best solution in terms of bus, capacity of batteries, charging infrastructure required, charging time etc. looking to the operational requirements of Authority.Power and space required for Fast charging or swapping or Flash charging on end route or terminals shall be procured by Operator itself. Authority will not pay any additional compensation including payment for KMs travelled for intermediate charging.However Bidder has to set up Intermediate charging stations on end route only.

The Operator will support the procurement, supply, operation and maintenance of the Bus including battery charging, maintenance/replacement in all respects throughout the Agreement Period. It will make its appropriately trained and qualified technical staff available for any solutions, challenges and fine tuning.

The Bidder shall submit, along with the bid, Bus specifications as per format asked. It shall also provide offered Bus Type Approval certificate (9m: Type I & 12m: Type II) issued by authorized test agencies as per CMVR 126 from Institutions such as CIRT/ARAI for operating these electric buses within thecity and as well from city to Satellite towns. These Electric buses are intended to operate within cities and their nearby satellite towns/ as intercity buses as per the routes mentioned in the tender document.

The supply of Buses by Bidder shall be subject to prototype approval by the Inspection Authority. Authority will visit Bus manufacturing site to inspect standard of facility as per the schedule of Inspection and Delivery at the cost of the Operator, and may reject the buses if found defective and workmanship is not found satisfactory, in which case the remedial work shall be immediately made and subject to re-inspection by third party agency.

The Operator shall be liable to pay RTO registration charges and insurance charges at the time of Bus registration and thereafter bear all RTO and insurance charges/ taxes for remaining years of Agreement.

S. No	Description	Timelines
1	Issue of Supply order	M
2	Release of First installment of the 20 % of the incentive amount against the Bank guarantee	M + 1 month
3	Prototype	M + 2 Months
4	Delivery of 50 % of the buses	M + 6 Months
5	Delivery of rest of the buses	M + 9 Months

The Operator Agreement shall remain in force for a period of Seven(7) years from Commercial Operations Date (COD) extendable by 3(three) or more years, during which period the Operator shall operate and maintain the buses on Authority routes as directed by the Authority adhering to its timetable from time to time and without disturbing its schedules in the respective cities on Gross Cost Contract basis. The Agreement may be extended at mutually agreed terms and rates up to three or more years based on performance and inspection of condition of the buses by investigation of Authority. The inspection charges of inspection of buses after 10 years shall be borne by the Operator. The Decision of Managing Director, AUTHORITY in this regard shall be Final and binding on Contractor.

The expected Schedule for providing prototype and delivery of AC Electric buses as per following schedule from the Date of awarding the contract:

3. Bidding Process

3.1. Brief Description of the Bidding Process

The Authority invites proposal through Online Technical and Price Bids in a Single stage bid system (Collectively referred as the" Bidding Process/ Operation Selection Process") for selection of a competent Bidder for the award of the Project. Technical proposal and Price Proposal shall be submitted online at www.mptenders.gov.inThe EMD and tender fees to be submitted online. Physical submission of only technical proposals, tender/RFP document shall be required as per the timelines.

The Bidders shall have to meet eligibility and qualification criteria provided in the RFP. Bidders would be required to quote one Base Kilometer Charge for Bus as per the contract conditions specified in Volume 2 of the RFP. Price bid of the bidders who are meeting eligibility, qualification criteria and successful completion of trials shall be opened. The Bidder whose Price Bid determined to be lowest and responsive as per clause 8.5 (C) shall be considered as Preferred Bidder (the "Preferred Bidder") for award of the Project.

Complete Bid (Technical Bid & Price Bid to be submitted online only) with the prescribed bid forms should be submitted online at the designated place on or before the time and date fixed for submission of bid ("Bid Due Date"). Bid submitted after Bid Due Date and time will be rejected.

3.2. Due Diligence & Site Visit

The Bidders are encouraged to examine and familiarize themselves fully about the nature of assignment/Project, all instructions, forms, terms and conditions of RFP, local condition and any other matters considered relevant by them before submitting the Eligibility and Qualification Submission/Bid by paying a visit to the site and sending written queries to the Authority duringPre-Bid Meeting. Proposers are encouraged to submit their respective Proposals after visiting the Authorities Office and ascertaining for themselves the availability and condition of passenger traffic, location, applicable laws and regulations, and any other matter considered relevant by them.

3.3. Acknowledgement by Bidder

It shall be deemed that by submitting the Eligibility and Qualification Submission/Bid, the Bidder has:

- made a complete and careful examination of the RFP received all relevant information requested from the Authority;
- accepted the risk of inadequacy, error or mistake in the information provided in the RFP or furnished by or on behalf of the Authority relating to any of the matters referred to in Clause above; and
- acknowledged that it does not have a Conflict of Interest agreed to be bound by the undertakings provided by it under and in terms hereof.
- The Authority shall not be liable for any omission, mistake or error in respect of any of the above or on account of any matter or thing arising out of or concerning or relating to the RFP or the Bidding Process, including any error or mistake therein or in any information or data given by the Authority.

3.4. Cost of Bid

The Bidders shall be responsible for all of the costs associated with the preparation of their Eligibility and Qualification Submission/Bids and their participation in the Bid Process. The Authority will not be responsible or in any way liable for such costs, regardless of the conduct or outcome of the Bidding Process.

3.5. Bid Currency

All prices quoted in the Bid shall be quoted in Indian National Rupee(s) (INR).

3.6. RFP Fee

The RFP document fees of INR 25,000/- towards tender processing fee including GST and excluding e-tendering procedure charges should be paid through e-payment on the e-tendering portal. The scanned copies of receipt of RFP Fee and EMD shall also be uploaded along with Technical Bid on www.mptenders.gov.in

Any bid not accompanied with RFP Fees in the acceptable amount and form will be summarily rejected by the Authority as being non-responsive and bids of such Bidder shall not be evaluated further.

3.7. Earnest Money Deposit ("EMD") or Bid Security

The bidder shall furnish separate bid security online (also referred to as "Earnest Money Deposit" (EMD) for Captioned work as part of his bid as per the details given below.

Sl. No.	Type of Bus	Nos.
1	50 nos. AC Electric Buses	INR 25,00,000/- (Twenty Five Lakhs Rupees Only)

The EMD shall be deposited via online method on the prescribed website of Govt. Of Madhya Pradesh.
Any bid not accompanied with valid Earnest Money in the acceptable amount and form will be summarily rejected by the Authority as being non-responsive and bids of such Bidder shall not be evaluated further.

After the bid due date and within the period of validity of his bid, the Earnest Money deposit paid by the bidder is liable to be forfeited if the bidder withdraws or amends or impairs or derogates from the bid in any respect or engages in any fraudulent practices.

No interest will be payable by the Authority on the Earnest Money Deposit.

The Earnest Money deposit of the successful bidder will be returned after the contract performance security is furnished.

If the successful bidder fails to furnish the Performance Security as specified in the Bus Operator Agreement, then the Earnest Money deposit shall be liable to be forfeited by the Authority, in addition to any other actions as per terms and conditions stipulated in the bid documents.

The Earnest Money deposit of all unsuccessful bidders will be returned to them at the earliest after expiry of the final bid validity date.

The Bid Security of a Bidder shall be forfeited in the following events:

(i) If a Bidder withdraws/modifies/changes the proposal during the period of Bid validity; or
(ii) In the case of a Successful Bidder, if the Bidder fails to sign the Agreement within the stipulated time as specified by the Authority.
(iii) Successful Bidder fails to furnish the required Performance Security within stipulated time in accordance with RFP terms set forth herein.
(iv) In case of a fraudulent offer and involved in fraudulent or corrupt practice a per RFP terms.
(v) In the event, Bidder, after the issue of communication of acceptance of his bid by Authority, fails/refuses to start/execute the work as herein the Bidder shall be deemed to have abandoned the work/contract and such an act shall amount to and be construed as the Bidder's calculated and wilful breach of contract, the cost and consequences of which shall be to the sole account of the Bidder and in such an even the Authority shall have full right to claim damages thereof in addition to the forfeiture of the Bid security deposited in terms of this bid documents.

(v) In case of occurring any other event as may be specifically stated in the RFP document.

3.8. Bid Validity

Bids shall remain valid for a period of 180 days after the date of opening of Price Bid. The Authority reserves the right to reject a Bid as non-responsive if such Bid is valid for a period of less than Bid Validity Period and Authority shall not be liable to send an intimation of any such rejection to such Bidder.

In exceptional circumstances, prior to expiry of the original bid validity period, Authority may request the bidders to extend the period of validity for a specified additional period. The request and the responses thereto shall be made in writing. A bidder may refuse the request without forfeiting his Bid Security. A bidder agreeing to the request will not be required or permitted to modify his bid but will be required to extend the validity of his Bid Security/EMD for the period of the extension, and in compliance with RFP terms in all respects.

3.9. Schedule of Selection/Bidding Process

As mentioned in the Bidding Schedule and Details of RFP Fees and EMD.

4. General

4.1. Consortium

Bids are permitted as either (i) Single Bids or (ii) Consortium of a maximum three bidders led by a Lead Bidder.

4.2. Number of Bids by Bidder

No Bidder or any of Consortium members shall submit more than one Bid/Eligibility and Qualification Submission and price bid pursuant to this RFP. Any Bidder applying individually as Single Bidder or a part of a group of Bidders applying as a Consortium shall not be entitled to submit another Bid either individually or as members of another Consortium, directly or indirectly, as the case may be. If a Bidder submits or participates in more than one Bid in this manner, such proposals shall be disqualified and rejected.

4.3. Rejection of Bid

A Bid is likely to be rejected by the Authority without any further correspondence, as non-responsive, if:

Technical and/or Price Bid is not submitted online in the manner as prescribed in the Instructions to Bidders Section of this RFP and is otherwise not in conformity with the terms and provisions of this RFP Document; or

Technical and/or Price Bid is not submitted in the bid-forms annexed in the RFP Document; or

Bid Security and RFP Fees does not conform to the provisions set forth in this RFP; or

- Price Bids which are incomplete or not submitted in accordance with Price Bid format;
- In case of fraudulent Bid and involved in fraudulent and corrupt practice as per clause 15
- Each bidder shall submit only one bid. A bidder who submits or participates in more than one bid under this RFP will be disqualified.
- Even though the Bidders may meet the Eligibility and Qualification Criteria (i.e Financial and Technical Capability criteria), they are subject to be disqualified for any of the following reasons:
- Misleading or false representation in the forms, statements and attachments submitted under this Tender/RFP.
- Record of poor performance such as abandoning the work, rescinding of contract for which the reasons are attributable to the non-performance of the Bidder, consistent history of litigation awarded against the applicant or financial failure due to bankruptcy.
- Bidder is blacklisted/barred by any Government Agency in India or abroad.

- Failure of any one (or more) of the conditions set forth herein above shall result in rejection of Bid.

- In addition to the foregoing, in the event a Bidder makes an effort to influence Authority in its decisions on Bid evaluation, Bid comparison or selection of the Successful Bidder, it may result in rejection of such Bidder's Bid.

- Bidders may specifically note that while evaluating the Bid, if it comes to Authority's knowledge expressly or implied, that some Bidders may have compounded in any manner whatsoever or otherwise joined to form an alliance resulting in distorting competitive price discovery or delaying the processing of proposal then the Bidders so involved are liable to be disqualified for this contract as well as future bids/contracts.

- Even though the Bidder meet the required Eligibility and Qualification criteria specified in RFP, it is subject to be disqualified if Bidder or any of its constituent partner/s, director/s have:
- made misleading or false representation in the forms, statements, and attachments submitted;

- Been debarred or terminated or blacklisted by Central Govt. organization / State Govt. organization / Authority / Any Municipal Corporation / ULBs etc.
- If, any of the directors, partners or the proprietor has a criminal history or has been convicted by any court of law for any of the offenses under any Indian laws.

4.4. Governing Law and Jurisdiction

The Bidding Process shall be governed by, and construed in accordance with, the laws of India and the Courts at Jabalpur, Madhya Pradesh State in the Republic of India shall have exclusive jurisdiction over all disputes arising under, pursuant to and/ or in connection with the Bidding Process.

5. Documents and Pre Bid Conference

5.1. Content of RFP

This RFP comprises the Tender Notice set forth hereinabove and the contents as listed below, and will additionally include any Addendum / Amendment issued in accordance with RFP conditions.

- Volume 1: Instructions to Bidder
  - Disclaimer
  - Notice Inviting Tenders
  - Definition and Abbreviation
  - Instructions to Bidders
  - Annexure specifying Bid Form / other Formats
- Volume 2: Bus Operator Agreement
- Volume 3: 9m/12m Electric AC Bus Specifications
- Any Modifications/ Amendments made by Authority in RFP.

5.2. Clarification to RFP Documents

Bidders requiring any clarification on the RFP may notify the Authority by email at the address provided in the Bidding Schedule. They should send in their queries on or before the date mentioned in the Schedule of Bidding Process specified. The Authority shall endeavor to respond to the queries at short span of time prior to Bid Due Date. The responses of queries willbe uploaded on website of www.mptenders.gov.in

The Authority shall endeavour to respond to the questions raised or clarifications sought by the Bidders. However, the Authority reserves the right not to respond to any question or provide any clarification, in its sole discretion, and nothing in this Clause shall be taken or read as compelling or requiring the Authority to respond to any question or to provide any clarification.

The Authority may also on its own motion, if deemed necessary, issue interpretations and clarifications to all Bidders. All clarifications and interpretations issued by the Authority shall be deemed to be part of the Bidding Documents. Verbal clarifications and information given by Authority or its employees or representatives shall not in any way or manner be binding on the Authority.

5.3. Pre Bid Meeting

A Pre Bid Meeting shall be held on date time and venue specified in Bidding Schedule. Bidders requiring any clarification may send queries on email ID provided in Bidding Schedule. Bidders will be free to seek clarifications and make suggestions for consideration of the Authority. The Authority shall endeavor to provide clarifications and such further information as it may, in its sole discretion, consider appropriate for facilitating a fair, transparent and competitive Bidding Process.

Clarifications/ responses would be shared by uploading the responses on websiteswww.mptenders.gov.in in the formof responses/ addendum.

Not sending Queries/ asking clarifications shall not be a cause for disqualification of a Bidder. However, terms and conditions of the Addendum(s) shall be legally binding on all the Bidders and shall form part of the bid documents / RFP.

5.4. Amendment of Bidding Documents

At any time prior to the Bid Due Date, the Authority may, for any reason, whether at its own initiative or in response to clarifications requested by a Bidder, modify the RFP by the issuance of Addendum/Corrigendum.

Any Addendum issued hereunder will be in writing and may be uploaded on the Authority's website: www.mptenders.gov.in.

In order to afford the Bidders a reasonable time for taking an Addendum into account, or for any other reason, the Authority may, in its sole discretion, extend the Due Date of Submission.

5.3 Evaluation Criteria

All bids must be considered responsive as described earlier in order to be considered fit to be evaluated. As a first stage of evaluation for responsive bids, technical bids shall be evaluated. In case the Bidder is a consortium then it must meet Additional Consortium criteria specified in clause 6.2 along with Eligibility and Qualification Criteria specified hereunder. Bidders whose technical bids are found to be meeting Eligibility Criteria, Qualification Criteria and successful completion of trial will progress to the next stage of Price Bid opening.

6 Eligibility Criteria

6.1 (Pre-Qualification Criteria)

The following Eligibility Criteria shall apply to all Bidders who are bidding as Single Bidder or to all members of a Consortium:

The Bidder or/ and all members who are legally competent to enter into a contract as per prevailing Indian law, and must be either a:

- Company incorporated under the Companies Act, 1956 (as amended or re-enacted or restated, and including the Companies Act, 2013 as notified from time to time), (Copy of Certificate of Incorporation, Memorandum and Article of the association of the bidder should be submitted) Or
- Partnership firm registered under The Indian Partnership Act (Copy of registered Partnership Deed should be submitted) Or
- Limited Liability Partnership (LLP) registered under the Limited Liability Partnership Act, 2008 (Copy of Certificate of Incorporation, LLP Deed should be submitted) Or
- Registered proprietary firm in India (Copy of sales tax/GST registration, EPF registration, Shop registration certificate, as may be applicable, should be submitted). Foreign Electric Bus Manufacturers constituted under respective foreign law not having a registered office in India are not allowed to participate in the bidding as single bidder or Lead consortium member or to issue MAF for the Operator or Aggregator.
- The Bidder/s or its parent/subsidiary/sister concern from which it seeks to obtain credit for meeting Qualification Criteria specified in the RFP shall not have been blacklisted by any Government Agency, or proved to have indulged in serious fraudulent practices by a Court of Law or an independent Commission of Inquiry in India at the time of Due Date of Submission. In this regard, a Self-Attested Anti blacklisting certificate is required to be provided as per the format prescribed in Annexures.
- The Services of Bidder should not have been terminated by Authority or any other Government/Semi-Government or Public Authority or Public Institution in India, before the completion of respective Contract Period for which it has executed the Project or in process of execution of such project, on account of its poor performance, delay or abandonment of work by the Bidder. If such instance(s) shall be found by Authority during bid process or period thereafter, then Authority at its sole discretion may reject the Bid or terminate the Agreement. The Authority at its sole discretion may reject the Bid or terminate the Agreement in respect of the bidder whose cases are pending in litigation.

- A Bidder shall not have a conflict of interest (the "Conflict of Interest") that affects the Bidding Process. Any Bidder found to have a Conflict of Interest shall be disqualified. Conflict of Interest is specified / defined in Clause 16.
- Consortium is permitted to participate in Bidding Process. Maximum number of consortium members is limited to 3 (three) members, with respective qualifications and role as provided for in Bidding Conditions for Single Bidders and Consortiums.
- Only the Bids of the Bidder meeting above Eligibility Criteria shall be considered for assessment of next stage of assessment of Qualification Criteria.

6.2. Bidding Conditions for Single Bidder and Consortium

Bids may be presented by Single Bidder or by Consortium. Following conditions are prescribed in bidding by Single Bidder and by Consortium:

- If the Bid is by a Single Bidder, the Bidder should be a registered Electric Bus Manufacturer (Original Equipment Manufacturer for Electric Buses shortly called "OEM" henceforth) or Operator or Financer only who is meeting the prescribed qualifications for OEMs, Operator and Financer who is supplying the Buses under this Project. Sub-contracting specific tasks by Single Bidder by experienced / qualified subcontractors is not restricted.

- For this project any one of the member - OEM/ Operator/ Financer could be the lead member of the Joint Venture/ Consortium. Lead member should own the 51 % of the partnership of the JV/ Consortium. If Financer is Lead member then, Financer should have the strong agreement/ MOU with only one qualified OEM / Operator (mandatory) which would be the part of the agreement. Similarly, if operator is a lead member then, Operator should have the strong agreement/ MOU with only one qualified OEM, which would be the part of agreement.

- Sub-contracting is allowed in any of the case if in single bid of OEM or any consortium. If fulfilling the criteria of the agreement. But it should have the strong MOU with the other sub-contractors and same shall be the part of the agreement.

- Any one of the Financer/ OEM or Operator could be the lead member.

- If Operator or Aggregator is a Single Bidder or Lead member then such bidders shall submit Manufacturer Authorization Form (MAF) from only one qualified OEM. OEM can submit bids as a Single bidder or as a member of consortium and can issue Manufacturer Authorization Form(s) to operator(s)/Financier(s).

- Bidders bidding as Consortiums must clearly identify their respective roles in the Consortium Agreement.

- The role and responsibility of any member must be commensurate with the technical/financial capabilities that such member is contributing towards meeting Qualification criteria. Each consortium member is liable to contribute resources in terms of knowledge, skills and trained manpower commensurate with its role and responsibilities during the Agreement Period.

- RFP/EMD/Performance security can be submitted by any of the Consortium members with duly certified by all the members.

- Single Bidder shall have minimum Average Annual turnover of 100crores for the last 3 financial years and shall have minimum Average Net worth of100Crores for the last 3 financial years. In case of consortium, at least 51% of Turnover and Net worth criterion shall be met by Lead member. CA certificate is mandatory.

6.3. Qualification Criteria for Bidders

Qualification criteria pertaining to each of the three parties to participate in this tender, envisaged above are presented below:

a) OEM Qualifications Criteria

The Bidder shall be a registered Electric Bus Manufacturer with bus manufacturing facilities in India and having experience of manufacturing and delivery of at least 50 Electric or 100 Diesel / CNG buses over the last five financial years in India.

i. The OEM shall have a Minimum Average Annual Sales Turnover (MAAT) of last 3 (three) Financial Years more than INR 100.00 Crores. OEM shall have minimum Rs. 100 Crore average Net worthduring the last 3 (three) Financial Years. OEM shall submit the Certificate of Chartered Accountant as per the Annexure attached, in this regard.

Documentary evidences:

a. License to manufacture Buses and Evidence of bus manufacturing facilities.

b. Details of at least 50 Electric OR 100 Diesel / CNG Buses manufactured and supplied in terms of number, year of supply and names of customers to whom supplied.
c. Statement from the Chartered Accountant as prescribed in the Annexures certifying/ specifying MAAT of the Bidder conforming to the provisions of this RFP.
d. Statement from the Chartered Accountant as prescribed in the Annexures certifying/ specifying Net Worth of the Bidder conforming to the provisions of this RFP.

b) Financer's Qualification Criteria

The Financer member shall have to present the valid licence certificate of NBFC or MFI issued by RBI. (Reserve Bank of India). In case of international Financer, the internationally acclaimed certificate to be submitted. (or)A Minimum Net worth of INR 50crores as on 31st March 2019 and Financier shall have a Minimum Average Annual Turnover (MAAT) of INR 50 crores for last 3 Financial Years as per Auditor's certificate.

Documentary evidences:

- As stipulated above.

c) Bus Operator Qualifications Criteria

- The Bus Fleet Operator shall have executed/undertaken Project reference as listed below in any part of India or Abroad for atleast one year during the last 5 years immediately preceding the Bid Due Date. The bidder shall upload the documentary evidence in support of the same in the form of Work Orders and Satisfaction Certificates from the Client.

- The bus operator should have atleast one Project reference of minimum operation of 10 electric buses or 25 diesel/CNG/alternate fuel/hybrid buses in last 3 financial years.

- Operational Experience must include Planning, managing and monitoring of day to day bus/Passenger vehicle operations and/or maintenance. Such experience must be demonstrated through an explicit contract/concessionaire Agreement of operations with a public sector entity/Government or semi Government Department or a private sector organization of repute and which has been in successful operation for a period on at least one year.

- The Bus Operator member shall have a Minimum Average Annual Turnover (MAAT) of INR 5 crores for last 3 Financial Years as per Auditor's certificate.

Documentary evidences:

- Statement from the chartered accountant as prescribed in the Annexure certifying/ specifying MAAT of the Bidder conforms to the provisions of this RFP.
- Bus Operation Agreement / Concessionaire Agreement of operations.

7. Preparation and Submission of Technical Bid (Eligibility and Qualification Submissions) and Price Bid

7.1 Language of Bid/Eligibility and Qualification Submissions

The Technical Bid/Eligibility and Qualification Documents and all related correspondence and documents in relation to the Bidding Process shall be in English language. All supporting documents and printed literature furnished by the Bidders with the technical Bid/ Eligibility and Qualification Submission may be in any other language provided that they are accompanied by translations in the English language, duly authenticated and certified by the Bidder. For the purpose of interpretation and evaluation of the Bid, the English language translation shall prevail.

The Bidders shall ensure that any number mentioned in the Bid shall be followed by words in relation to such numerical format of the number, and in the event there is a conflict in the numerical and word format of the number, the number provided in words shall prevail.

7.2 Format and Signing of Bid

The Bidder shall provide all the information sought under this RFP. The Authority will evaluate only those Bids that are received in the required formats and complete in all respects. Incomplete and /or conditional Bids shall be liable to rejection.

The uploaded Bid documents shall be signed by the authorized signatory of the Bidder on each page. In case of a Consortium, this signature shall be that of the Authorised signature of the authorized signatory shall bind the Bidder to the contract. The signed pages shall be scanned and uploaded at designated place. In case of printed and published documents, only the cover shall be initialled. All the alterations, omissions, additions or any other amendments made to the Bid shall be initialled by the person(s) signing the Bid. Each page of the Bid must be numbered at the right hand top corner.

The Bid must be properly signed by the authorized signatory (the "Authorized Signatory") as detailed below:

- by the proprietor, in case Bidder is a proprietary firm; or

- by a duly authorized person holding the Power of Attorney, in case Bidder is either a Limited Company or a corporation or a Partnership firm.

In case of the Bidder Being Company incorporated under Indian Companies Act 1956, the Power of Attorney shall be supported by a Board Resolution in favour of the person vesting power to the person signing the Bid.

All prices and other information having a bearing on the price shall be written both in figures and words in the prescribed Proposal form. In case of discrepancy, the price given in words shall be considered.

7.3. Sealing and Marking of Technical Bids/Eligibility and Qualification Submissions

The Bidders shall submit Technical Proposal and Price Proposal Online only at designated space on www.mptenders.gov.in

Sl. No.:	Submission	Format as Per Annexure	Signed and original scanned copies of Documents to be uploaded online
1.	RFP Fees, EMD and Affidavit.	Clauses 3.6 and 3.7, Annexure 11	RFP Fees and EMD as per clauses 3.6 and 3.7 Scanned copies to be uploaded online.
2.	**Technical Bid (Uploaded online only)**		
			Technical Bid/Eligibility and Qualification Submission. ○ Copies of RFP and Addendum, if any, signed sealed by the authorised representative. ○ Cover letter as per Annexure 1. ○ General Information of Bidder as per Annexure 2 along with Bidder's constituting documents such as MOA, AOA, Certificate of Incorporation, Sales tax/GST registration, Partnership deed as may be applicable. For Bidders bidding as Consortium, such information may be furnished for each member of the Consortium.

(i)	Technical Bid for Bus Procurement, Operations and Maintenance of Electric AC Buses and Allied Electrical & Civil Infrastructure For AUTHORITY	Annexure 1 to 10	○ Financial Capability Statement as per Annexure 3 along with Audited Annual accounts for last three financial years and any other document. For Bidders bidding as Consortium, such information may be furnished for each member of the Consortium as applicable. ○ Bus operations experience as per Annexure 4 along with documentary operational experience. ○ Bus Manufacturing Experience as per Annexure 5. ○ No black listing certificate as per Annexure 6. ○ Statement of deviation in Annexure 7. ○ Authorisation in terms of Power of attorney/Board or Partner Resolution as per Annexure 8. ○ PoA for Lead Member of Consortium - Annexure 9. (For Consortiums only) ○ Joint Bidding Agreement for Consortiums – Annexure 10. (For Consortiums only) ○ Bus Specifications & Battery specifications as per Volume 3 and 4. ○ Bus Type Approval certificate including Homologation Certificate (9m: Type I & 12m: Type II) by Authorized test agencies approved under CMV Rule 126. ○ Any certification it has obtained for its vehicles or parts, which has been tested at authorized test agencies under CMV Rule 126 or any test agency approved by Govt. of India. ○ Any other documents required as per the RFP terms.
3.	**Price Bid (Upload Online Only)**		
1.	Price Bid	Annexure	To be filled up Online Only

A hard copy of the technical bid documents uploaded shall be submitted in sealed envelope to Authority before the due date for submission of bids at the address and time limit specified in the Bidding Schedule.

Following shall be superscripted on the Physical Submission: Request for Proposal (RFP) document for Selection of Operator for Procurement, Operation and Maintenance of 50 numbers of AC Electric Buses on Gross Cost Contract basis for Authority – Physical Submission. Physical Submission may be made by Speed Post/ RPAD/Hand Delivery/Courier. Authority shall not be responsible for and shall not take any cognizance of delay/loss in transit.

All the original documents to be uploaded as part of technical bid shall be colour scanned. All stampings etc. shall be displayed clearly. The documents shall be scanned in JPEG or any other data light but visible formats available.

7.4 Due Date of Bid Submission

The last date and time of submission of the Technical Bid and Price Bid ("the "Due Date of Submission") is specified in table given in Bidding Schedule.

The Authority may, in its sole discretion, extend the Due Date of Submission by issuing an Addendum uniformly for all Bidders. In such event, all rights and obligations of Authority and Bidders previously subject to the earlier deadline will thereafter be subject to the Due Date of Submission as extended. Any such change in the Due Date of Submission shall be notified to the Bidders by dissemination of requisite information in this behalf in writing either by uploading on Authority website www.mptenders.gov.in

7.5. Late Bids

Bids of the Bidders are not able to make Online submissions on Bid Due Date ("Due Date of Submission") shall be summarily rejected.

Bids of Bidders who make any physical submission apart from that specified in clause 6.3b shall be summarily rejected.

Authority shall not be responsible for any non-receipt / non submission of any bid / any documents owing to any technical issue at online web portal. The bidders are requested to make online submission well in advance.

7.6. Modification and Withdrawal of Bids

Bids shall not be allowed to modify any part of its Bid after the Bid Due Date ("Due Date of Bid Submission")

In order to avoid forfeiture of Bid Security, a Bidder may withdraw his Bid after submission thereof, provided that authority receives written notice of such withdrawal before the expiration of the Bid Due Date.

The Bidder may modify, substitute or withdraw its Technical Bid and Price Bid after online submission, prior to the Bid Due Date.

Any alteration/ modification in the Bid or additional information supplied subsequent to the Due Date of Submission, unless the same has been expressly sought for by the Authority, shall be disregarded.

8. Evaluation Process

8.1. Opening of Technical Bid/ Eligibility and Qualification Submission

The Authority shall open online the Technical Bids/ Eligibility and Qualification Submission received to this RFP, at time and date specified in the RFP, at the place specified in RFP and in the presence of the Bidders who choose to attend. The Bidders' representatives who are present at such opening shall sign a register evidencing their attendance as a witness to the Bid opening process.

The bids for which the price bid is not submitted online shall be considered Non-responsive and shall not be opened.

- Bids for which a notice of withdrawal has been submitted in accordance with RFP shall not be opened.
- The Bidder's names, the presence or absence of requisite RFP Fees, EMD and such other details as Authority in its sole discretion may consider appropriate, shall be announced at the opening of Bid/ Eligibility and Qualification Submission.
- The Authority will subsequently examine and evaluate Bid/ Eligibility and Qualification Submission in accordance with the provisions set out hereunder in this RFP.

8.2. Evaluation of Technical Bid/ Eligibility and Qualification Submission:

The Bidders shall be required to upload scanned copies of documents as listed in this RFP document along with supporting documents. The Authority shall examine and evaluate the Bid/ Eligibility and Qualification Submission as per the evaluation steps specified below.

Test of Responsiveness for RFP Fee, Timely and proper Submission Prior to evaluation of Eligibility and Qualification Submissions/Technical Bid, the Authority shall determine whether each Bid is responsive to the requirements of the RFP.

A Bid shall be considered responsive only if:

- The Technical and Price Bids are submitted online properly.
- Technical Bid is accompanied with RFP Fee and EMD amount as specified in RFP.
- Physical submission of RFP fee and EMD is made within specified timeline and in valid format matching with online submission.
- The Bid is received by Bid Due Date including any extension thereof pursuant hereto;
- It contains all the information (completed in all aspects as requested in this RFP and/or Bid documents (in formats same as those specified in the RFP);
- It does not contain any conditionality or qualification; and
- It is not non-responsive in terms hereof and any other conditions specified elsewhere in RFP.
- The Authority reserves the right to reject any Bid which is non-responsive and no request for alteration, modification, substitution or withdrawal shall be entertained by the Authority in respect of such Bid.
- Evaluation of Eligibility Criteria and document checks of only those Bidders shall be carried out whose Bids determined to be responsive.

Assessment of Eligibility Criteria:

- The Authority shall examine and evaluate the eligibility of each Bid upon determining its responsiveness as per sub clause (a) above.
- The Bidder must meet Eligibility Criteria specified in the RFP and have uploaded all scanned copies of all documents in order to qualify for next stage of assessment.
- Assessment of Qualification Criteria of only those Bidders shall be carried out whose Bids are meeting Eligibility Criteria and uploaded scanned copies of all required documents pursuant to sub clause 2) above.

Assessment of Qualification Criteria:

- The Authority shall examine and evaluate the qualification of each Bid upon determining its eligibility as per sub clause (b) above.
- The Bidder must meet Qualification Criteria as specified in the RFP in order to qualify for Price Bid Opening Stage.
- The Technical Bids/Eligibility and Qualification Submission of the Bidder determined to be responsive, meeting Eligibility and Qualification Criteria shall be

declared Eligible and Qualified Bids (the "Eligible and Qualified Bids"/ "Eligible and Qualified Bidder").

- In case the bidder is not able to submit the documents required to demonstrate capability of the bus procurement as provided in the ITB and/or the bidder is not able to satisfy the Authority with regards to clarifications/information/confirmations sought from the Bus Operator, the Authority, at it's sole discretion, can consider such bids ineligible for next stage of opening of price bid.
- Price bids of the bidders only those who are meeting eligibility and qualification criteria and successful completion of trials shall be opened.

8.3. Opening of Price Bids:

After the evaluation of Technical Bid/ Eligibility and Qualification Submissions has been completed, shall open the Price Bids of only those Bidders who successfully have completed proof of concept(trials) in the state of Madhya Pradesh.

Proof of concept – The technically qualified bidders are required to conduct trial run of the offered Electric busor its base model variant for a period of minimum 15 days under below conditions,

Trial conditions – Vehicle should operate for

i. 9m Intracity Bus should be capable of running min of 200 kms + 20% contingency in a day with AC, Passengers/Sand bags (load details will be specified during trials), traffic conditions for 18hrs with one-time shift changeover time of not more than 30 minutes including travel time to charging station.

ii. 12m Intercity Bus should be capable of running 200 kms + 20% contingency (with 80% SOC) in a single charge in a day with AC, Passengers/Sand bags (load details will be specified during trials), traffic conditions for 18hrs;

in the presence of the JCTSL or any third party agency at the time of the POC. Technology for flash charging, fast charging or In case of battery swapping mechanism opted by the operator so as to not disturbing the bus headway. The detailing of the same has been mentioned in the annexure of the routes.

Bid determined to be responsive, meeting Eligibility Criteria and Qualification Criteria and submitted all required documents as per the requirement of RFP. Decision of

Authority in this regard will be final. Price Bids of those Bidders whose Technical Bid (not meeting Eligibility and/or Qualification Criteria and/not submitted required RFP fee and/or Bid Security) shall stand rejected and shall not be opened. Authority reserves the right to open the Price Bids with subsidy as per FAME II scheme.

Price Bids shall be opened online, in the presence of Bidders' representatives who choose to attend the Price Bid opening on such date and time which shall be communicated to the Bidders whose Technical Bid are accepted. The Bidder's representatives who are present at such opening of Price Bids shall sign a register evidencing their attendance as a witness to the Bids opening process. The name of Bidder, bid rates, etc. will be announced at such opening.

8.4. Clarification of Bids and Request for additional/ missing information

During evaluation of Bids, Authority may, at its discretion, ask the Bidder for a clarification or to submit additional or missing information to his Bid. The request for clarification or submission of information and the response shall be in writing. If the response from the bidder is not received by Authority before the expiration of the deadline prescribed in the written request, Authority reserves the right to proceed with evaluation process at the total risk and cost of the Bidder.

8.5. Evaluation of Price Bid and Award

Price Bid of only those Bidders meeting requirement shall be opened online.

Bidders are required to quote per Kilometer Charges in each part as per indicative Price Bid format specified in Annexure 13 in respect of cost payable to such Bidder by Authority towards Procurement, operation and maintenance of each type of Bus along with allied civil & electrical infrastructure. All prices shall be in Indian Rupees. The lowest Kilometer Charge in respect of corresponding categories of buses is the sole criteria after the determination/declaration of Eligibility and Qualification for determination of Preferred Bidder ("Preferred Bidder") under each Part. Authority may hold further negotiation with the preferred Bidder before the assignment of Letter of Acceptance.

In case sufficient number of bids is not received and only L1 bidder is present, Authority reserves the right to consider single bid received, order may be awarded to successful L1 Bidder.

In case of the Bid of the preferred Bidder (i.e. Lowest Bidder) is found seriously unbalanced by Authority in relation to the market rate or its internal estimate, the Authority shall be entitled to solicit, at its sole discretion, detailed price analysis for any or all items specified in Price Bid, from the Preferred Bidder and/or all Bidders to demonstrate the internal consistency of those prices.

"Market Rate" shall mean prevailing Per Km rate for the Urban buses with similar quality and specifications anywhere in India.

"Internal Estimate" shall mean per km rate prepared by Authority through its internal estimates.

9. Notification of Award

Within 15 days of Opening of Price Bid, the Authority will notify the Preferred/successful bidder to be confirmed in writing by registered/speed post/email that his bid has been accepted. This letter (hereinafter called `Letter of Award') shall name the sum (i.eKilometer Charges) which the Authority will pay to the Operator in consideration of operation and maintenance services as per terms of Contract. LOA shall also specify likely Bus Deployment/Delivery Schedule.

The notification of award through LOA will constitute the formation of the contract which shall be formalized and detailed further through the Bus Operator Agreement as executed by the parties.

The Letter of Acceptance (LOA) dispatched through 'Speed Post/ Regd. post/Fax/courier/email by hand shall constitute the formation of the Contract.

Prior to the expiry of the period of Proposal validity, the Authority shall notify the Preferred Proposer, by issuance of a Letter of Award (the "LOA"), in duplicate, and the Preferred Proposer shall, within 7 (seven) days of the receipt of the LOA, sign and return the duplicate copy of the LOA in acknowledgement thereof. In the event the duplicate copy of the LOA duly signed by the Preferred Proposer is not received by the stipulated date, the Authority may, unless it consents to extension of time for submission thereof, appropriate the EMD of such Preferred Proposer as Damages on account of its failure to acknowledge the LOA, and the next eligible Proposer may be considered. The Letter of Award shall stipulate the sum of quoted fee and performance security which the Service Provider shall pay/furnish to the Authority.

10. Performance Security (PS)

Before signing of the Bus Operator Agreement, the Successful bidder(s) shall furnish Performance Security for the said project in the form of Bank Guarantee (As per format provided in the Annexure 12) in favor of "Jabalpur City Transport Services Limited." payable at Jabalpur at the time of signing of the Bus Operator Agreement as detailed below. The Bank Guarantee of Performance Security should be on any Nationalized/Scheduled Bank. The Successful Bidder shall be required to furnish additional performance security, in proportion to the additional quantity of buses ordered by the Authority, with pursuant to the provisions of the RFP. All charges, fees, costs and expense for providing the PS deposit in the form of Bank Guarantee shall be borne and paid by the Operator. Performance Security shall be of 5 % value of the contract amount calculated. If the Bidder, fails to furnish the same, it shall be lawful for Authority to forfeit the EMD and cancel the contract or any part thereof.

Authority shall be entitled to forfeit the amount of the Performance security in whole or in part in the event of any default, failure or neglect on the part of the Operator in the fulfilment or performance and obligation in all respects of the Agreement as per the provision set forth in the Agreement. The PS shall not carry any interest.

If the contract is terminated for reasons other than which can be attributable to the Operator, the Performance Security, shall, subject to the Authority's right to receive amounts, if any, due from the Operator under this contract, be duly discharged and released to the Operator.

The Performance Security shall remain in full force and effect during the Contract period and 180 days thereof that would be taken for satisfactory performance and fulfilment in all respects of the contract. On the performance and completion of the contract in all respects, the Performance Security will be returned to the Operator without any interest.

11. Signing of Bus Operator Agreement

The Successful Bidder(s) would be required to execute the Bus Operator Agreement,with such terms and conditions as specified in Volume 2: Bus Operator Agreement of the RFP and any additional terms may be considered necessary by the Authority at the time of finalization of the Bus Provider Agreement. Such Agreement shall also have all correspondence (to be discussed and agreed upon separately) between Authority and the Successful Bidder(s) and additional clauses and/or provisions that further explain or clarify provisions of this RFP, or certain provisions which Authority may be required to include as per law or being a publicly owned

institution, as per its practices. Authority hereby reserves the right to modify the terms of the Agreement.

The signing of the Bus Operator Agreement shall be completed within 15 days from issuance of the Letter of Acceptance to the Successful Bidder.

11.1. Expenses for the Bus Operator Agreement

Any and all incidental expenses of execution of the Bus Operator Agreement shall be borne by the Successful Bidder.

11.2. Annulment of Award

Failure of the Successful Bidder(s) to submission of Performance Security and Adjustable Security Deposit as per RFP terms and any other requirements and /or the provisions of the Bus Operator Agreement shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security.

11.3. Failure to abide by the Bus Operator Agreement

The conditions stipulated in the Bus Operator Agreement shall be strictly adhered to by the Bus Operator and any violation thereof by the Bus Operator may result in termination of the Bus Operator Agreement without prejudice to any rights available to Authority upon such termination as set forth in the Agreement.

12. Contacts during Bid Evaluation

Bids shall be deemed to be under consideration immediately after they are opened and until such time the Authority makes official intimation of award/ rejection to the Bidders. While the Bids are under consideration, Bidders and/ or their representatives or other interested parties are advised to refrain, save and except as required under the Bidding Documents, from contacting by any means, the Authority and/ or their employees/representatives on matters related to the Bids under consideration.

13. Confidentiality

Information relating to the examination, clarification, evaluation and recommendation for the Bidders shall not be disclosed to any person who is not officially concerned with the process or is not a retained professional advisor advising the Authority in relation to, or matters arising out of, or concerning the Bidding Process. The Authority will treat all information, submitted as part of the Bid, in confidence and will require all those who have access to such material to treat the same in confidence. The Authority may not divulge any such information unless it is directed to do so by any statutory entity that has the power under law to require its disclosure or is to enforce or assert

any right or privilege of the statutory entity and/ or the Authority or as may be required by law or in connection with any legal process.

14. Site Visit and Verification of Information

Proposers are encouraged to submit their respective Proposals after visiting the Authorities Office and ascertaining for themselves the availability and condition of passenger traffic, location, availability of power, fare and its sensitivity, applicable laws and regulations, and any other matter considered relevant by them. It shall be deemed that by submitting a Proposal, the Proposer has:

- made a complete and careful examination of the Proposal Documents;
- received all relevant information requested from the Authority;
- accepted the risk of inadequacy, error or mistake in the information provided in the Proposal Documents or furnished by or on behalf of the Authority relating to any of the matters referred to in Clause above;
- satisfied itself about all matters, things and information including matters referred to in Clause hereinabove necessary and required for submitting an informed Proposal, execution of the contract in accordance with the Proposal Documents and performance of all of its obligations thereunder;
- acknowledged and agreed that inadequacy, lack of completeness or incorrectness of information provided in the Proposal Documents or ignorance of any of the matters referred to RFP provision hereinabove shall not be a basis for any claim for compensation, damages, extension of time for performance of its obligations, loss of profits etc. from the Authority, or a ground for termination of the Contract Agreement by the Service Provider(s);
- acknowledged that it does not have a Conflict of Interest; and
- agreed to be bound by the undertakings provided by it under and in terms hereof.

The Authority shall not be liable for any omission, mistake or error in respect of any of the above or on account of any matter or thing arising out of or concerning or relating to RFP or the Bidding Process, including any error or mistake therein or in any information or data given by the Authority.

15. Fraudulent and Corrupt Practices

The Bidders 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, the Authority may reject a Bid without being liable in any manner whatsoever to the Applicant 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.

Without prejudice to the rights of the Authority under Clause (a) hereinabove, if a Bidder is found by the Authority 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 or RFP issued by the Authority during a period of 2 (two) years from the date such Bidder is found by the Authority 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, as the case may be.

For the purposes of this clause, the following terms shall have the meaning hereinafter respectively assigned to them:

"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 (for avoidance of doubt, offering of employment to or employing or engaging in any manner whatsoever, directly or indirectly, any official of the Authority who is or has been associated in any manner, directly or indirectly, with the Bidding Process or the LOA or has dealt with matters concerning the Contract or arising there from, before or after the execution thereof, at any time prior to the expiry of one year from the date such official resigns or retires from or otherwise ceases to be in the service of the Authority, shall be deemed to constitute influencing the actions of a person connected with the Bidding Process); or (ii) engaging in any manner whatsoever, whether during the Bidding Process or after the issue of the LOA or after the execution of the Contract, any person in respect of any matter relating to the Project or the LOA or the Contract or otherwise, who at any time has been or is a legal, financial or technical adviser of the Authority in relation to any matter concerning the Project;

"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;

"coercive practice" means impairing or harming, or threatening to impair or harm, directly or indirectly, any person or property to influence any person's participation or action in the Bidding Process;

"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

"restrictive practice" means forming a cartel or arriving at any understanding or arrangement among Bidders with the objective of restricting or manipulating a full and fair competition in the Bidding Process.

16. Conflict of Interest

A Bidder shall not have a conflict of interest (the "Conflict of Interest") that affects the Bidding Process. Any Bidder found to have a Conflict of Interest shall be disqualified. A Bidder may be considered to have a Conflict of Interest that affects the Bidding Process, if the relationship between two Bidders is established through common holding of at least 25% holding of equity/profit sharing in another company/firm, or in each other.

The Bidder, its Member (or any constituent thereof) and any other Bidder, its Member (or any constituent thereof) have common controlling ownership interest. Common controlling ownership interest for Company, Partnership Firm, and Proprietorship firm is defined as follows.

If Bidder is a Company: In such case, the Bidder (including its Member or any shareholder thereof of Bidder) possessing over 25% of the paid up and subscribed capital in its own company, Member as the case may be, also holds:

- more than 25% of the paid up and subscribed equity capital in the other Bidder, its Member, its Member is Company; and/or
- more than 25% of profit sharing in other Bidder, its Member such other Bidder, its Member is a Partnership firm. and/or
- Other Bidder, its Member which is a Proprietorship Firm.

If Bidder is a Partnership Firm: In such case, the Bidder or its Partners having a profit sharing of more than 25% of such Bidder or its Partners as the case may be also holds;

- more than 25% of the paid up and subscribed equity capital in the other Bidder, its Member of such other Bidder, its Member is Company; and/or
- more than 25% of profit sharing in other Bidder, its Member such other Bidder, its Member is a Partnership firm. and/or
- Other Bidder, its Member which is a Proprietorship Firm.

If Bidder is a Proprietorship Firm: In such case, the Bidder or its Proprietor of such Bidder or its Proprietor as the case may be also holds;

- more than 25% of the paid up and subscribed equity capital in the other Bidder, its Member of such other Bidder, its Member is Company; and/or
- more than 25% of profit sharing in other Bidder, its Member of such other Bidder, its Member is a Partnership firm. and/or
- Other Bidder, its Member which is a Proprietorship Firm.

It is to be noted that this disqualification shall not apply to any ownership by a bank, insurance company, pension fund or a public financial institution referred to in section 4A of the Companies Act 1956.

- a constituent of such Bidders is also a constituent of another Bidders; or.
- such Bidders receives or has received any direct or indirect subsidy from any other Bidder/s, or has provided any such subsidy to any other Bidders; or
- such Bidders has the same legal representative for purposes of this Bid as any other Bidders; or
- such Bidders has a relationship with another Bidders, directly or through common third parties, that puts them in a position to have access to each other's' information about, or to influence the Bid of either or each of the other Bidders.

17. Miscellaneous

The Bidding Process shall be governed by, and construed in accordance with, the laws of India and the Courts at Madhya Pradesh shall have exclusive jurisdiction over all disputes arising under, pursuant to and/ or in connection with the Bidding Process.

The Authority, in its sole discretion and without incurring any obligation or liability, reserves the right, at any time, to;

- Suspend and/ or cancel the Bidding Process and/ or amend and/ or supplement the Bidding Process or modify the dates or other terms and conditions relating thereto;
- Consult with any Bidder in order to receive clarification or further information;
- Retain any information and/ or evidence submitted to the Authority by, on behalf of, and/ or in relation to any Bidder; and/ or
- Independently verify, disqualify, reject and/ or accept any and all submissions or other information and/ or evidence submitted by or on behalf of any Bidder.

It shall be deemed that by submitting the Bid/ Eligibility and Qualification Submission, the Bidder agrees and releases the Authority, its employees, agents and advisers, irrevocably, unconditionally, fully and finally from any and all liability for claims, losses, damages, costs, expenses or liabilities in any way related to or arising from the exercise of any rights and/ or performance of any obligations hereunder, pursuant

hereto and/ or in connection with the Bidding Process and waives, to the fullest extent permitted by applicable laws, any and all rights and/or claims it may have in this respect, whether actual or contingent, whether present or in future.

ANNEXURES

Annexure 1

Cover Letter

{On bidder's letterhead/ Lead Member in case Bidder is a Consortium}
(Bidders are required to fill up all the blank spaces in this Bid Proforma and its enclosures.)

Dated:

To
The Managing Director
Jabalpur City Transport Services Limited.
Cabin No 3 Transport Cell Jabalpur Smart
City Office Manas Bhawan Wright Jabalpur
Pin- 482002 Ph-0761-4014501 Email- info@jctsl.org

Subject: Submission of Bid for Request for Proposal (RFP) for Selection of Operator for Bus Procurement, Operation and Maintenance 50 numbers of Fully Built 9/12m AC ELECTRIC Buses and Allied Electrical & Civil Infrastructure on Gross Cost Contract basis.
Dear Sir/Madam,

1. Having examined the 'Instructions to Bidder's, Scope of Services, terms and conditions, Annexure and Content of the RFP, we undersigned, hereby submit /our Bid for the aforesaid project. Our Bid is unconditional.

2. We are bidding as Consortium. The names of our Consortium Members are as follows: (Please provide names)
   OR
   We are bidding as Single Bidder.

3. We are bidding for 50 number(s) __ meter AC Electric Bus

Note: It is mandatory to provide the above information as the EMD or Bid Security amounts need to be verified against these. The bid documents shall be rejected if the above information isn't provided.

4. We acknowledge that the Authority will be relying on the information provided in the Bid and the documents accompanying such Bid for pre-qualification of the Bidder for the aforesaid project, and we certify that all information provided in the Bid/Eligibility and Qualification Submission is true and correct; nothing has been omitted which renders such information misleading; and all documents accompanying such Bid are true copies of their respective originals.

5. We shall make available to the Authority any additional information it may find necessary or require to supplement or authenticate the Qualification statement.

6. We acknowledge the right of the Authority to reject our Bid without assigning any reason or otherwise and hereby waive, to the fullest extent permitted by applicable law, our right to challenge the same on any account whatsoever.

7. We understand that you may cancel the Bidding Process at any time and that you are neither bound to accept any Bid that you may receive nor to invite the Bidders to Bid for the Project, without incurring any liability to the Bidders.

8. We undertake that in case due to any change in facts or circumstances during the Bidding Process, we are attracted by the provisions of disqualification in terms of the provisions of this RFP, we shall intimate the Authority of the same immediately.

9. We hereby undertake that we have examined and familiarized ourselves fully about the nature of assignment/Project, all instructions, forms, terms and conditions of RFP, local condition and any other matters considered relevant by paying a visit(s) to the site(s). We also undertake that we have ascertained the availability and condition of passenger traffic, location, working conditions, applicable laws and regulations, and any other matter considered relevant by them.

10. We hereby undertake that we have made a complete and careful examination of the RFP received all relevant information requested from the Authority;

11. accepted the risk of inadequacy, error or mistake in the information provided in the RFP or furnished by or on behalf of the Authority relating to any of the matters referred to in Clause above; and acknowledged that it does not have a Conflict of Interest agreed to be bound by the undertakings provided by it under and in terms hereof.

12. The Authority shall not be liable for any omission, mistake or error in respect of any of the above or on account of any matter or thing arising out of or concerning or relating to the RFP or the Bidding Process, including any error or mistake therein or in any information or data given by the Authority.

13. 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 Authority in connection with the selection of the Bidder(s), or in connection with the selection/ Bidding Process itself, in respect of the above mentioned Project and the terms and implementation thereof.

14. We agree and undertake to abide by all the terms and conditions of the Volumes 1, 2, 3 of the RFP document.

For and on behalf of

Signature :

Name :

Designation :

Bidding Organization / Lead Member:

Date :

Place :

Round Stamp/Seal :

Name of Non lead member organization in case it is a consortium:

Annexure 2

General Information of Bidder

{On bidder's letterhead} [All Consortium members should provide in case Bidder is a Consortium]

1. Bidders name and contact details.

- Name of the Bidder Organization:
- Nature of Entity (company /partnership/Proprietorship, etc.):
- Address of Registered Office:
- Phone and E-mail:

Main Line of Business with experience:

Details of top ten shareholders / partners along with their share (if information of this nature is not already present in Annual Reports shared)

2. Bus Manufacturer related Documents

- Registration Certificate of Factory and License for manufacturing of Buses
- Evidence of bus manufacturing facilities
- Quality Certificate (from reputed/ recognized Firm) - Certificate No. - Date of Validity
- Details of Safety Critical Items with their Type Approval Certificate No. and Date (wherever applicable)
- Quality Management System Certification (e.g. ISO: 9001-2000)
- Quality System Certification (e.g. ISO: 16949-1999)
- Environment Management Certification(ISO:14001-1996)
- ARAI accreditation,
- ISO certification,
- ESIC and Employee Provident fund -EPF registration number and Capabilities/Preparedness may be verified through Site visit.

3. Any Technology Partner related Documents

- Registration Certificate of Factory and License for manufacturing of Batteries/Electric System
- Quality System Certification
- Environment Management Certification

4. Copy of the Registration of the bidder (Certificate of Incorporation, Memorandum of Article, Article of Association, Partnership Deed, GST Registration copy, Shops and Establishment Dept. Certificate, etc. as may be applicable) (to be attached separately).

Authorized signatory

Annexure 3

Format for Certification for Minimum Average Annual Turnover (MAAT) from Chartered Accountant

{On Statutory Auditor's letterhead}

[In case of Consortium, all members should provide MAAT Certificate]

This is to certify that the Minimum Annual AverageTurnover (MAAT) furnished by M/s. _____ for last 3 Financial Years is as detailed below and as furnished in the enclosed statement of accounts, is verified by us and found correct.

Financial Year	Turnover
	INR _____ Crores
	INR _____ Crores
	INR _____ Crores

CHARTERED ACCOUNTANT:

(Signature with Seal)

My Membership No:

Address:

Annexure 3A

Format for Certification for Net worth From Chartered Accountant

(To be uploaded by the Bidder In case of consortium, by each partner as appropriate to demonstrate that they meet the requirements on the letterhead of the Chartered Accountant)

Date:

To

The Managing Director

Jabalpur City Transport Services Limited.
Cabin No 3 Transport Cell Jabalpur Smart
City Office Manas Bhawan Wright Jabalpur
Pin- 482002 Ph-0761-4014501 Email- info@jctsl.org

Dear Sir/Madam,

We have examined the books of accounts and other relevant records of <<Bidder / consortium Partner Name along with registered address>>. On the basis of such examination and according to the information and explanation given to us, and to the best of our knowledge & belief, we hereby certify that the net worth of the bidder is as per details given below:

Information from Balance Sheets (in INR)

Financial Year	2017-18	2018-19	2019-20 (as on 31st March 2019)
Net worth			

(Signature of the Chartered Accountant) Name :
Designation :
Membership Number :
Date :
Company Seal :
Business Address :

Annexure 4

Undertaking for Bus Ownership or Operational Experience

{On bidder's letterhead}

[[Bus Operator either as part of Consortium shall provide experience statement and evidences. If Other Members of Consortium may also provide experience statement and evidence if it has relevant Bus Operation/Ownership Experience]

I hereby declare that our company/firm has experience of operation of following no of Buses through ownership or contractual right.

For Operation experience for required no of Buses for last five years (starting from 2013-14) No. of Buses operated through contract/subcontract by the bidder.

Details to be submitted in the table. ○ No. of buses contracted ○ Contract period ○ Contract date and number ○ Name of the client ○ The copy of contract document/Letter of Award / Letter of Intent ○ Completion certificate / Interim Satisfaction Certificate from the client for respective contract if available	

In case operation contract is held in partnership/JV/Consortium, the JV/Consortium agreement copy specifying the share of each partner in the JV must be submitted.

Annexure 5

Bus Manufacturing Experience

- Details may be given for all types of Buses supplied by Bidder in past five years.
- Details are to be furnished for the supplies made by the Bidder or its principal in five years prior to the year in which the date of Opening of Bid falls.

S. No	Contract placed (full name & Address of Authority)	Contract No. & Date	Description and Quantity of Buses Ordered	Date of Completion of Delivery (as per Contract)	Documentary evidences (Purchase Order/ Letter of Award/ Bus Purchase Agreement/work Completion certificate)*
1	2	3	4	5	6

*: Copy of the documentary evidences, signed by the Authorised Signatory shall be attached.

SIGNATURE AND SEAL OF THE BIDDER/BUS MANUFACTURER

Annexure 6

UNDERTAKING FROM ORIGINAL ELECTRIC BUS MANUFACTURER

We, M/s. _____, (Name of an OEM) Original manufacturer of the Electric Battery Operated Bus, hereby undertake and confirm the following: -

i) We, will give priority to M/s. _____ , (Name of Bidder) in providing the Contracted Buses to the Bidder as per delivery schedule once agreed [i.e. all 50 Air-Conditioned Electric Buses (as mentioned in Scope of Work) to be supplied starting as per mentioned in the RFP of issue of LOA by Authority}.

ii) We will provide adequate service support (AMC) to ensure smooth running of the Contracted Buses offered by the Bidder.

iii) We will ensure timely supply of spare parts to the Bidder for the maintenance of contracted buses.

iv) We will prioritize training to the Drivers and Technicians of the Bidder.

v) We will provide the requisite technical know-how from time to time with technical literature to the Bidder and Authority.

vi) The vehicle being offered is _____ (make and model) and its specifications are in compliance with RFP conditions.

Stamp & Signature of the Authorized Signatory of Electric Bus Manufacturer

Annexure 7

No Blacklisting Certificate

{Notarization is required}

Format of self-certificate stating that the Entity/Promoter/s / Director/s of Entity are not blacklisted (On a Stamp Paper of relevant value)

All Consortium Member should provide in case Bidder is a Consortium]

No Blacklisting Certificate

M/s. …… (Name of the Bidder), (the names and addresses of the registered office) hereby certify and confirm that we or any of our promoter/s / director/s or our firm as well as our Consortium member) as defined in RFP are not barred by Government of Madhya Pradesh (GoM) / any other entity of GoM or blacklisted by any state government or central government / department / Local Government agency in India or similar agencies from foreign countries from participating in Project/s,either individually or as member of a Consortium for last one year from (Bid Due Date)

We further confirm that we are aware that our Bid for the captioned Project would be liable for rejection in case any material misrepresentation is made or discovered with regard to the requirements of this RFP at any stage of the Bidding Process or thereafter during the agreement period. Dated this ……..Day of ……., (Year).

Name of the Bidder

Signature of the Authorized person

Name of the Authorized Person

Annexure 8

Statement of Deviation from Technical Specifications

We hereby state the deviations from the Bus Technical Specifications in our offer. We understand that the Authority has the right to discuss these deviations with us before finalization of Technical Bid and before final bid aware. We understand and accept that in the event of material deviation, our bid is likely to be rejected.

Sr. No.	Technical Specification Clause Reference and Provision.	Deviation proposed	Rationale thereof

Signature and Seal of the Bidder

Annexure 9

Format of Power of Attorney for Authorized Signatory to Bid

(Applicable in case of bid not being signed by the person directly authorized by Board of the firm. In the latter case, please provide a copy of the relevant Board Resolution/Partner Resolution signed by Company Secretary/Director/Partner authorizing the Signatory)

{On Requisite Stamp Paper}

[All Consortium Member should provide in case Bidder is a Consortium]

KNOW ALL MEN by these presents that we, …… [name of the Company/partnership firm], acompany incorporated under the Companies Act 1956/2013, / Firm having partnership deed as per partnership act and having its Registered Office/office at …… [Address of the Company/partnership firm] (hereinafter referred to as "Company/firm"):

WHEREAS in response to the Request for Proposal (RFP) for Selection of Bus Operator for Procurement, Operation and Maintenance of AC Fully Built Pure Electric Buses on Gross Cost Contract Basis of 50 numbers of 9m/ 12 m Standard Compliant AC ELECTRIC Buses on GrossCost Contract basis for Authority Project for Madhya Pradesh, ("Project"), as per the Scope of Work specified in RFP, the Company/ firm is submitting Bid Comprising Eligibility and Qualification Submission for the project, and is desirous of appointing an attorney for the purpose thereof.

WHEREAS the Company deems it expedient to appoint Mr._____son of Mr. _____resident of _____, holding the post of _____as the Attorney of the Company/firm. [name of the company/firm] do hereby

NOW KNOW WE ALL BY THESE PRESENTS, THAT

nominate, constitute and appoint…….[name & designation of the person]……as its true and lawfulAttorney of the Company/ firm to do and execute all or any of the following acts, deeds and things for the Company/ firm in its name and on its behalf, that is to say :

To act as the Company's/firm's official representative for submitting the Bid Comprising Eligibility and Qualification Submission for the said project and other relevant documents in connection therewith;

To sign all the necessary documents, papers, testimonials, Bids, representations and correspondence necessary and proper for the purpose aforesaid;

To RFP/bid documents, receive and make inquiries, make the necessary corrections and clarifications to the Bid and other documents, as may be necessary;

To do all such acts, deeds and things in the name and on behalf of the Company/Partnership firm as necessary for the purpose aforesaid.

The common seal of [name of the company/Partnership firm] was here unto affixed pursuant to a resolution passed at the meeting of Committee of Directors held on ___ Day of ----------, 2019 in the presence of [name & designation of the person] and countersigned by [name & designation of the person] of the Company/firm of [name of the company]	---------- [name & designation of the person] ---------- [name & designation of the person]

Annexure 10

Format of Power of Attorney to Lead Member of Consortium

{To be provided in case Bidder is a Consortium}

{On Requisite Stamp Paper}

Whereas the _____(Name of the Authority), (the "Authority") has invited bids from interest parties for the …….. (Name of the RFP) (the " Project"). Whereas, …….. and ……... (collectively the "Consortium") being Members of the Consortium are interested in bidding for the Project in accordance with the terms and conditions of the Request for Proposal and other connected documents in respect of the Project, and Whereas, it is necessary for the Members of the Consortium to designate one of them as the Lead Member with all necessary power and authority to do for and on behalf of the Consortium, all acts, deeds and things as may be necessary in connection with the Consortium's bid for the Project and its execution.

NOW THEREFORE KNOW ALL MEN BY THESE PRESENTS

We, M/s …… having our registered office at ……, and

M/s. ……, having our registered office at ……, and

M/s. ……, having our registered office at ……, and

(hereinafter collectively referred to as the "Principals") do hereby irrevocably designate, nominate, constitute, appoint and authorize M/s ……, having its registered office at

……, being one of the Members of the Consortium, as the Lead Member and true and lawful attorney of the Consortium (hereinafter referred to as the "Attorney") and hereby irrevocably authorise the Attorney (with power to sub-delegate) to conduct all business for and on behalf of the Consortium and any one of us during the bidding process and, in the event the Consortium is awarded the Contract, during the execution of the Project, and in this regard, to do on our behalf and on behalf of the Consortium, all or any of such acts, deeds or things as are necessary or required or incidental to the submission of its bid for the Project, including but not limited to signing and submission of all applications, bids and other documents and writings, accept the Letter of Award, participate in bidders' and other conferences, respond to queries,

submit information/ documents, sign and execute contracts and undertakings consequent to acceptance of the bid of the Consortium and generally to represent theConsortium in all its dealings with the Authority, and/ or any other Government Agency or any person, in all matters in connection with or relating to or arising out of the Consortium's bid for the Project and/ or upon award thereof till the Agreement is entered into with the Authority. AND hereby agree to ratify and confirm and do hereby ratify and confirm all acts, deeds and things done or caused to be done by our said Attorney pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Attorney in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us/ Consortium.

IN WITNESS WHEREOF WE THE PRINCIPALS ABOVE NAMED HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS …… DAY OF ……., 20….

For ……..
(Signature, Name & Title)

For ……..
(Signature, Name & Title)

For ……..
(Signature, Name & Title)

For ……..
(Signature, Name & Title)

For ……..
(Signature, Name & Title)

For ……..
(Signature, Name & Title)

(Executants)
(To be executed by all the Members of the Consortium)

Accepted

Notarised

(Signature, name, designation and address of the Attorney)
Witnesses:

1.

2.

Annexure 11

Joint Bidding Agreement for Consortium

{On Requisite Stamp Paper}

(To be provided by Consortium)

The Bidder bidding as Consortium shall provide a Joint Bidding Agreement between the consortium members specifying the followings:

- Convey the intent to Consortium Agreement as per clause 2 of Volume of RFP, which would enter into the Contract Agreement and subsequently perform all the obligations of the Operator as per Agreement terms, in case the Project is awarded to the Consortium;
- Clearly outline the proposed roles and responsibilities, if any, of each member
- Tenure of Joint Bidding Agreement (ATLEAST TILL Bid Validity Period)
- Include a statement to the effect that all members of the Consortium shall be liable jointly and severally for all obligations of the Operator in relation to the Project during Contract Period.
- The role and responsibility of any member must be commensurate with the technical/financial capabilities that such member is contributing towards meeting the qualification criteria. Each consortium member is liable to contribute resources in terms of knowledge, skills and trained manpower commensurate with its role and responsibilities during the Contract Period.
- No change in composition of the Consortium shall be permitted during the Bidding Process and during the Contract Period, in case the Project is awarded to the Consortium.

Annexure 12

Format for Bank Guarantee for Bid Security / Earnest Money Deposit

To be submitted online.

Annexure 13

Indicative Format of Price Bid

(To be submitted Online Only at www.mptenders.gov.in Bidders submitting this Price Bid in physical form will have their bids rejected)

With Subsidy as per FAME II Scheme: as per the notification no. E.No. 6(09)/ 2019 – NAB. II (Auto) dated – 04/06/2019.

e. Maximum demand incentive available from DHI under FAME India Scheme Phase II will be as given below.

a. Standard Bus (length > 10 m to 12 m): 55 Lakhs

b. Midi Bus (length > 8 m to 10 m): 45 Lakhs

c. Mini Bus (length > 6 m to 8 m): 35 Lakhs

Sr. No	Item	Rs per KM rate for 9m AC Electric bus as per the annexure 4.	Rs per KM rate for 12m AC Electric bus as per the annexure 4.
1	**2**	**3**	**4**
1	Base Rate (INR)		
2	Taxes (INR)		
3	Total Rate (INR)		

- Bidder should quote the price inclusive of all taxes. Evaluation of the price bids will be on the basis of total rate with subsidy.
- Each bidder must quote his km rates after through reading of this RFP document and Response to Queries/Amendment documents, breakup between his variable and fixed cost, detailed due diligence of the site, city conditions, passenger load and likely wear and tear of the buses.
- AUTHORITY reserves the right to evaluate the bid with subsidy as per FAME II.
- It is mandatory for the bidders to offer the rates for both sets i.e., with subsidy.
- The bids shall be evaluated as per the lowest cost quoted per km.

Annexure 14

Security Deposit-Cum-Performance Guarantee Form

INSTRUCTIONS:

The Bank Guarantee should be executed exactly as per this Draft on a stamp paper of INR 100/- alongwith a Confirmatory Letter from the regional office of the Bank concerned in an enclosed format

A certified copy of the Power of Attorney under which the person is authorized to sign this guarantee bond may please be sent to the Authority alongwith the guarantee. This copy should be certified by the Agent of the Bank under his seal.

1. Against Contract No. _____ dated _____ 20____ (hereinafter called the Said "Contract") entered into between _____ (Name/s of the persons authorized to sign on behalf of Operator) Inhabitants of _____carrying on bus in essat _____ (Full address of the firm) _____ (Name of Business) Under the style and name of M/s. _____ (Name of the firm) (hereinafter called the "Operator") of the one part and the JCTSL. (hereinafter called "Authority") for the purpose of the undertaking (in which expression are included, unless the inclusion is inconsistent with the context or meaning thereof his/her successor or successors for the time being holding the office of Managing Director of the second part and WHEREAS at the request of the Operator we _____ (Full name and address of the Bank) Bank are holding in trust in favour of the Undertaking the amount of _____ (Rupees _____ in words) to indemnify and keep indemnified the Authority against all losses, damages, expenses or the Contractor of any of the terms and conditions of the said Contract and/or the performance thereof. We agree that the decision of the Managing Director, whether any breach of the terms and conditions of the said Contract and/or any failure in the performance thereof has been committed by the Operator and the amount of loss, damage, costs, expense or otherwise that has been caused or suffered by the Authority shall be final and binding on us and the amount of the said loss, damage, costs and expenses or otherwise shall be paid by us forthwith on demand to the Authority.

2. We _____ (Name of the firm and Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for satisfactory performance and fulfillment in all respects of the said Contract including the minimum guarantee of 120 months

from the date of final acceptance as per the clauses included in the tender and including Operator's obligation

to remedy all defects in vehicle, material, services as well as operation that may develop under normal use of 9m / 12m Standard Compliant Electric AC Buses provided always that before the expiry of the date of the validity of the guarantee herein contained, we shall, from time to time on being called upon by the Managing Director, extend the date of validity thereof for the period of 6 months on each occasion and that if any claim accrues or arises against us _____ (Name of the Bank) by virtue of this guarantee before the said date as extended from time to time, the same shall be forcible against us _____ (Name of the Bank) notwithstanding the fact same is enforced after the said date and extended from time to time, provided that notice of any such claim has been given by the Managing Director before the expiry of 6 months from the said extended date, payment under this :Letter of Guarantee" shall be made promptly upon our receipt of notice to that effect from the Managing Director.

3. It is fully understood that this guarantee is effective from the date of the said Contract and that we _____ (Name of the Bank) undertake not to revoke this agreement during its currency including the extended period without the consent in writing of the Managing Director.
4. We _____ (Name of the Bank) further agree that the Managing Director shall have the fullest liberty, without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Operator to extend the time of performance by the Operator from time to time or to postpone for any time from time to time any of the power exercisable by the Managing Director against the said Operator and to forbear or enforce any of the terms and conditions relating to the said Contract and we _____ (Name of the Bank) shall not be released from our liability under this guarantee by reason of any such variation or extension being granted to the said Operator or for any forbearance and/or on the part of the Managing Director or any indulgence by the Managing Director or by any other matter or thing whatsoever which under the law relating to sureties would, but for this provision have the effect of so releasing us from our liability under this guarantee.
5. We _____ (Name of the Bank) further agree that the guarantee herein contained shall not be affected by any change in the constitution of the said Operator or the Bank.
6. Notwithstanding anything contained herein:

- Our liability under this Bank Guarantee shall not exceed INR _____ (Rupees
- _____).
- The Bank Guarantee shall be valid upto _____ and the same can be further extended, if so requested by the applicant/Contractor.
- We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only if you serve upon us a written claim or demand on or before _____.
- The guarantee herein contained is subject to Madhya Pradesh jurisdiction.

This _____ day of _____ Two thousand and _____

In witness where of-Signed and delivered by the

above named _____ Bank by its Authorized Signatory as by authorized

Board Resolution passed on

Power of Attorney dated [……]

_____

Authorized Signatory

Name

Designation

In the presence of:

1.

2.

NAME OF THE BANK (ON THE BANK'S LETTER HEAD)

To
The Managing Director,
Jabalpur City Transport Services Limited

Ref.: Guarantee No. dated
For issued on behalf of

M/s.

_____
_____

Dear Sir/Madam,

We refer to the captioned Bank Guarantee issued on behalf of our clients M/s._____, which is drawn at our _____ Bank.

The above Bank Guarantee has been given by our clients towards Security Deposit / Performance Guarantee for the execution of the contract with the AUTHORITY.

In this regard, we assure AUTHORITY that in the event of any demand is made by you for invoking the said Bank Guarantee, the Bank will honour the commitment made by them and the payment will be made to you without any demur forthwith upon receipt of demand from your office as per the terms of the guarantee. We, once again, assure you that the interest of your organization under any circumstances will be fully protected by us.

Yours faithfully,

GENERAL MANAGING
DIRECTOR OF THE BANK

Annexure 15

Undertaking for Handing Over of Civil Infrastructure

{On bidder's letterhead}

Date: _____

To
The Managing Director
Jabalpur City Transport Services Limited

Sub: AUTHORITY Electric Bus Operations - Undertaking for Handing over Civil Infrastructure

Dear Sir/Madam,

I am writing with respect to the project of Procurement, Operation and Maintenance of Operator owned 50 Nos. of 9/12m Electric AC Buses and Allied Civil Infrastructure for Urban Bus Operations in Jabalpur.

I hereby confirm that after completion of Contract Period, the entire civil infrastructure established at depot(s) for charging of Electric Buses will become the property of AUTHORITY solely for its further usage by AUTHORITY. _____ (Name of the Bidder) will not have any right on this Infrastructure after completion of Contract Period.

This letter will serve as our confirmation of contract agreement of various aspects respecting the handover.

Yours sincerely,

Name:
Designation:
Organization:
Seal of the Organization:

Annexure 16

DEPOT DETAILS

Depot Details shall be shared post award of LOA to Bidder.

Annexure 17

LETTER OF SUPPORT FOR SUBSIDY FROM FUNDING AGENCY

ANNEXURE-18

DRAFT ESCROW AGREEMENT

(The said draft would be finalized post award of work and is only an indicative ESCROW account Agreement)

THIS ESCROW AGREEMENT (the "Agreement") is made at on _____, by and amongst:

1. [_____], [a company incorporated in India under the Companies Act, 1956/a banking company registered under the Banking Regulation Act, 1949], with its registered office at [_____] (hereinafter referred to as the "**ESCROWBank**" which expression shall, unless it be repugnant to the subject or context thereof,include its successors and permitted assigns) of the **FIRST PART:**

2. The [**JABALPUR TRANSPORT SERVICES LIMITED]**/[**Special Purpose Company for Operation ofUrban Bus Services**] [description of the relevant Authority] and having its principal officeat [_____], (hereinafter referred to as the "JCTSL" which expression shall include its successors and permitted assigns) OF THE SECOND PART;

AND

3. [**XYZ LTD**.], a company incorporated under the Companies Act, 1956 acting through [_____] having its registered office at [_____] (hereinafter referred to as the "Operator", which expression shall include its successors and permitted assigns) **OF THE THIRD PART**;

The ESCROW Bank, the JCTSLand the Operator are hereinafter collectively referred to as the"Parties" and individually as the "Party".

WHEREAS:

(a) The JCTSL[has the power/function] to ensure the provision of public bus transport services within Jabalpur City & its extended suburbs.

(b) The Operator was selected by the JCTSL under a competitive bidding process and is established, *inter-alia* with the objectives of providing Bus Services within the Bus Service Area.

(c) The JCTSL and the Operator have entered into an Operator Agreement dated [_____] (hereinafter referred to as "Operator Agreement"), whereby the JCTSL has granted to the Operator a non exclusive right to operate and maintain the Buses and provide Bus Services within the specified BusService Area and the Operator has agreed to undertake the Project on the terms and conditions contained therein.

(d) Under the terms of the Operator Agreement, it has been stipulated that an ESCROW account shall be created into which the JCTSLshall deposit all the revenues generated and all the income accruing from the operation and maintenance of the Contracted Buses and provision of Bus Service within the Bus Service Area including but not limited to the Passenger Fare collected by the JCTSL(itself or through a third party) in the ESCROW Account.

(e) This Agreement sets forth the detailed mandates, terms and conditions and operating

procedures for such ESCROW account.

NOW, THEREFORE, in consideration of the premises contained herein, the Parties hereto agree as follows:

1. Definitions

1.1 For the purposes of this Agreement, unless the context otherwise requires, capitalized terms shall have the meaning set forth hereunder. "**Beneficial Parties/Party**" means the JCTSLand the Operator as the case may be. "**Business Day**" means any day of the week (excluding Saturdays, Sundays and public holidays) on which banks in are generally open for business;

"**Dispute**" shall mean any dispute, difference, question or controversy between the Parties arising out of, in connection with or in relation to this Agreement.

"**Event of Default**" shall mean an event or default of the Operator under the Operator Agreement, as certified by the JCTSLin a written notice in this regard to the ESCROW Bank. "**Month**" shall mean a calendar month.
"**Priority Cash-now Application**" shall have the meaning ascribed to the term in Clause 3.5(B) (a) hereunder;

"**Tax**" shall mean the Goods & Service Tax (GST) and other such analogous payments due under Applicable Laws.

Other capitalized terms used herein (and not defined herein) but defined under the Operator Agreement shall have the meaning ascribed to the term under the Operator Agreement

1.2 In this Agreement, unless the context otherwise requires, the rules of interpretation and construction as mentioned in the Operator Agreement shall apply.

2. Establishment of ESCROW Account

2.1 Establishment of the Accounts, the JCTSLand the ESCROW Bank confirm that the ESCROW Bank has established, in the name of at the ESCROW Bank's branch, an account titled the **"ESCROW Account**".

2.2 General Right or Withdrawal The ESCROW Bank shall not make any transfer or withdrawal other than in accordance with this Agreement, unless the ESCROW Bank has received the prior written instructions of the JCTSLauthorizing such use.

3. Deposits into and Withdrawals from the ESCROW Account

3.1 The JCTSLshall deposit all the revenues that it receives from Bus Operations under the terms of the Operator Agreement.

3.2 The JCTSL shall, at the time of opening the ESCROW Account, give irrevocable instructions, under the ESCROW Agreement, to the ESCROW Bank instructing, inter

alia, that deposits in the ESCROW Account shall be appropriated in the following order based on the receipt of relevant demand or instructions:

a. all taxes due and other statutory dues

b. Operator Payment after deducting any taxes/charges under Applicable Law and as specified under the Operator's Agreement. Provided, however, the ESCROW Account can only be operated at all times by the JCTSL.

4. ESCROW Bank Provisions

4.1 ESCROW Bank and the Beneficial parties

(a) The Beneficial Parties hereby appoint the ESCROW Bank for benefit of the Beneficial Parties in connection herewith, and authorize the ESCROW Bank to exercise such rights, powers, authorities and discretions as are specifically delegated to the ESCROW Bank by the terms hereof together with all such rights, powers, authorities and discretions as are reasonably incidental hereto, and the ESCROW Bank accepts such appointment pursuant to the terms hereof.

(b) The JCTSLhereby agrees to pay to the ESCROW Bank, fees of ` [_____] per[_____] consideration for acting as the ESCROW Bank hereunder.

4.2 **Obligation of the ESCROW Bank**

(a) undertakes to perform only such duties as are specifically set forth to be performed in this Agreement. in accordance with the terms and conditions contained herein, and further undertakes to act in good faith and without negligence;

(a) shall, within [five (5)] Business Days after receipt, deliver a copy to the JCTSLacting through [_____] of any notice or document received by the ESCROW Bank (in its capacity as the ESCROW Bank) from the Operator or any other entity;

(b) Shall, within [five (5)] Business Days after receipt deliver a copy to the Operator of any notice or document received by the ESCROW Bank (in its capacity as the ESCROW Bank) from the JCTSLor any entity in connection herewith; and

(c) Shall within seven (7) Business Days prior to any date on which any payment is due to a Beneficial Party in accordance with the terms and conditions of this Agreement, provide notice to the JCTSLof any anticipated shortfall in theESCROW Account (or any account there under) for making any payments due in accordance with the terms and conditions of this Agreement.

5. Term and Termination

5.1 This Agreement shall, unless terminated earlier by the mutual consent of the Parties or otherwise in accordance with the provisions of this Clause by written notice from the JCTSL to the ESCROW Bank, remain in full force and effect for the duration of the Operator Agreement.

5.2 The JCTSLmay, at any time may remove the ESCROW Bank, with or without cause, and appoint a successor ESCROW Bank by written notice of such action to the Operator, the ESCROW Bank and the successor ESCROW Bank.

5.3 If, at any time, the ESCROW Bank or any of its associates, shall become a Beneficial Party and after such time there is an Event of Default, the ESCROW Bank shall resign as ESCROW Bank immediately upon the occurrence of such Event or Default, if in the sole judgment of the other Beneficial Parties (which, for this purpose, shall not include the ESCROW Bank), there shall be, or be reasonably likely that there will arise, any conflict in or impediment to the ESCROW 'Bank's performance as ESCROW Bank under this Agreement.

5.4 The ESCROW Bank shall be entitled to terminate its services under this Agreement if the JCTSLfails to comply with any of its material obligations owed to the ESCROW Bank under this Agreement and fails to remedy the failure within [60 (sixty)] days after receipt of notice thereof from the ESCROW Bank in relation thereof. Provided however, the JCTSLhas arranged for the appointment of a successor ESCROW Bank and arrangements are made for the transfer of amounts deposited in the ESCROW Account (including any sub-accounts thereof) to new accounts established with successor ESCROW Bank.

5.5 Any successor ESCROW Bank appointed as provided in accordance with this Clause shall execute, acknowledge and deliver to, and for the benefit of, the Beneficial Parties

and to its predecessor ESCROW Bank an instrument accepting such appointment, and thereupon the resignation or removal of the predecessor ESCROW Bank shall become effective and such successor ESCROW Bank, without any further act, deed or conveyance, shall become vested with all the rights, powers, duties and obligations of its predecessor hereunder, as if it was originally named as ESCROW Bank;

5.6 provided that on the written request of the Beneficial Parties or of the successor ESCROW Bank, the ESCROW Bank ceasing to act shall take such steps or actions as are required of it by the Beneficial Parties. Including without limitation the execution and delivery of an instrument or instruments transferring and assigning to such successor ESCROW Bank (without obligation to indemnify such successor) all the rights and powers of the ESCROW Bank so ceasing to act, delivery to the Beneficial Parties all documents, instruments, etc. relating to its obligations under this Agreement.

5.7 Upon the reasonable request of any such successor ESCROW Bank, the Beneficial Parties shall execute any and all instruments in writing in order more fully and certainly to vest in and confer to such successor ESCROW Bank all such rights and powers.

5.8 Any corporation into which the ESCROW Bank may be merged or converted or with which it may be consolidated or any corporation resulting from any merger, conversion or consolidation to which the ESCROW Bank shall be a party, or any corporation succeeding to the corporate ESCROW Bank's rights or business or either, shall, subject to approval of the JCTSL, be the successor of the ESCROW Bank with all rights, benefits, obligations and duties as were originally available and provided for to the transferor ESCROW Bank in relation to the merger, conversion or consolidation proceedings or process.

6. Books and records

6.1 The ESCROW Bank shall be responsible for maintaining a correct and complete record of all transactions, deposits, withdrawals or transfer of funds relating to the ESCROW Account (and all subaccounts thereof).

6.2 The JCTSL shall have unrestricted access to review such books and records of the ESCROW Bank in relation to the ESCROW Account subject to restrictions in law.

7. Confidentiality

The ESCROW Bank agrees to keep all information ("Information") (including the terms and conditions of this Agreement and the Operator's Agreement) made available (whether before or after the date of this Agreement) by any of the Parties to the ESCROW Bank concerning the JCTSL, Operator or the Bus Services, and hereby undertakes and covenants not to communicate any Information, or allow any Information to be communicated to any third party unless:

a. in connection with any proceedings arising out of or in connection with this Agreement to the extent that such party may consider it necessary to protect its interest or the interests of the ESCROW Bank;

b. required to do so by an order of a court of competent jurisdiction whether or not ill pursuance of any procedure for discovering documents; or

c. pursuant to any Applicable Law in accordance with which such party is required to act;

d. to its auditors for the purposes of enabling the auditors to complete an audit of the ESCROW Bank or to its legal advisers when seeking bona fide legal advice in connection with this Agreement;

e. in circumstances where the relevant Information has been published or announced by the Concessionaire and/or any other Beneficial Party in conditions free from confidentiality or has otherwise entered the public domain without default on the part of the relevant Party; or

f. the Information was obtained by such ESCROW Bank from an independent or third party source who was not in breach of any confidentiality obligations with the Beneficial Parties.

8. Not Acting in Individual Capacity

The ESCROW Bank acts solely in its capacity as a ESCROW Bank and not in its individual capacity and all entities having any claim against the ESCROW Bank by reason of the transactions contemplated by the Operator Agreement shall look only to the JCTSLfor payment or satisfaction thereof, save and except as provided in this Agreement, other than as a result of its willful misconduct or gross negligence.

9. Representation and warranties of the ESCROW bank and the Operator

Each of the ESCROW Bank and the Operator represent and warrant that it is duly organized and validly existing under the laws of India with power to enter into this Agreement and to exercise its rights and perform its obligations hereunder and has taken all corporate and other actions required for the execution of this Agreement and the performance of its obligations hereunder. The ESCROW Bank represents and warrants that it shall hold all funds in the ESCROW Account for the benefit of the Beneficial Parties in accordance with the provisions of this Agreement and further represents and warrants that it has obtained all approvals, permits and other clearances required for the execution of this Agreement and the performance of its obligations hereunder.

10. Miscellaneous

10.1 Restriction on Assignment

Save as provided in Clause 5.2, the Operator and the ESCROW Bank, shall not assign or transfer any part or their respective rights or obligations under this Agreement without the prior consent of the JCTSL. It is expressly agreed between the Parties that nothing in this Clause 7.1 shall prevent the JCTSL from assigning, no vating or transferring its rights, benefits and obligations under this Agreement to any entity.

10.2 Notices

10.2.1 All notices shall be sent to a Party hereto at its address and contact number specified hereunder, or at such other address and contact number as in designated by such Party in a written notice to the other Parties hereto.

Addresses: _____

10.2.2 All such notices and communications shall be effective (i) if sent by telex, when sent (with the correct answerback), (ii) if sent by telecopier, when sent (on receipt of a confirmation to the correct telecopier number), (iii) if sent by person, when delivered, (iv) if sent by courier, (a) one Business Day after deposit with an overnight courier if for inland delivery and (b) [5) five] Business Days after deposit with an international courier if for overseas delivery and (c) if sent by registered letter when the registered letter would, in the ordinary course of post, be delivered whether actually delivered or not.

10.2.3 An original of each notice and communication sent by telex or telecopy shall be dispatched by person, overnight courier (if for inland delivery) or international courier (if for overseas delivery) and, if such person or courier service is not available; by registered airmail (or, if for inland delivery, registered first class mail) with postage prepaid,

10.3 No Waivers; Remedies

No failure on the part of any Party to exercise, and no delay in exercising, any right, power or privilege hereunder shall operate as a waiver thereof or a consent thereto; nor shall any single or partial exercise of any such right, power or privilege preclude any other of further exercise thereof or the exercise of any other right, power or privilege. The remedies herein provided are cumulative and not exclusive of any remedies provided by Applicable Law.

10.4 Severability

Any provision of this Agreement that is prohibited or unenforceable in any jurisdiction shall, as to such jurisdiction, be ineffective to the extent of prohibition or unenforceability but that shall not invalidate the remaining provisions of this Agreement or a affect such provision in any other jurisdiction.

10.5 Amendments or Waiver

No amendment or waiver of any provision of this Agreement, nor consent to any departure by any of the Parties there from, shall in any event be effective unless the same shall be in writing and signed by the Parties hereto and then such waiver or consent shall be effective only in the specific instance and for the specific purpose for which given.

10.6 Governing Law

This Agreement shall be governed by and construed in accordance with the laws of India.

10.7 Additional Rights

Any rights Conferred on the Parities pursuant to this Agreement shall be in addition to and not in substitution for or in derogation of any other rights and remedies which the Parties may at any time have under the Contract or otherwise.

IN WITNESS WHEREOF the Operator has caused its Common Seal to be affixed hereto and to a duplicate hereof on the date first above written and the ESCROW Bank and JCTSL acting through have caused the same to be executed by the hand of an authorized official.

The signature of the authorized representative of the JCTSL has been affixed pursuant to the resolution of its Board of Directors dated the day, which has hereunto been affixed in the presence of Shri. _____, and Shri. _____ , Directors who have signed these presents in token thereof and countersigned by Secretary, the authorized officer/Company

SIGNED AND DELIVERED by the ESCROW BANK by the hand of

_____ its authorized official.

SIGNED AND DELIVERED by JCTSL by the

hand of

_____ Mr. _____ its authorized power

Jabalpur City Transport Services Limited

REQUEST FOR PROPOSAL (RFP) FOR
SELECTION OF BUS OPERATOR FOR PROCUREMENT, OPERATION AND MAINTENANCE OF AC FULLY BUILT ELECTRIC BUSES AND ALLIED ELECTRICAL & CIVIL INFRASTRUCTURE ON GROSS COST CONTRACT BASIS FOR 9/12 METER - 50 BUSES

Volume 2: Bus Operator Agreement

September, 2019

Jabalpur (M.P)

Table of Contents

Annexures

BUS OPERATOR AGREEMENT

JCTSL is incorporated under companies act 1956 the provisions of the Companies Act 1956,having its registered office at JCTSL , Madhya Pradesh

(hereinafter referred to as the "Authority", which expression shall include its successors and permitted assigns);

AND

[_____], a company incorporated under the/ Companies Act / Registered Partnership firm/ Registered Proprietary firm having its registered office at [_____] (herein after referred to as the "Operator", which expression shall include its successors and permitted assigns);

The Authority and the Operator are hereinafter individually referred to as "Party" and collectively as "Parties"

WHEREAS

Authority intend to use the Electric buses for augmenting clean and green shared mobility in Madhya Pradesh by deploying them on a Gross Cost Contract (GCC) basis through appointment of an Operator. Towards this endeavour ,the Authority sought a Private Operator for Procurement, Operation and Maintenance of 50 Nos Electric Buses along with Procurement, Operations and Maintenance of Transformers and Chargers including Establishment of associated Electrical and Civil Infrastructure and Its Maintenance with responsibilities better defined in the accompanying clauses in this Agreement and Instruction to Bidders in the RFP document, through an open competitive bidding process in _____2019.

After evaluation of the proposals received, Authority accepted the proposal of M/s_____ as the successful Proposal and issued its Letter of Acceptance _____ dated _____ (hereinafter called the "LOA") for Procurement, Operation and Maintenance of 50 Nos AC Electric Buses along with Procurement, Operations and Maintenance of Transformers and Chargers including Establishment of associated Electrical and Civil Infrastructure and Its Maintenance , requiring, inter alia, the execution of this Agreement.

By its letter dated _____the _____ (Operator) has accordingly agreed to enter into this Agreement with Authority for execution of his rights and responsibilities, subject to and on the terms and conditions set forth hereinafter.

The Authority and the Operator are hereby entering into this Operator Agreement to implement the Project of Procurement, Operation and Maintenance of 50 Nos AC Electric Buses along with Procurement, Operations and Maintenance of Transformers and Chargers including Establishment of associated Electrical and Civil Infrastructure and Its Maintenance in the receptive cities

NOW, THEREFORE, the Parties hereto hereby agree as follows:

1.DEFINITIONS AND INTERPRETATION

1.1. In the Agreement, unless the context otherwise requires, the following terms and expressions, whenever used, shall have the following meanings hereinafter respectively ascribed to them:

"Adjusted Equity" means the Equity funded in Indian Rupees and adjusted on the first day of the current month (the "Reference Date"), in the manner set forth below, to reflect the change in its value on account of depreciation and variations in WPI, and for any Reference Date occurring:

(a) on or before COD, the Adjusted Equity shall be a sum equal to the Equity funded in Indian Rupees and expended on the Project, revised to the extent of one half of the variation in WPI occurring between the first day of the month of Appointed Date and the Reference Date;

(b) from COD and until the 4th (fourth) anniversary thereof, an amount equal to the Adjusted Equity as on COD shall be deemed to be the base (the "Base Adjusted Equity") and the Adjusted Equity hereunder shall be a sum equal to the Base Adjusted Equity, revised at the commencement of each month following COD to the extent of variation in WPI occurring between COD and the Reference Date; and

(c) after the 4th (fourth) anniversary of COD, the Adjusted Equity hereunder shall be a sum equal to the Base Adjusted Equity, reduced by 0.56% (zero point five six per cent)3 thereof at the commencement of each month following the 4th (fourth) anniversary of COD and the amount so arrived at shall be revised to the extent of variation in WPI occurring between COD and the Reference Date;

For the avoidance of doubt, the Adjusted Equity shall, in the event of Termination, be computed as on the Reference Date immediately preceding the Transfer Date; provided that no reduction in the Adjusted Equity shall be made for a period equal to the duration, if any, for which the Contract Period is extended, but the revision on account of WPI shall continue to be made;

1.1.1. "Aggregate Fines" shall have the meaning as ascribed thereto in Clause 31.3 of the Agreement.

1.1.2. "Agreement" means this agreement executed between the Authority and the Operator together with its annexure and any further correspondence, notices and conditions, in the RFP or otherwise, that the Parties signatory to this Agreement have expressly agreed to include as part of this Agreement.

1.1.3. "Assured Bus Km" shall have the meaning as ascribed thereto in Clause 25.4 of the Agreement.

1.1.4. "Assured Payment Amount" shall have the meaning as ascribed thereto in Clause 25.4 of the Agreement

1.1.5. "Applicable Clearances" means all clearances, permits, no-objection certifications, exemptions, authorisations, consents and approvals required to be obtained or maintained under Applicable Law, in connection with the Project, during the subsistence of this Agreement.

1.1.6. "Applicable Law" means all the laws, acts, ordinances, rules, regulations, notifications, guidelines or bye-laws, in force and effect, as of the date hereof and which may be promulgated or brought into force and effect hereinafter in India, including judgments, decrees, injunctions, writs or orders of any court of record, as may be in force and effect during the subsistence of this Agreement, and applicable to the Project.

1.1.7. "Assured Fleet Availability" shall have the meaning as ascribed thereto in Clause 4.2 (j) of the Agreement.

1.1.8. "Available Fleet" means the Buses made available by the Operator to Authority for operations to meet the Assured Fleet Availability.

1.1.9. "Authority" means Municipal Administration Urban Development Authority or its authorized representatives.

1.1.10. "Authority Clearances" means the clearances, which are required to be procured by the Authority in accordance with Applicable Law, and which have been provided in detail in ANNEXURE to this Agreement.

1.1.11. "Authority's Event of Default" shall have the meaning as ascribed thereto in the Clause

35 of the Agreement.

1.1.12. "BRTS" means Bus Rapid Transit System.

1.1.13. "Bus Delivery Schedule" shall have the meaning as ascribed thereto in the Clause 10.1 of the Agreement.

1.1.14. "Bus Kilometre" means a kilometre travelled by a Contracted Bus as per this Agreement or as directed by the Authority.

1.1.15. "Base Kilometre Charge" or "Kilometre Charge" means the rate of the Kilometre Charge payable by the Authority to the Operator for travel by a Bus up to the Daily Assured Bus Kilometer.

1.1.16. "Bus Permit" means the permit for operating the Contracted Buses as required under the Motor Vehicles Act, 1988 or any other Applicable Law from time to time.

1.1.17. "Bus Services" means the bus services in the Bus Service Area being implemented by the Authority in one or more phases in accordance with the terms of this Agreement.
1.1.18. "Bus Specification/Technical Specifications" shall mean the specifications of the Contracted Buses including but not limited to design, power, GPRS, GPS and PIS and other IT equipment and other details stipulated by the Authority.

1.1.19. "Bus Stop" means designated points as determined by the Authority, from time to time and notified to the Operator in writing, and such Bus Stops are where the Buses may stop for a short duration for passengers to embark onto the Bus or disembark from the Bus.

1.1.20. "Central Control Centre" means computerised central monitoring unit setup, audited and supervised by the Authority for supervision, monitoring and control of the Bus Service.
1.1.21. "Commercial Operations Date"/"COD" - The COD shall be the date which is 45 days for from Date of LOA or the date of deployment of each contracted bus whichever is earlier.

1.1.22. "Contracted Bus(es)" means one or more of the passenger bus units of the Operator for use by the Authority from time to time for the purposes of operation and maintenance in the Bus Service Area in accordance with the terms of this Agreement, and which shall include but not be limited to including GPRS, GPS and PIS and other IT equipment, and the details of such Buses such as the type, category registration number is provided in detail in ANNEXURE 2 to this Agreement at later stage.

1.1.23.(a) 'Consortium' shall mean the group of legally constituted maximum two entities, who have come together and have agreed to or have formed an understanding (in writing)

for Procurement, Operation and Maintenance of the 50 Nos of 9/12m Standard AC Electric Buses along with Procurement, Operations and Maintenance of Transformers and Chargers including Establishment of associated Electrical and Civil Infrastructure and Its Maintenance subject to the terms of this Agreement.

1.1.23(b)"Contract Period/Agreement Period" shall mean the term as defined in Clause 3.1

1.1.24 (a) **"Debt Due"** means the aggregate of the following sums expressed in Indian Rupees outstanding on the Transfer Date:

(a) the principal amount of the debt provided by the Senior Lenders under the Financing Agreements for financing the Total Project Cost (the "principal") but excluding any part of the principal that had fallen due for repayment [two years] prior to the Transfer Date;

(b) all accrued interest, financing fees and charges payable under the Financing Agreements on, or in respect of, the debt referred to in Sub-clause (a) above until the Transfer Date but excluding (i) any interest, fees or charges that had fallen due one year prior to the Transfer Date, (ii) any penal interest or charges payable under the Financing Agreements to any Senior Lender, and (iii) any pre-payment charges in relation to accelerated repayment of debt except where such charges have arisen due to Authority Default; and

(c) any Subordinated Debt which is included in the Financial Package and disbursed by lenders for financing the Total Project Cost;

provided that if all or any part of the Debt Due is convertible into Equity at the option of Senior Lenders and/or the Operator, it shall for the purposes of this Agreement be deemed to be Debt Due even after such conversion and the principal thereof shall be dealt with as if such conversion had not been undertaken;

1.1.24(d)"Dispute" shall have the meaning ascribed to it in Clause 40 of this Agreement.

1.1.25. "Encumbrances" means any encumbrance such as mortgage, charge, pledge, lien, hypothecation, security interest or other obligations and shall also include physical encumbrances, including utilities both under and above the ground and encroachments.

1.1.26(b) **"Equity"** means the sum expressed in Indian Rupees representing the paid up equity share capital of the Operator for meeting the equity component of the Total Project Cost, and for the purposes of this Agreement shall include convertible instruments or other similar forms of capital, which shall compulsorily convert into equity share capital of the

Operator, and any interest-free funds advanced by any shareholder of the Operator for meeting such equity component.

1.1.26(b). "Execution Date" shall mean and refer to the date of signing of this Agreement.

1.1.27. "Fines" shall have the meaning as ascribed thereto in the Agreement.

1.1.28. "Fleet" shall refer to the total number of Contracted Buses having achieved COD pursuant to this Agreement.

1.1.29. "Operation Plan" means the detailed plan as developed and finalized by the Authority from time to time in accordance with Clause 21.

1.1.30. "Global Positioning System (GPS)" means the equipment installed on the bus to monitor its movement on the specified route during the Contract Period. Needs to be provided as per the UBS II norms or above and all the operating & maintenance charges needs to be borne by the operator only. Operator shall provide the protocols for the further integration with JCTSL/ authority control room. The kms provided by the GPS system shall be the reference for the payment to the operator under gross cost. Also Authority shall have full rights to calibrate or check the OBU accuracy by any third party any time during the contract period.

1.1.31. "Government" means the "Government of Madhya Pradesh" or "Government of India (GOI)" as is relevant in the context

1.1.32. "Invoice Amount" shall have the meaning specified in Clause 25.4(a) of this Agreement.

1.1.33. "LED Display" shall mean the light emitting diode display installed on the bus which would show the name and number of the designated Route of the respective Contracted Buses and which shall be used for the public information system.

1.1.34. "Letter of Award" means the letter of award dated __/__/20__ issued by the Authority to the Selected Bidder for Procurement, Operation and Maintenance of the 50 Nos of 9/12m AC Electric Buses along with Procurement, Operations and Maintenance of Transformers and Chargers including Establishment of associated Electrical and Civil Infrastructure and Its Maintenance.

1.1.35. "Lot of Contracted Buses" or "Lot" means Existing Lot of Contracted Buses and New Lot of Contracted Buses and details of which have been provided in the Annexure to this Agreement.

1.1.36. "Manufacturer/ Electric Bus Manufacturer" means the bus manufacturer and supplier of the Contracted Buses. Bus Manufacturer shall be part of Operator either as a single party or part of Consortium representing Operator, in the capacity of a lead bidder.

1.1.37. "Material Breach" means a breach of the terms and conditions of this Agreement, which has a material adverse effect on any act or event, or on the ability of either Party to perform any of its obligations under and in accordance with the provisions of this Agreement, which include but are not limited to an act or event which causes a material financial burden or loss to either Party.

1.1.38. "Operation and Maintenance Standards" means the operation and maintenance requirements which are required to be undertaken by the Operator throughout the Contract Period and have been provided at different places in the agreement.
1.1.39. "Operations Manager" shall have the meaning ascribed to it in Clause 28.1.9.

1.1.40. "Operating Plan" or "Operation Plan" means the detailed Route plan and trip schedule for the Bus Service, which is developed and finalised by the Authority.

1.1.41. "Operator" shall have the meaning as ascribed thereto in the array of Parties in the Recitals above.
1.1.42. "Operator Clearances" means the clearances which are required to be procured by the Operator in accordance with Applicable Law and which have been provided in detail in Annexure to this Agreement.

1.1.43. "Operator's Event of Default" shall have the meaning as ascribed thereto in Clause 34.1 of the Agreement.

1.1.44. "Operator's Payment" means payment given to the Operator through Escrow Account for providing operating and maintenance services in accordance with Clause 25 of this Agreement.

1.1.45. "Passenger Fare" shall have the meaning ascribed to it in Clause 23.1 of this Agreement.

1.1.46. "Parking Spaces" shall mean the spaces provided by the Authority for parking, charging and maintenance of contracted buses

1.1.47. "Payment Period" shall have the meaning as ascribed thereto in Clause 25 of this Agreement.

1.1.48. "Performance Security" shall have the meaning as ascribed thereto in Clause 6.1 of this Agreement.

1.1.49. "Project" means the Procurement, Operation and Maintenance of the 50 Nos of 9/12m AC Electric Buses along with Procurement, Operations and Maintenance of Transformers and Chargers including Establishment of associated Electrical and Civil Infrastructure and Its Maintenance service being provided by the Operator for Authority in accordance with the terms of this Agreement.

1.1.50. "JCTSL" Jabalpur City Transport Services Limited.

1.1.51. Deleted.

1.1.52. "RTO" means the Regional Transport Office of Madhya Pradesh

1.1.53. "Remedial Period" shall have the meaning specified in Clause 36.1 and 36.2 of this Agreement.

1.1.54. "Routes" means the routes specified in the annexure of this tender exclusively and notified by the Authority from time to time, and the Contracted Buses under this Agreement shall operate only on such Routes.

1.1.55. "Selected Bidder" means the Bidder to whom the Authority issues the Letter of Award for undertaking the Project.

1.1.56. "Third Party" means any Organisation / person other than the Authority and the Operator

1.1.57. "Training Period" shall have the meaning as ascribed thereto in Clause 18.4 of this Agreement.

1.1.58."Validity Period" means the period for which the Performance Security has to be maintained in accordance with Clause 6 of this Agreement.

1.1.59. "Vandalism" shall have meaning specified in Clause 30 of this Agreement.

1.1.60. "Vehicle Tracking System" is the satellite and or other communication system or any other procedure or device which allows locate/track the position of the vehicles at all/any times.

1.1.61. "WPI" means the Wholesale Price Index for all commodities as published by the Ministry of Industry, GOI and shall include any index which substitutes the WPI, and any reference to WPI shall, unless the context otherwise requires, be construed as a reference to the WPI published for the period ending with the preceding month.

1.2. Interpretation

1.2.1. In this Agreement, unless the context otherwise requires:

a) Words denoting the singular shall include the plural and vice versa;
b) Words denoting a person shall include an individual, corporation, company, partnership, trust or other entity;

c) Heading and bold type face are only for convenience and shall be ignored for the purposes of interpretation;
d) reference to any legislation or law or to any provision thereof shall include references to any such law as it may, after the date of this Agreement, from time to time be amended, supplemented or re-enacted;
e) References to the word "include" or "including" shall be construed without limitation;
f) References to this Agreement or to any other agreement or deed or other instrument shall be construed as a reference to such agreement, deed, or other instrument as the same may from time to time be amended, varied, supplemented or innovated; and
g) The Annexure to this Agreement form part of this Agreement and will be in full force and effect as though they were expressly set out in the body of this Agreement.
h) Terms and expression not herein defined shall have the meanings assigned to them in the Indian Sale of Goods Act, 1930 (as amended) or the Indian Contract Act, 1872 (as amended) or the General Clauses Act, 1897 (as amended) as the case may be.

1.2.2.The following documents attached hereto shall be deemed to form an integral part of this Agreement:
a) This Agreement along with all Annexure hereto.
b) Request for Proposal (RFP) in its entirety including all its Volumes, Sections, Annexure, Corrigendum and Addendums thereto.
c) Letter of Acceptance (LOA) no. _____issued to the Operator on __/__/2018
d) Any relevant correspondence between the two Parties that the signatories have agreed to include as a part of the Agreement for validating and clarifying any points in the contract or by way of revised or improved understanding of any terms of the Agreement as appended herein.

2. APPOINTMENT OF THE OPERATOR, SUBSIDY AND CONSORTIUM CONDITIONS

2.1. Appointment of the Operator

Subject to and in accordance with the provisions of this Agreement, the Authority hereby appoints, on a non-exclusive and non-transferable basis, the Operator, and the Operator hereby accepts its appointment to Procure/Supply, Operate and Maintain 50 Nos of 9/12m AC Electric Buses and Procure, Operate and Maintain Transformers and Chargers and Establish & Maintain associated Electrical and Civil Infrastructure. The Electric Buses shall be as per Technical Specification given in Volume 3. The Operator shall maintain Daily Assured Fleet Availability, within the Bus Service Area in accordance with the terms of this Agreement and subject to the Applicable Laws and Applicable Clearances.

2.2. Undertaking

In consideration of the rights, privileges and benefits conferred upon the Operator, and other good and valuable consideration expressed herein, the Operator hereby accepts this Agreement and agrees and undertakes to perform/discharge all of its obligations in accordance with the provisions hereof, and bear and pay all costs, expenses and charges in

connection with, or incidental to the performance of its obligations in accordance with the terms contained herein.

2.3. Subsidy

The subsidy received by the Authority as per FAME II scheme, shall be passed on to Operator as and when received. This shall be as per the notification dated 04/06/2019 of DHI.

The entire subsidy amount will be released to STU for further payment to the selected bidder as per following installments.

Installment No	The activity being completed	Percentage of demand incentive to be released by DHI
1	After the issue of supply order and signing of the agreement by STU with selected bidders; as mobilization advance	20%
2	Delivery of Buses	40%
3	After 6 months of the successful commercial operation of Buses	40%

The subsidy shall be applicable as follows:

e. Maximum demand incentive available from DHI under FAME India Scheme Phase II will be as given below.

a. Standard Bus (length > 10 m to 12 m): 55 Lakhs

b. Midi Bus (length > 8 m to 10 m): 45 Lakhs

c. Mini Bus (length > 6 m to 8 m): 35 Lakhs

All the incentives/ subsidy shall be as per the FAME II scheme of DHI Govt. Of India.

2.4. Consortium Conditions

2.4.1. The Consortium shall perform all obligations and responsibilities of the Operator specified in this Agreement during the Contract period and additionally adhere to the conditions specified hereunder.

Each member of the Consortium shall be jointly and severally liable for due Implementation of the Project as per the scope and discharge of all obligations resulting from the Agreement.

Operator shall submit a Consortium Agreement (the contract between the consortium members) comprising the terms specified hereunder, alongwith the submission of RFP Document OR within 20 days from LOA to Authority for its review which shall become part of this Agreement.

A Bidding Consortium is required to nominate a Lead Member as per provision of Volume 1 of RFP. The Lead Member shall be authorized to sign the Contract on behalf of the Consortium and do all deeds and acts on behalf of the Consortium. The nomination should be supported by a Power of Attorney in favour of the Lead Member as per the provision of Volume 1 of RFP.

Include a statement to the effect that all members of the Consortium shall be jointly and severally liable for all obligations of the Operator pursuant to this Agreement during the Contract Period.

The Tenure of the Consortium Agreement shall be coinciding with the Contract Period. The Consortium shall continue to be in existence during the period of the contract and that any change will be subject to approval of the Authority and subject to clause 2.4.2.

Clearly outline the proposed roles and responsibilities, if any, of each member. The role and responsibility of any member must be commensurate with the technical/financial capabilities that such member is contributing towards meeting the qualification criteria. Each consortium member is liable to contribute resources in terms of knowledge, skills and trained manpower commensurate with its role and responsibilities during the Contract Period.

The Consortium Agreement shall be made available to Authority for legal vetting and open to its suggestions by the Authority. The Authority shall have rights to suggest binding corrections if it finds that such contract does not meet its requirements and interests as per the RFP in letter and spirit.

The Agreement should be on stamp paper of appropriate value, notarized and registered. The signatories must be duly authorized. The Authority shall have the right to suggest role reallocation if it finds that the role and responsibilities allocated to each partner are not commensurate with qualifications and capability of that partner.

Any modification in roles and responsibilities between consortium members during Contract Period shall be allowed only after approval from the Authority. Any changes and deviation of roles and responsibilities of consortium members during the execution, operation and maintenance of this Project without prior approval of Authority shall be viewed seriously by the Authority as it can affect an important public service. Such unilateral action by the

Operator shall entitle Authority to take appropriate action including considering it an Event of Default under this Contract leading to consequences including termination with appropriate notice.

In the event of non-performance by any particular members of the consortium leading to an Event of Default not leading to Termination, Authority reserves a right to (i) demand a change in the defaulting member, with the process as above (ii) pay any non-defaulting non lead member directly for any obligations and costs pertaining to its role in the execution of the Bus Operator Agreement performed after the date of Event of Default with due advance notice to the Lead Member of the arrangement.

Any Dispute arising during the Contract Period between the Consortium Member shall be resolved amicably without adversely impacting Agreement. If in Authority's opinion, Dispute between Consortium members adversely impacting implementation and operation of Authority then Authority may its sole discretion in the interest of the Project (a) Terminate the Contract after due process and/or (2) Provide a binding solution.

2.4.2. Lock in Period for Consortium
The members of Consortium shall remain in Consortium for a Lock-In Period for the Contract Period.

3. TERM OF THE AGREEMENT

3.1. The term of this Agreement shall be a contiguous period comprising the (a) The "Bus Procurement Period" beginning on the Execution Date and ending on the Commercial Operations Date (COD) and (b) the "Operations Period" beginning from COD and ending **10 (Ten) years from the COD ("Contract Period/ Agreement Period")** during which period Operator shall operate and maintain the buses and allied civil and electrical infrastructure on Gross Cost Contract basis as directed by Authority, provided that the Agreement can be extended on mutually agreed terms and rates upto two years based on performance and condition of the buses at the discretion of the Authority .

3.2. The COD shall begin from the date which is 90 days from Date of LOA for 9/12 m AC Electric buses.

3.3. In the event of termination, the Contract Period shall be limited to the period commencing from the Execution Date and ending on the date on which this Agreement is terminated in accordance with the provisions contained herein.

4. SCOPE OF WORK

4.1. Responsibilities during" Procurement / Supply of Electric Buses, Transformers & Chargers with Allied Civil & Electrical Infrastructure".

a. The Operator shall before the deployment of buses undertake and complete the following tasks:

b. Procure/Supply 50 Nos of 9/12m AC Electric Buses as per technical specification included in RFP.

c. Ensure Bus Body, Chassis, batteries, charging infrastructure and all other Bus components shall be built as per "Good Industry Practices" and as per the specifications provided in Volume 3 and Volume 3 of the RFP. The Operator shall not be permitted to make any changes in the Specifications until specifically authorised by the Authority in writing.

d. Showcase prototype and adhere to the Bus Delivery Schedule specified in clause 10.1 of this Agreement.

e. Facilitate the Authority or representatives of the Authority or representatives of Third Party test agency ie., Central Institute of Road Transport for inspections and testing with regards to the structure, bus body building and electric battery and related components

f. as per the quality standards as prescribed in the Clause 8 of the agreement.

g. Incorporate changes/modifications/Alternations suggested in the bus body and / or in the Prototype by the Authority before obtaining the final acceptance certificate from the Authority as per Clause 15 of this agreement.

h. Deploy buses pursuant to Clause 18 and provide training to the manpower as per clause 18.4 of the agreement.

i. Provide sufficient and trained drivers (complying MV Rules) per hired bus to ensure continued and uninterrupted Bus Service in accordance with the terms contained herein and as per Applicable Law. These bus drivers must possess a valid Heavy Motor Vehicle driving license and Public Service Vehicle (PSV) badge for driving passenger bus. The drivers should have minimum five years of experience of driving passenger bus, age within 21 to 58 years, height 158 cm to 180 cm and weight above 45 kgs. as per the prescribed norms of the Authority. The Operator may appoint Ex-AUTHORITY bus drivers to drive the buses, except the drivers retired or dismissed from the service of the Company. The Operator should provide additional training if required to the drivers as and when directed by the Authority.

j. Ensure that all drivers, staff and personnel are provided the required training on driving, maintenance, safety, behaviour and hygiene aspects at his own costs;

k. Procure all Operator Clearances in accordance with Annexure for the purposes of providing Bus Services as per the terms of this Agreement, at his own cost and expenses.

l. Develop & Establish Charging infrastructure including Development, Supply and Erection of Transformers and all Necessary Electrical systems, sub-systems, accessories and parts as required for charging Infrastructure, Procure and Install Chargers at parking space provided by Authority prior to Procurement of Buses;

m. Establish necessary Workshop for preventive and routine maintenance of buses, transformers, charging batteries of the Buses and maintenance of Charging Infrastructure for periodic overhaul at its own cost and expense, and staff it with trained professionals for the purposes of maintenance of Contracted Buses and Chargers and Electrical & Civil Infrastructure ;

n. After completion of Contract Period, the entire infrastructure established at depots for charging of Electric Buses such as Transformers, Necessary Electrical systems, sub-systems, accessories and parts and Chargers will become the property of AUTHORITY solely for its further usage by AUTHORITY. The Operator will not have any right on this Infrastructure after completion of Contract Period. Similarly all the Civil Infrastructure established will also become the property of AUTHORITY solely for its further usage by AUTHORITY and the Operator will not have any right on civil Infrastructure

o. The Operator shall be responsible to Maintain the ITMS system in good workable condition throughout the Contract Period.

p. The Operator shall be responsible for Renewal of Fitness Certificate of Buses as per MV Act.

q. The Operator shall be responsible for EPF, ESI and other Mandatory deductions.

r. The Parking Space for Charging ,maintenance and Parking of Buses shall be provided by AUTHORITY without any Cost. The Operator shall not use the given space for any commercial use.

4.2. Responsibilities during "Operations Period"

The Operator, on and after COD, and during the Operations Period shall undertake the following responsibilities:

a. Operate the Contracted Buses in compliance with terms contained herein including but not limited to the routes, frequency and schedules as may be specified by the Authority from time to time on the routes prescribed by the Authority in Madhya Pradesh Metropolitan Region ;
b. Ensure availability of duly licensed drivers with PSV badge, with minimum five years of experience of operating passenger buses, maintenance staff and other personnel through pro-active human resource management for continued and uninterrupted Bus Service in accordance with the terms of this agreement.

c. Develop a training program for driving, maintenance, charging, safety, behaviour and hygiene aspects; which ensures training to newly recruited drivers, staff and personnel and refresher training to the existing staff already deployed in the operations.
d. At his own cost and expenses maintain all Operator Clearances in accordance with Annexure for the purposes of providing Bus Services as per the terms of this Agreement;
e. Maintain the Contracted Electric Buses in Safe, Secure and Good operable conditions in accordance with Good Industry Practices and Operation and Maintenance Requirements set forth in the agreement.
f. Ensure that Safety and Security of passengers and any third person on the Contracted Buses is maintained at all times;
g. Maintain the Transformers and allied Electrical Infrastructure, Chargers and allied Electrical Infrastructure and Civil Infrastructure for these equipment in Safe , Secure and Good operable conditions in accordance with Good Industry Practices and Operation and Maintenance Requirements set forth in the agreement.

h. Bear all taxes as may be levied under Applicable Law in relation to the Bus Services, save and except those taxes which are the responsibility of the Authority as per the terms of this Agreement and Applicable Law;
i. Ensure any equipment installed on the Contracted Buses or within the Bus Depot/ Parking Space including any monitoring device or equipment that is installed by the Authority is not tampered with in any manner; and that the Authority and its authorised personnel, are allowed to inspect the equipment installed on the Contracted Buses and the Parking Space at any time without any notice in this regard;
j. Make available to the Authority 50 Nos. of 9/12m Electric AC buses for operations all the time. The Operator is expected to keep spare fleet to meet this requirement. The bidder may refer Annexure regarding Fines/Damages in this regard.
k. Wear and tear of the bus due to bad road conditions, shall not be considered an adequate defence on the part of the Operator for not fulfilling his Contractual obligations as per the Agreement.
l. However the operator shall not be liable for any liquidated damages for delay or failure to perform the contract for reasons of force majeure such as the acts of god, acts of public enemy, acts of government, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, grid failures and provided that the operator shall within 15 days from the beginning of such delay shall notify the Authority in writing the cause of delay duly substantiated with documentary evidence.
m. Ensure that all Applicable labour Laws and any other Laws including but not limited to the Minimum Wages Act, 1948 are complied with in relation to appointment, hire, recruitment, of any personnel (whether on temporary, contractual or permanent basis by the Operator) required in relation to the operation and maintenance of Bus Service;
n. Maintain and Upkeep the Parking Space in good condition a per the Parking Space License Agreement.

o. Submit regular monthly reports to the Authority as per the format that may be instructed by the Authority from time to time; and
p. Carry out all activities necessary for the effective implementation of the provisions of this Agreement.

5. AGREEMENT

The whole Agreement is to be executed in the approved, substantial and workmanlike manner, to the entire satisfaction of the Authority, who both personally and by his/her deputies, shall have full power, at every stage of progress, to inspect the buses at such times as he/she may deem fit which he/she may disapprove. The Authority will depute a team of monitoring personnel who shall have full powers to check, monitor, demand any records from any of the Operator personnel.

6. PERFORMANCE SECURITY

6.1. For securing the due and faithful performance of the obligations of the Operator under this Agreement, the Operator, has handed over to the Authority, Performance Security for before signing the Operator Agreement of INR_____in form of Bank Guarantee (instrument no _____) drawn on _____ (Bank) dated _____, for a Validity Period of_____, lien marked in favour of Managing Director, Jabalpur City Transport Services Limited , through a nationalised Bank, payable/encash able, admissible and extendable at Madhya Pradesh only. ("Performance Security").

6.2. The Operator shall maintain a valid and binding Performance Security for a period of six months after the expiry of the Contract Period ("Validity Period").

6.3. The Authority shall be entitled to forfeit and appropriate the amount of the Performance Security in whole or in part:

a. in the event the Authority requires to recover any sum due and payable to it by the Operator including but not limited to Damages; and which the Operator has failed to pay in relation thereof; and

b. in relation to Operator's Event of Default in accordance with the terms contained herein.

6.4. At any time during the Validity Period, the Performance Security has either been partially or completely been encashed by the Authority in accordance with the provisions of this Agreement. The Operator shall within [15 (fifteen) days] of such encashment either replenish, or provide a fresh performance security, as the case may be, failing which shall be considered as Operator's Event of Default as per clause 34.1.

6.5. On the performance and completion of the Contract by expiry of its term in all respects the Performance Security shall be returned to the Operator without any interest, provided the Operator is not in default of the terms hereof and there are no outstanding dues of the Authority with the Operator.

7. BUS PROCUREMENT

Upon submission of requisite Performance Security and Signing of this Agreement, the Operator shall procure/supply Lot-I & Lot-II 9/12m AC Electric Buses and Procure/Supply Transformers and Chargers and establish associated Electrical and Civil Infrastructure. The Operator shall obtain adequate insurance as mentioned in the clause pertaining to Insurance in this RFP.

8. QUALITY ASSURANCE

8.1 Quality of Materials

a. The Bus Manufacturer shall procure material which is as per Standards set in India. Wherever, Indian Standards are not available, internationally acceptable Standards may be referred such as ECE, JIS, DIN, ASTM, ISO etc. for quality assurance of material.
b. The Bus Manufacturer can use any material out of the lots, which have been approved by an Authorised test agency under CMVR 124 and CMVR 126. A certificate to that effect along with copies of the latest Laboratory Test Report (as per specification of this contract from CIRT, Madhya Pradesh) shall be submitted to Authority at the time of inspection.
c. The Bus Manufacturer shall obtain type approval of all safety critical items/ materials from the authorized testing agencies before use. The Bus Manufacturer shall provide a list of such items along with their Certificates to the Authority.
d. Cost of all tests, analysis, and patent rights would be borne by the Bidder.
e. All the chargers installed shall comply with IEC 61851-1, IEC 61851-21, IEC 61851-22, IEC 61851-23 and IEC 61851-24 or as per OEM standards as applicable. The Operator will have to submit Compliance Certificates to this effect. The charger shall be capable of charging Buses for full State of Charge (80% SOC within maximum 4 hours of duration for 12m and 3 hours for 9m. All the Charges shall also have provision for recording and storing data for charging units consumed by each of the Electric Bus for every charging activity and time taken for charging by each of the Electric bus for every charging activity. Such recording and storing of data for each of the electric bus shall be uniquely monitored with reference to the registered number of electric bus. The operator shall submit this data to Authority on monthly basis in the format prescribed by the Authority.

8.2. Purchase of Material

Material purchase orders of The Bus Manufacturer must be specifying quality, Standards, grade etc. of supplied material. Inspecting official(s) of Authority would carry out random checks and satisfy itself of these details vis-à-vis those specified in the contract.

In addition, copies of invoices of respective Manufacturers from whom these material had been purchased, be enclosed and these should also have details of quality & grade etc. Authority shall also satisfy itself of these details as above before permitting usage in the Bus.

For items/ materials to be used as per BIS/ AIS/ASRTU Standards, the Bus Manufacturer shall show & furnish a copy of Laboratory Test Certificate from approved Laboratories near the location of Bus Bodybuilder in respect of material proposed to be used in the body building of the Bus. 'ISI' or 'E' marked items of concerned country used in manufacturing of bus need no testing.

8.3. The Operator shall conform in all respect to provisions in this behalf as contained in the Central Motor Vehicle Act, 1988 (or latest) as amended up to date and Central Motor Vehicle Rules, 1989 (or latest) / Madhya Pradesh Motor Vehicle Rules currently in force in Madhya Pradesh or to any other statutory modifications or enactment thereof in such Act & Rules from time to time.

9. INSPECTION AND TESTING

9.1. Third Party Agency, Central Institute of Road Transport (CIRT) is authorized by the Authority to carry out inspection of Prototype and other buses at following stages before pre-dispatch stage at Bus Operator's premises.

Structural, Panelling & Fully Built Stage for prototype bus under each part.

Remaining buses will be inspected during final stage.

9.2. For any Deficiency noted by the Authority during any stage of the inspection, the Operator shall initiate immediate remedial actions for the same as advised by the Authority/CIRT.

9.3. The Operator shall provide free of charge all facilities at Bus Manufacturer's premises viz. Working space, equipment, tools, labours, gauges, drawings and specifications required for this purpose without extra charge to the inspecting officer/s of CIRT for proper performance of his work on inspecting and testing of work under this Agreement.

9.4. The Authority may not conduct any laboratory test if the material procurement certificates are submitted by the Operator at the time of inspection of buses. Notwithstanding with above, if found necessary, the Authority may conduct material test at any stage for prototype or any other buses, the cost of which shall be borne by the Operator. The Authority might conduct lab testing mostly for following material.

Sr. No.	Items to be tested	Specifications

Sr. No.	Items to be tested	Specifications
1.	CR Tubular sections	BIS:4923-1997 (or latest) of Grade Yst-240
2.	Phosphating / Galvanizing	BIS:3618-1966 (or latest) Class A-2 for Phosphating & BIS:277-2003 or latest - 120 gsm for Galvanizing (Zinc Coating) and two weeks (336 hours) Salt Spray Test for both in accordance with ASTM procedure B117 with no structural detrimental effect to normally visible surfaces & no weight loss of over 1%.
3.	EPDM Rubber	As per AIS 085
4.	Glasses	• Laminated: BIS: 2553 (Part-2)-1992 (or latest) Float Glass, Front 'AA' Grade Glass, PVB Film in Laminated Glass. • Toughened: BIS 2553 (Part-2)-1992 (or latest)
5.	Aluminium Parts	IS:733-1974 (or latest) for Solid Part, IS:1285-1975 or latest for Extruded Round Tube and Hollow Part and IS:738-1977 or latest for Drawn Tubes, Alloy 63400, tempering WP.
6.	Paint	PU Paint as per relevant IS: 13213:1991(or latest) & any other relevant BIS Standards. For Matt Black Paint the Gloss Value is upto 30 units.
7.	LT Wire	BIS: 2465-1984(or latest). DIN 72551- Dimensional Test JISC3406- Spark, Immersion & Conductor Resistance Test, SAE J 1127 & J 1128
8.	Aluminium sheet	BIS:737-1986(or latest), Aluminium Alloy H-2/31000
9.	CR sheets	BIS:513-2008(or latest)
10.	GI Sheets	BIS:277-2003 (or latest),Class-VIII Medium Coatingof Zinc Nominal Weight120 grams/M2.
11.	Passenger Seat Assembly	As per AIS-023, Bus Code & BIS Standards. For MS components two weeks (336 hours) Salt Spray test for both in accordance with ASTM procedure B117 with no structural detrimental effect to normally visible surfaces & no weight loss of over 1%.

Sr. No.	Items to be tested	Specifications
12.	Marine Board / other floor material	BIS: 710-1976 (or latest) IS:5509-2000 (or latest) for Flammability.

9.2. The Authority shall issue Pre Despatch Inspection Report within seven days of satisfactory inspection of Fully Built buses. Operator shall despatch buses only after attending defects/ deficiencies observed during Pre- Dispatch Inspection.

10. DELIVERY OF CONTRACTED BUSES

10.1. Delivery Period: Delivery of prototype Bus and thereafter other Contracted buses shall be as follows; ("Bus Delivery Schedule") as per the FAME II notification:

S.No	Description	Timelines
1	Issue of Supply order	M
2	Release of First installment of the 20 % of the incentive amount against the Bank guarantee	M + 1 month
3	Prototype	M + 2 Months
4	Delivery of 50 % of the buses	M + 6 Months
5	Delivery of rest of the buses	M + 9 Months

10.2. Operator shall deliver buses at the place/ places as shall be specified by the Authority within Jabalpur Municipal Limits, not later than the dates/schedule specified in the Agreement.

10.3. Authority shall be entitled to levy damages as per clause 16 of the Agreement to the Operator upon failing to perform as per Clauses above.

10.4. Failure to comply with stipulated delivery schedule shall attract pre-defined liquidated damages and other provisions of the contract.

10.5. Operator shall intimate Authority at least 15 days prior to any inspection at Bus Manufacturer's premises failing which Authority shall not be liable for delay in inspection and

supplies of buses. Authority shall arrange inspection by CIRT within 15 days from the day of receipt of request for inspection from Operator. Delay in delivery of buses on account of late inspection and delay in submission of inspection report by the Authority for the affected quantity shall be entirely attributable to the Authority.

11. INSPECTION OF CONTRACTED BUSES

11.1. On receipt of fully built Contracted Buses at Madhya Pradesh, these shall be jointly inspected by the Operator and the Authority for completeness and satisfactory condition of all equipment/ components. Damages, defects and deficiencies, if any, shall be noted and the Operator shall initiate immediate action for making good the same under advice from Authority /CIRT within mutually agreed time period. Any delay in commissioning of these buses due to any such reason shall be to Operator's account and shall be dealt with by the Authority as per Conditions of the Agreement.

12. COST OF INSPECTION

All the costs associated with the inspection of prototype bus and other buses at Bus Operator's premises and at Madhya Pradesh, including travelling and conveyance expenses and lodging and boarding expenses of representatives of the Authority shall be borne by the Bus Operator.

13. PROVISIONAL RECEIPT CERTIFICATE

Authority shall issue Provisional Receipt Certificate within three working days of receipt of Bus (es) in good conditions along with valid required documents at Madhya Pradesh. The Provisional Receipt Certificate issued by the Authority shall not be considered the Acceptance of the Buses for deployment for operations as per the conditions of the Agreement.

14. REMOVAL AND REPLACEMENT OF REJECTED BUSES

14.1. On rejection of any Bus, subjected to inspection or assessment of performance during commissioning at Authority's premises, such buses shall be replaced within 21 days of the date of intimation of such rejection.

14.2. The Operator shall immediately transport such rejected buses back to its premises at it's own cost and risk.

15. FINAL ACCEPTANCE CERTIFICATE

The Operator shall inform about rectification/ removal of defects/ deficiencies observed during Joint Final Inspection within 07 days from date of inspection. Thereafter, Final

Acceptance Certificate shall be issued by Authority. The Operator shall initiate the process of deployment of buses for AUTHORITY operations in accordance with clauses of this agreement.

16. LIQUIDATED DAMAGES (LD) FOR DELAY IN SUPPLY OF FULLY BUILT CONTRACTED BUSES

16.1. If the Operator fails to complete the supply of Contracted Buses within the Month wise delivery schedule specified in the clause 10.1 above and if the Operators is not able to cure such default (delay in buses) within the prescribed delivery schedule, the Authority shall, without prejudice to other remedies under the Agreement, levy/deduct pre-estimated liquidated damages (LD) @ INR 1000/- (Rupees One Thousand only), per bus per day of delay.

16.2. The amount of pre estimated liquidated damages to be charged under the contract, in terms of Clause 16 of Contract Conditions shall not exceed INR 1 lakh per Bus.

16.3. In the event of the delivery of Contracted Buses is delayed beyond the stipulated Delivery Schedule as per clause 10.1 and within the period of additional 90 days after expiry of the delivery schedule, the Authority at its discretion may not accept delivery of number of delayed Buses beyond above mentioned time period unless such occurrence (delay in bus) is not attributable to Force Majeure Events.

17. CONSEQUENCES OF NON-ADHERENCE TO DELIVERY OBLIGATIONS

17.1. In case of the Operator fails to deliver Contracted Bus as per stipulated schedules and timelines and as specified in sub clause 16, after exercising all remedial measures provided in elsewhere in this agreement, it shall be considered Operator's Event of Default.

17.2. Notwithstanding above, in case of delay in delivery of Contracted buses by the Operator pursuant to clause 16 above, the number of Contracted Buses which are to form part of the contracted fleet shall be reduced by only the number of buses delivered and accepted by the Authority.

17.3. With pursuant to clause 17.2 above, in case of reduction/increase in size of the contract, the Operator shall replace the amount of Performance Security calculated as per the revised contract size.

18. DEPLOYMENT OF CONTRACTED BUSES

18.1. Subject to issuance of Final Acceptance Certificate from the Authority, the Operator shall commence Bus Service for each Lot of such accepted Contracted Buses no later than 10

(Ten days from the date of Final Acceptance Certificate, or any extended period as may be agreed upon the Parties in writing ("Commercial Operations Date for Bus Lot" or "COD for Bus Lot").

18.2. In the event the Operator is not able to start operations of particular Lot of Contracted Buses as per above clause for reasons not attributable to the Authority or to a Force Majeure Event, and which in the opinion of the Authority can be attributable to the Operator, the Operator shall pay liquidated damages of INR 1000 per bus per day comprising of the Lot for every day of delay till COD for that Lot is achieved. Capping of LDs and consequences are as per clauses 16 and 17 of this Agreement.

18.3. It is hereby clarified that non-compliance of any bus specifications and design shall not be acceptable as a reason for delayed or non-deployment of the Contracted Buses by the Operator.

18.4. The Operator shall deploy entire Staff for operation and maintenance of the Contracted buses and operation and maintenance of chargers and transformers for provision of training for 15 days prior to COD. ("Training Period").

18.4.1. During the Training Period, The Operator's staff shall be educated about the intricacies of Bus Operations Bus Service Area and skill-set required for efficient operations.

18.4.2. Cost of Damage to Project Asset or any other third-party property including fatalities, injuries of employee of Authority, Operator or third party due to negligence of the Operator's staff employed for the purpose of the training shall be the liability of Operator.

18.4.3. Entire Costs towards above training shall be borne by the Operator.

19. OWNERSHIP OF CONTRACTED BUSES

19.1. The ownership of the Buses shall remain fully with the Bidder during the entire term of the Agreement.

20. HANDOVER OF PARKING SPACE AND BUS DEPOT

20.1. For the purposes of maintenance, charging and cleaning and parking of Contracted Buses, the Authority shall provide a Parking Space to park the Contracted Buses for short duration and carry out maintenance and charging activities in accordance with the terms contained herein. It is hereby clarified that the Operator shall only have a limited right to use the Bus Depot/ Parking space subject to the terms contained herein. The Operator shall enter in a separate Parking Space License agreement as per the enclosed format with the Authority at time of handover of such depot or Parking Space.

20.2. The Operator shall at his own cost and expenses bring any such moveable equipment and/or machinery and charging infrastructure and appoint skilled personnel and supervisor for regular upkeep, maintenance, cleaning and safekeeping of the Contracted Buses in accordance with the terms contained herein.

20.3. It is hereby clarified that the ownership of the Parking Spaces shall remain vested solely with the Authority at all times. The Operator shall only be provided the limited right to use the Bus Depot/ Parking Spaces during the Contract Period, and on Termination, the Operator shall vacate and hand back such Bus Depot/ Parking Spaces as per the terms contained herein.

Upon termination, the Operator shall not remove any permanent structure created by him to fulfil the obligations as per the terms of this Agreement. After completion of Contract Period, the entire infrastructure established at various depots for charging of Electric Buses such as Transformers, Necessary Electrical systems, sub-systems, accessories and parts and Chargers will become suo moto property of AUTHORITY solely for its further usage by AUTHORITY. The Operator will not have any right on this Infrastructure after completion of Contract Period. Similarly all the Civil Infrastructure established will also become the property of AUTHORITY solely for its further usage by AUTHORITY and the Operator will not have any right on civil Infrastructure.

20.4. The Operator shall have all right to display advertisement in the Bus Depot/ Parking Spaces or any part thereof and need not share any revenue with the Authority.

20.5. The Operator shall:

a. at his own cost and expense maintain the area of the Bus Depot/ Parking Space provided to it under the terms of the license agreement and the terms contained herein in good working condition;

b. not cause any damage in the area of the Bus Depot/Parking Space provided to it under the terms of the license agreement and the terms contained herein or do any act which will in any way be prejudicial to the rights of Authority or other users/occupants of the same.

c. only be responsible to maintain the area of the Bus Depot/Parking Spaces which has been specifically allocated and handed over to him by the Authority under the relevant licence agreement

20.6. Authority will assist the operator to take 11/22/33 KV HT power line available at Parking Space. Operator will arrange for site level distribution of power to its charging points along with related equipment and infrastructure for charging including any civil and other ancillary work required for parking, charging and maintenance. The decision on number of chargers to be provided is left to the Operator according to his solution. The Operator shall

also be liable to pay bills for utilities such as electricity, water etc. on actual basis in relation to the area of the Bus Depot/Parking Space allotted to the Operator.

20.7. All Electricity charges including the connection charges for charging of Buses and for maintenance & other activities in depot and t the charging station deployed on the routes shall be borne by the operator .

20.8. Operator should provide the best solution in terms of bus, capacity of batteries, charging infrastructure required, charging time etc. looking to the operational requirements of Authority. (This includes any of the charging mechanism like flash, fast or swapping).

20.9. The Operator shall also be liable to pay bills for utilities such as water, electricity etc. on actual basis in relation to the area of the Bus Depot/Parking Space allotted to the Operator. Operator shall establish and maintain necessary Infrastructure for these requirements.

20.10. It shall be the obligation of the Operator to whom a Bus Depot/Parking Space is allotted to allow buses of other Bus Operators for other Urban Bus services of Authority to park and share the facilities developed at the Bus Depot by the Operator. It is likely that Authority may ask multiple Operators to share Depot/Parking Space Facilities to optimize Bus Schedules. In such case different Operators may decide the terms if any between them which are most suitable in their opinion.

21. OPERATION PLAN

21.1. The Authority shall develop a plan which shall contain details including but not limited to number of Contracted Buses, details of the Assured Fleet Availability, Operating Plan, Routes, frequency, stoppage plan and table of schedule providing bus headways based on peak and off peak hour requirements ("Operation Plan").

21.2. The Authority may develop the Operation Plan in consultation with the Operator provided however, the suggestions made by the Operator shall not be binding on the Authority.

21.3 The Authority reserves the right at its own sole discretion to make changes to the Operation Plan from time to time and shall notify the same to the Operator.

22. ROUTES AND SCHEDULES

22.1. The tentative routes for the 50 buses have been mentioned in the RFP document. Authority shall have the exclusive discretionary power to determine Routes, frequency and

schedules of the Contracted Buses as a part of the Fleet Deployment Plan throughout the Contract Period.

22.2. The Operator shall ensure that the Contracted Buses are operated on the said Routes, frequency and schedules and other requirements as specified in the Fleet Deployment Plan and as specified by the Authority from time to time in accordance with the operation and maintenance standards specified herein.

22.3. The Authority may at any time make changes to the Routes, frequency, schedules of Contracted Buses due to any reason whatsoever including but not limited to special circumstances, festivals, and seasonal requirements.

22.4. In the event the Authority makes changes as specified in above Clause, it shall notify the Operator in writing [seven (7) days] prior to the date of implementation of such change.

22.5. In the event the Operator makes any unscheduled or unauthorized trip outside operation hours and beyond the Routes or in violation of any requirement of the Fleet Deployment Plan or specific instructions notified by the Authority in relation thereof, it shall be liable for the penalty set forth in this Agreement.

23. FARE AND FARE COLLECTION

23.1. Passenger Fare Determination

The Authority shall determine the quantum of passenger fare that will be charged from the users/passengers of the Contracted Buses or persons who avail of the Bus Service ("Passenger Fare").

23.2. Passenger Fare Collection

a. The Authority retains the right to collect Passenger Fare either by itself or through a third party using any technology or methodology it deems appropriate to it.
b. The Operator shall not directly or indirectly collect Passenger Fare or any portion thereof.
c. The Operator shall not in any way cause any interference in the process of collection of Passenger Fare and shall fully co-operate and facilitate the process of Passenger Fare collection undertaken by the Authority though itself or a third party including allowing any personnel such as a conductor to collect such Passenger Fares on the Contracted Buses.

24. ADVERTISEMENT ON THE BUSES

24.1. The Operator shall have all rights to display advertisement of all types of media on the Contracted Buses as well as to collect and retain revenue generated from advertisement.

24.2 The Operator shall be responsible for security and cleanliness of advertisement material and equipment.
24.3 In case any damages occur to the Contracted Buses while mounting or dismounting of advertisement material or equipment, the Operator shall immediately make good of such damages at it's own cost. The Authority shall not make any compensation to the Operator in this regard.
24.4 Advertisement rights shall not be limited for the following spaces in the contracted buses:

1. Interior
2. LED Displays near back door and behind driver seat Advertisement panel on the back of passenger seats
3. Advertisement panel on the Standee passenger hand hold
4. Exterior
5. Side Panels Back Panel

24.5 The dimensions and colour schemes of the advertisement panels shall be finalised in consultation with the Authority.
24.6 The Advertisement should not be anti-social, vulgar, unlawful and should require permission of Authority. The Authority shall have the right to regulate the Advertisement. The Operator shall not display any Advertisement that is on the negative content as detailed below, irrespective of the time of the day and scale of the advertisement. Such negative content list is mentioned below:

a. Advertisement banned by the Advertisement Council of India or by law.
b. Advertisements of goods or services which are prohibited by any law
c. Advertisement of Political Parties.
d. Advertisements of any kind of prohibited drugs, hard drinks (Alcohol) and all kind of tobacco products for smoking.
e. Advertisements containing pornographic contents and/ or an "indecent representation of women" within the meaning of the Indecent Representation of Women (Prohibition) Act, 1986.
f. Advertisements containing sexual overtone and/ or nudity.
g. Advertisements glorifying exploitation of women or child.
h. Advertisements showing violence and cruelty to either human being or any kind of plant or animal.
i. Advertisements showing racial abuse to any caste or community or propagating ethnic differences.
j. Advertisements related with lottery tickets, sweepstakes entries and slot machines.
k. Any animated, laser, moving or blinking displays.
l. Advertisements accompanied by sound.
m. Advertisements banned by the provisions of the Election Commission.
n. Any other advertisement not found appropriate by The Authority.

25. PAYMENTS TO THE OPERATOR FOR KILOMETER CHARGE

25.1 Calculation of Kilometres of Buses

i. The Authority shall pay hire charges through Escrow Account for the actual effective kilometres at the rate determined through the tender process.

   1. Distance operated for making payment will be reckoned from the appointed terminus for plying vehicles as per the kilometers of the trip distance as per time table.

   2. Distance travelled by the Contracted Bus from the Bus Depot/Parking Space to the first point of loading passengers at the commencement of its service on a day and Distance travelled by the Contracted Bus from its last passenger stop as per the Operating Plan to the Bus Depot/Parking Space at the end of the day's service shall not be considered.

   3. Distance travelled by a Contracted Bus, which is outside the Operating Plan but approved by the Authority for specific and special requirements, shall be considered.

ii. The Operator shall make available the bus for minimum 16 hours a day. In case a bus is not made available for minimum 16 hours a day, it will not be counted as a day for the purpose of reckoning the number of days operated in a month.

iii. In case of cancellation of kilometers trips for any reason payment shall be made for actual km operated.

iv. Bus Kilometres shall not constitute the following:
   1. Any kilometres travelled by the Contracted Bus to a maintenance facility set up by the Operator at the Bus Depot/Parking Space provided by Authority or for any travel not authorized by Authority.
   2. Distance travelled by a Contracted Bus for charging facility set up by the Operator at the Bus Depot/Parking Space provided for by Authority.
   3. Kilometres from the point of the breakdown to the destination point in case of breakdown wherein Authority can divert the passengers to any other hired bus of Authority.

v. Increase in route kilometer due to enforcement of law and order shall not be reckoned for hire charges where Authority has not changed its fare structure.

vi. Operator is free to keep spare electric buses for smooth running of contracted Electric Buses. The Operator shall at all times during the contract period maintain 96% of the buses every day excluding 2 days in a month for maintenance. If it fails to provide, additional penalty will be charged as per mentioned in Annexure for Deficiency and Incident Wise Damages/ Fines of the agreement.

vii. In case of an accident where the bus is detained by police authorities or impounding of vehicle by any other statutory authority, penalty will be imposed for the period for which the vehicle is detained or impounded by the authorities.

25.2 Payment of Bills

The Authority shall compute and provide payment to the Operator through Escrow Account, for every Payment Period, from when the first of the Contracted Buses commences service. The data of total number of kilometres that the Contracted Buses have travelled for the aforesaid period will be collected from all Depot Managers at Traffic Manager Level. Such calculation shall be made using actual survey manually with the supervision of the Authority staff / Global Positioning System (GPS).

25.3. Basis for Payments

i. The bidder shall quote his rate per kilometre charge in "INR per km." for operation of buses to be given to AUTHORITY "On hire" as per the terms and conditions specified in the contract. The charges quoted will be effective for the contractual period from the date of operation under the contract with the provision for revision in the Hiring Charges to cover the upward price escalation annually from 3rd year of contract.

ii. The Basic Quoted Rate per kilometer for Hiring of Electric AC Buses will be revised annually @ 2.0% of Basic Quoted Rate from 3rd year of the date of COD throughout the contractual period to accommodate price escalation on account of cost of maintenance, material and manpower. However, for the first two years, there will be no revision for Hiring Charges.

25.4. Payment Terms

a) Invoicing Period

i. Fortnightly Bills for the payment of hire charges as per provision laid in 25.1 above shall

ii. be prepared by the Operator and submitted with receipt along with certificate of authorized official of the Authority on every 20th day of current month for the First Fortnight and bill for second fortnight can be submitted on every 5th day of succeeding month. The Operator shall submit an invoice specifying:

iii. Registration number of each Contracted Bus and the type of bus that has travelled as part of the Bus Service,

iv. Bus Kilometres travelled by each Contracted Bus as part of the Bus Service in the relevant payment period (clearly identifying the Contracted Bus)

v. Applicable Kilometre Charge for the period for the particular type of Contracted Bus.

vi. GST tax, and any applicable surcharge or cess on it, if any, payable on the amount as per provision of sub clause below.

vii. The Operator shall submit invoice strictly for the operated kms for the payment period provided by Authority. (here in together referred as "Invoice Amount")

b) Payment Period

i. The Authority shall, within a period of 15 (Fifteen) days of the receipt of invoice, will check AUTHORITY Internal record and make payment of the total invoiced amountthrough Escrow Account. In case of expiry of the agreement in the normal course of time, complete payment of last month of operation shall be made by the last day of the Agreement.

ii. All payments shall be made by the Authority to the Operator after making any tax deductions at source under Applicable Law.

c) Method for Calculation of Payment

The Escrow payment for Bus Kilometres for actual Bus Kilometres per each Contracted Bus deployed shall be calculated as

Payment = Applicable Kilometre Charge for Contracted Bus x Operated KM

(Where Operated KM is Bus Kilometres Operated by the contracted buses as part of the Operating Plan during the relevant Payment Period)

- Any Fines levied, Excess Electricity Charges than assured shall be adjusted from the Payment subject to provisions of this Agreement.

- Any applicable surcharge or cess on payment for services rendered by the Operator, if any, shall be levied and billed over and above the payment amount based on the number of operated kilometres in the given period multiplied by the Applicable Kilometre Charge. The Authority is liable to pay this additional amount on the Invoice Amount.

- The GST as applicable shall be payable by the Authority

iii. Any increase in the unit price of the Electricity/ WPI shall be regulated by the formula mentioned below:

Jabalpur City Transport Services Limited, Jabalpur shall not be liable to make any other payments such as those arising from maintenance or operations of buses other

R = [R-base] + [R-base x 0.45 x (F – F-base)/F-base] + [R-base x 1.2 x 0.35 x (W – W-base)/W-base]

Where

R is Applicable Kilometre Charge for the payment period

R-base is the Base Kilometre Charge

F is present Price of Electricity/unit

F-base is Base Year Price of Electricity/unit.

W is Present Year Wholesale Price Index.

W-base is base year whole sale price Index.

d) Guarantee to operate particular number of kilometres

The Authority hereby assures the Operator that the Operating Plan will be formulated so as to ensure that the Bus Kilometres travelled by each of the Contracted Buses, in daily basis is 200 Kms at annual assured fleet level. The total kms shall be calculated as per the fleet size at the end of the each month.

e) Assured Payment after Reconciliation

i) Payment for Unutilised Kilometres

In the event that the Authority is unable to demand from the Operator the operations of the Contracted Bus trips such that the average number of kilometres operated per Contracted Bus is not equal to the Assured Bus Kilometres, Authority will pay to the Operator, in addition to the full payments made for Bus km operated based on invoices presented by the Operator, an amount which shall be determined as follows:

Assured Payment Amount for Unutilised Kms = 0.75 x (Tm – Ta) x Applicable Kilometre Charge

Where,

Tm = Assured Bus Kilometres

Ta = Actual Bus Kilometres Operated by the Contracted Bus during the relevant period that has triggered this provision.

It should be noted that the Assured Payment Amount will not be payable for any shortfall in Kilometres of the Fleet that arises due to:

- Default of the Operator under this Agreement
- Non-availability of Contracted Buses for reasons attributable to maintenance or accidents
- Breach of law by the Operator
- Occurrence of a Force Majeure Event.

ii) Payment for Excess Kilometres

If the Contracted Buses operated under this Agreement exceed the Assured Bus Kilometres, then the Kilometre Charge payable applicable for such additional kilometres in excess of the Assured Bus Kilometres shall be calculated as follows;

Assured Payment Amount for Excess Kms = 0.75 x (Ta – Tm) x Applicable Kilometre charge

where

Ta = Actual Bus Kilometres Operated by the Contracted Bus during the relevant period

that has triggered this provision

Tm = Assured Bus Kilometres

iii) The Authority shall provide the Operator with a notice of the calculation with the supporting data (the kilometres travelled by each of the Contracted Buses comprising the Available Fleet).

iv) The Authority shall have right to compute on its own and verify the Assured Kilometres. The Authority shall compute and provide to the Operator, every quarter from the COD for the respective lot of buses, the total number of Kilometres that the Available Fleet has travelled for the aforesaid period. Such calculation shall be made manually or using GPS.

v) With respect to sub clauses (iii) and (iv) herein above, the provision of clause 25.4 e shall be also used to determine Assured kilometres.

vi) Any dispute regarding kilometers operated/payments received shall be taken up with the Depot Manager of respective depot within one month from date of receipt of payment. Claims raised after one month shall be treated as null and void. The disputes shall be heard and settled by Traffic Manager.

vii) Income tax at source would be deducted from the payment made to the Operator as per rules in force from time to time.

25.5. Limitations to Liability of Authority for Operations and Maintenance

The Authority shall not be liable to make any other payments other than the payments described in this Clause.

25.6. Liabilities arising from negligent driving and accidents

a. Any damages arising due to negligent driving, malfunctioning of bus or accidents of the Contracted Buses on the street and within the Authority premises shall be the liability of the Operator.

b. The Operator shall be responsible for all claims that may arise due to statutory violations and negligence etc. arising out of the operation of its bus on road and within the Authority premises, like claims and damages due to accidents, providing relief and emergency medical care to persons or property of fatal or injury or any loss/damage to any property, etc. payable under the provisions of M.V. Act/Rules or any other Acts. The Authority under no circumstances shall be made liable or responsible to pay any compensation that may be imposed by the Statutory Authorities, in respect of accidents and injuries involved.

c. It shall be the responsibility of the Operator to make arrangements on behalf of the Authority for proper prosecution of proceedings before the Motor Accident Claim Tribunal (MACT), Regional Transport Authority (RTA), State Transport Authority (STA), Hon'ble High Court, Hon'ble Supreme Court, etc. in respect of the claims as stated herein at its own cost and consequences.

d. In case of accident, Operator himself shall make arrangement to bail out his employee (driver) from police custody following the applicable law and also to deal with further litigations arising out of the said accident, as per the applicable law.

25.7. FINES AND COMPENSATION

Any fines levied by traffic police or any competent Authority will be borne solely and directly by the Operator. The Authority shall have no liability in relation thereof.

26. TAXES AND STATUTORY LEVIES

The responsibility to pay taxes and statutory charges related to Bus Services would be divided between the Authority and the Operator as mentioned in the responsibility matrix provided in the table below:

Sr. No.	Permission/ Clearance	Party responsible

1	Vehicle Registration	Operator
2	Insurance for Electric Buses, Electrical & Civil Infrastructure and other Authority owned assets like Depot	Operator
3	Motor Vehicle tax	Operator
4	Fitness Certificate Renewal	Operator
5	Stage Carriage Permit	Operator
6	No Objection Certificate from State Transport Department or RTA or from State Transport Undertaking as applicable	Operator
7	Fare Notification & Collection	Authority
8	Pollution Under Control Certification	Operator
9	Road worthiness Certificate / Fitness Certificate for Electric Buses	Operator
10	Passenger Tax on tickets	Authority
11	GST	Authority/ Operator

27. OPERATION AND MAINTENANCE STANDARDS

27.1. The Operator shall observe the minimum service standards for operations and maintenance of Contracted Buses as provided in the Agreement.

27.2. The Operator shall operate and maintain the Contracted Buses in accordance with the Fleet Deployment Plan, and shall at all times ensure that the frequency is maintained as specified under the Fleet Deployment Plan or as per the instructions of the Authority from time to time.

27.3. The Operator shall ensure that the following activities are undertaken as part of the maintenance activity of the Contracted Buses without causing any disruption to the frequency or the availability of the Contracted Buses in accordance with the terms contained herein:

a. Charging of Bus Batteries. (At the depot & at the route charging points).
b. Checking and maintaining Transformers including Annual Inspection from Competent Authority like MSEDCL, Electrical Inspector and payment of their respective licence fess, Checking and Maintenance of Chargers and Charging Infrastructure.
c. Checking and topping of oils

d. Checking of tyres
e. Cleaning, sweeping and washing of buses including soap washing every week.
f. Attending to defects reported by drivers
g. Repairing/ Replacing any damaged, non-functional parts, systems and sub systems of electric buses, transformer, chargers and electrical and civil infrastructure of the same specification.

27.4. In addition to the Operator Clearances, the Operator shall ensure that he procures and maintains a valid certificate of fitness, as per the statutory rules and a pollution control certificate if applicable from the relevant authorities for all the Contracted Buses from time to time.

27.5. The operator shall make its own security arrangement by appointing and deploying security personnel at parking and charging space.In the event the Operator fails to maintain the security of the Contracted Buses and there is any theft or damage of bus component/spare parts/ hardware/software/instrument/bus batteries,then the Operator shall reinstall/re-instate such bus component/ spare parts/ hardware/ software/ instrument/ bus batteries of the same or equivalent quality and specification after giving prior written notice to the Authorityand after obtaining consent of the Authority.

27.6. The Authority or representative of the Authority shall monitor the replacement or reinstallation done by the Operator and shall determine whether the replaced or reinstalled bus component/spare parts/batteries/hardware/software/instrument is the same or equivalent quality as originally provided or installed in the Contracted Bus. In the event that the Authority or representative of the Authority determines that the replaced or re-installed bus component/spare arts/batteries/hardware/software/instrument is of an inferior quality then the Authority shall consider this an Operator's Event of Default.

27.7. In the event of such breach in security, the Operator shall extend all co-operation to the Authority including but not limited to filingcomplain to the police and undertake any other investigation as directed by Authority.

27.8. Operator shall replace batteries/ replenish charging infrastructure at its own cost if need so arise to comply with Assured Availability during the Contract Period.

28. ROLES, RESPONSIBILITIES AND OBLIGATIONS OF THE OPERATOR AND THE AUTHORITY

28.1. Obligations of the Operator

In addition to the terms and conditions of this Agreement, the Operator shall perform the following obligations. The Operator shall:

28.1.1. Operator shall deploy the fully built AC Electric buses in accordance with termsand condition set forth in this Agreement.

28.1.2. Operation and Maintenance of Contracted Buses:

a. Operate and maintain the Contracted Buses in accordance with Specifications, maintenance manual and other information provided inAnnexure to the Agreement.
b. Use the Contracted Buses only for the purpose of providing Bus Services in accordance with this Agreement and shall not use the Contracted Buses for any other purposes;
c. Allow access to the Contracted Buses to all members of the public without any prejudice or discrimination;
d. Ensure that all recruited drivers shall hold commercial heavy duty vehicle license with minimum experience of 5 years of operating passenger buses with PSV badge. Licenses of drivers shall be submitted to Authority for verification before deployment. In addition, before deployment of any driver/s, the Operator shall arrange to verify, through appropriate tests, the knowledge, skills and expertise of the proposed drivers and obtain an acceptance certificate from Authority for deployment of each driver. When on duty, the driver shall always carry this certificate. No driver without the said certificate shall ever be deployed on the Buses provided for the Bus operation of the Authority. Further, if any driver is found to be wanting in the requisite skills, knowledge, and responsibility, Authority reserves the right to ask for replacement of such a driver by a duly qualified driver and the Operator shall forthwith comply with this requirement immediately.
e. Make drivers and technicians undergo orientation / familiarisation training programme at respective cities. Operator would also arrange for space, the training bus,etc for said training programme at his cost.
f. The training program shall be organised by the Operator on periodic basis as an ongoing activity of providing primary training to newly recruited drivers and technicians as well as upgradation training to existing manpower.
g. Ensure the highest standards of cleanliness both inside and outside the Contracted Bus at the time of reporting for the first shift of operations of the bus service of the day;
h. Ensure safety and security of the passengers, personnel and any third party using the Contracted Buses. The Authority may impose penalties/damages for breach of safety, maintenance and operating requirements;
i. Ensure safety and security of the Contracted Buses against theft or other forms of damage;
j. Submit invoices in a timely manner in accordance with the terms contained herein;
k. Maintain working capital equivalent to at least 2 (TWO) month's Operator Payment payable by Authority;
l. Pay all amount due and payable including but not limited to damages and/or fines to the Authority as per terms of Agreement without any delays;
m. Ensure that the Contracted Buses stop to pick up and allow the passenger to get off at the nominated bus stations;
n. Provide and maintain (and keep up to date) first aid box in each Contracted Bus during Contract Period;

o. Keep available any and all equipment, spare batteries, charging infrastructure, consumable, machine or material that is required for the uninterrupted and continuous operation, management and maintenance of the Fleet at all times and places during the Contract Period;
p. Make adequate arrangement for Maintenance of Buses overhauling of bus aggregates, repair and replacement of tyres, repair of bus bodies, repair of accidental buses, repair of charging infrastructure and bus batteries etc to the satisfaction of the Authority.
q. Make adequate arrangement either in-house or outsourced for attending to road calls on-line, towing of failed vehicles if required, clearance of bus ways, etc in least possible time.
r. Shall not tamper or interfere with any equipment, instrument or system installed including the GPS tracking facilities and any other IT and Contracted Bus monitoring devices provided in the Contracted Buses to enable provision of safer Bus Services to the passengers.
s. Shall ensure the air conditioners provided in the Contracted Buses are operated and maintained in good working condition as per the design capacity, failing which the Authority shall have the right to impose fines in relation thereof.
t. All provisions of this document would be applicable, mutatis mutandis, for providing buses for operation during night shift if so required and or full complement of buses required on festival days / special occasions etc as decided by Authority.
u. Ensure at its own cost and expense and keep available at all times, any and all equipment, charging infrastructure, consumable, machine or material that is required for the uninterrupted and continuous operation, management and maintenance of the Bus Service and the implementation of this Agreement. It is clarified that all the costs, including costs relating to the equipment, material and consumables shall be solely borne by the Operator.
v. Submit the copy of the Employee State Insurance and Provident Fund challans to the Authority every month; and
w. Agree to comply with all Applicable Laws including labor and local laws, pertaining to the employment of labor, staff and personnel engaged by it for implementing the Project, that are now or may in the future become applicable to Operator's management, operation and maintenance of the Project, and personnel/ drivers, engaged in such operations covered by this Agreement or accruing out of the performance of Bus Services and operations contemplated hereunder. The Operator shall be solely responsible and liable for compliance with all Applicable Laws, including labor and local laws, pertaining to the employment of labor, staff and personnel engaged by it for implementing the Project.

28.1.3. Co-operation with the Authority

a. cooperate with the Authority and/or any third party appointed by Authority for the purposes of establishing or operating any equipment, instruments or systems in the Contracted Buses or Bus Depots, Terminals and/or ParkingSpaces;

b. make adequate communication arrangements / develop communication facilities / centre for effective and efficient, timely communication of all incidents/ accidents/ breakdowns etc. to relevant authorities / persons / officials.
c. cooperate with the Authority and/or any third party appointed by the Authority for the purpose of collection of Passenger Fare;
d. co-operate with the Authority or any third party appointed by the Authority in relation to the installation, operation, and maintenance of the ticket vending and collection of fare through hand held machines if required. The Authority, its personnel, and authorized Operators shall have complete access to such ticket vending and validation machines and shall not be in any manner obstructed by the Operator, its personnel, or Operators, and the said machines shall in no manner be tampered with or damaged by the Operator or its personnel;
e. cooperate with the Authority for the purposes of monitoring and supervision of the quality, efficiency and adherence of the Operator to other contractual arrangements pertaining to Project.
f. maintain log books, bus wise, and all maintenance work / activities pertaining to each bus shall be entered there-in on regular basis. Authority shall be free to inspect logbooks at all times and the Operator shall make log books available to Authority or it's representative and answer all queries to it's satisfaction.
g. respond to all notices, letters , communications received from Authority within the given time frame;
h. provide all information, data, records, documents or information as may be required by Authority or its representatives, from time to time; and
i. Participate in all the meetings, discussions as directed by the Authority from time to time.

28.1.4. Compliance with the terms of the Warranty and Good Industry Practice

a. shall comply with all terms of Warranty and instructions that are provided by Bus Manufacturer ;
b. undertake all preventive and corrective maintenance in compliance with terms of the Warranty as provided by the bus manufacturer, standards and instructions as may be notified by the Authority from time to time and in accordance with Good Industry Practice;
c. carry out major overhauls of the Contracted Buses according to the number of kilometres travelled as per terms of the warranty as provided by the Bus manufacturer, standards and instructions as may be notified by the Authority from time to time and in accordance with Good Industry Practice;
d. shall comply with all the literature provided by bus manufacturer in terms of manuals, operating, and maintenance and safety instructions/manual to the Operator. The Operator shall be responsible for understanding the working of Contracted Buses allotted to it in all aspects specified above including safety features. Operator shall abide by the instructions specified in the operating, and maintenance and safety instructions/manual all times during the Contract Period. The inspection procedures for the frequency and type of the inspection for each technical condition criteria as specified therein for

e. Contracted Buses shall be complied by the Operator;
f. notify defects of any bus component or equipment and/or monitoring device to Authority and take prompt and immediate action as per the instructions of the Authority at Operator's own cost and expense, as per the instructions issued by the Authority.

28.1.5. Record and ReportingRequirements

a. maintain record of all preventive maintenance activities shall be kept in the bus maintenance log book and duly authenticated by the person in charge of carrying out Contracted Bus maintenance. The Operator shall submit the
b. log books for inspection by Authority staff as and when demanded;
c. submit to the Authority in a format as specified by the Authority from time to time:
   i) a monthly report which shall include but not be limited to:
   • Progress reports
   • Status of all risks and issues.
   • Status of readiness the skilled staff to operate Contracted Buses and supervise Contracted Bus operation.
   • Status of Contracted Buses with regards to roadworthiness and compliance with highest maintenance standards/manufacturer's manual or instruction.
   ii) Report on an immediate basis reporting incidents requiring urgent attention of the Authority such as accidents, theft, etc.
   iii) Submit a summary of all the complaints on a monthly basis to Authority.
   iv) Submit copy of certificate of road worthiness of the Contracted Buses periodically every quarter.

28.1.6. Inspection

a. Make available Contracted Buses to the Authority or its authorised personnel for inspection as and when required/instructed by Authority for assessment of compliance with maintenance and roadworthiness.
b. Upon such inspections any suggestions/instruction received from the Authority with regards to corrective actions, maintenance requirement, part replacement requirement, shall be implemented by the Operator at its own cost within [15 (fifteen)] days or a reasonable time period as specified by the Authority. In case of non-rectification/non action of such instruction within stipulated time period, the Authority may replace or rectify such defect at its own cost and such expenses borne by the Authority shall be reimbursed by the Operator on an immediate basis.
c. It is hereby clarified that the Authority at its sole discretion, if it determines that such events are occurring on regular basis or are causing undue interference with the Bus Services, may:
   (i) impose fines and/or damages in accordance with the terms contained herein; and/or
   (ii) terminate this Agreement.

28.1.7. Repair and Replacement

a. Subject to obtaining prior written permission of the Authority and any instructions/specifications issued by the Authority, the Operator may if need so arises, replace or install any equipment or accessory for beyond the specifications inside or on the outside of the Contracted Buses. In the event the Operator replaces or installs any equipment or accessory in accordance with this provision, it shall ensure that such additional equipment or accessory is compatible with the existing bus components, parts, software, accessories, or equipment.

28.1.8. Appointment of Drivers and Staff

a) appoint:

(i) drivers holding a valid licence and Public Service Vehicle (PSV) badge for driving passenger bus for a minimum period of [5 (five)] years , before the Execution Date in accordance with the Motor Vehicles Act, 1988; and submit the license of all appointed drivers to the Authority before deployment of the Contracted Buses; and

(ii) appoint either on a temporary, permanent or contractual basis trained and skilled staff for operation, maintenance, and supervision of the Contracted Buses and Electrical and Civil Infrastructure facilities related thereto at his cost for services as per the Agreement.

Provided however, the Authority may require the Operator, to remove any person employed for the Bus Services, who in the opinion of the Authority:

i. persists in any misconduct,
ii. is incompetent or negligent in the performance of his duties,
iii. fails to conform with any provisions of this Agreement, or
iv. persists in any conduct which is prejudicial to safety, health, or the protection of the general public / environment.

b) be solely and exclusively responsible for all drivers, employees, workmen, personnel and staff employed for the purposes of implementing the Agreement. The Operator shall ensure that all personnel and staff are under its supervision so as to provide the Bus Service in a safe and efficient manner to the public.

Provided, however the Authority shall not be liable for any payment or claim or compensation (including but not limited to compensation on account of death/injury/termination) of any nature to such foregoing persons at any point of time during tenure of this Agreement or thereafter and the Operator shall keep the Authority indemnified in this regard.

c) ensure that all drivers, personnel and staff shall wear uniform as approved by Authority and are well behaved with passengers and officials of Authority. The Operator shall at its own cost and expense provide uniforms and shall ensure that clean uniforms shall be worn by drivers and any other personnel and staff employed at all times when they are on duty and doing any act in relation to providing the Bus Service under this Agreement.

d) hold periodic training sessions for drivers, staff and all personnel (temporary or on contractual or permanent basis) so as to ensure to implementation of Bus Services efficiently.

e) ensure that the drivers and other personnel engaged by the Operator do not involve in any subversive activities, disruption in normal services and inconvenience or/and harassment to the commuters/users The drivers and other personnel engaged by the Operator are required to be police verified.

f) be responsible for all the costs and expenses of maintenance, operation, employment of drivers and other personnel including but not limited to travel, training of its employees, and vendors engaged by the Operator in connection with the implementation of this Agreement.

g) make efforts to maintain harmony and good industrial relations among the labor and personnel employed in connection with the performance of the Operator's obligations under this Agreement and shall at all times be the principal employer in respect of such labor and personnel.

28.1.9. Appointment of Operator's Manager

The Operator shall appoint, at each of the depot, qualified personnel to supervise and manage day to day operations and maintenance of the contracted buses and Maintenance of Transformers, chargers and associated electrical and civil infrastructure and to act as a single point contact to manage all the communications and correspondence with Authority ("Operations Manager").

28.1.10. Payment of Taxes and Duties

Subject to Clause 25, make timely payment of all taxes and duties due and payable under Applicable Law.

28.1.11. Payment of Fines

Shall ensure that it promptly pays any fines or damages that may be imposed for any defaults in compliance with traffic rules or other Applicable Laws in relation to the operation of the Bus Service.

28.1.12. Bear the costs associated with electricity consumed for lighting and repair and maintenance activities and water chargesas per clause 20.6.

28.1.13. No Alterations or Modifications of the Contracted Buses

a) ensure that there are no alterations in the Contracted Buses or any part thereof made at any point of time including the colour of such Contracted Buses without the prior written approval of the Authority.

b) ensure that no additional or new equipment, hardware or software is installed or used in the Contracted Buses without prior approval of Authority.

c) shall not tamper or interfere with any equipment, instrument or system including the GPS tracking facilities and any other equipment without prior approval of Authority.

28.1.14. Complaints Redressal

a) maintain a complaints register on every Contracted Bus, and shall ensure that the Complaint Register is not tampered with in any manner at any point of time.

b) take appropriate action as per the instructions notified by the Authority in relation to any complaint made by the passenger or user of the Contracted Bus or any third person in relation to the Bus Service.

28.1.15Provide APIs and Interfacing protocols of ITS Componentsto Authority so as to ensure compatibility and integration of Operator's ITS Equipment with Authority's ITS System.

28.2. Rights of the Operator

The Operator shall have right to:

28.2.1.receive Operator Payment from the Authority as per the terms mentioned in this Agreement;

28.2.2. Receive support for obtaining required permits and sanctions from the government, or local body and to obtain assistance and support in dutifully carrying out the obligations as provided for in this Agreement as may be within the purview and general jurisdiction of the Authority;

28.2.3. Use Parking Space subject to the terms of the Bus Parking Space Lease Agreement and the terms provided herein; and

28.2.4.Operate and maintain the Contracted Buses on the Routes as per conditions set forth in the Agreement.

28.2.5.Expect Transfer of Contracted Buses after completion of contract as per the terms specified in Clause 39 of the Agreement

28.3. Authority's Rights and Responsibilities

In addition to the terms and conditions of this Agreement, the Authority shall:

28.3.1.Provide provisions for water and electric connection to theParking Space during the Agreement Period;Further necessary Infrastructural requirements shall be dealt with by Operator.

28.3.2.Provide to the Operator the Bus Depot right to use to the Operator in accordance with the terms of this Agreement and Depot License Agreement

28.3.3.Obtain, at its own cost, Route licenses (stage carriage permits) from the RTO, and allow the Operator to operate the buses on its behalf under these Licenses;

28.3.4. provide APIs and Interfacing protocols to Operator so as to ensure compatibility and integration of Operator's ITS Equipment with Authority's ITS System.

28.3.5. establish and operate a Central Control Centre to:

(i) register complaints, public grievances in relation to the Bus Services being undertaken by the Operator under this Agreement; and

(ii) monitor and supervise the functioning of the Operator; (iii) maintain records and reports in relation to the implementation of the Project;

28.3.6. provide assistance, on a best effort basis, in obtaining the Operator Clearances, provided the Operator has made the applications for such permits/ clearances to the concerned government authorities and is otherwise in compliance with the terms applicable for grant of the same;

28.3.7. conduct regular inspections of Contracted Buses and the Project at any time during the Contract Period. The Authority may penalise traveller commuting without ticket in cash as determined by the Authority;

28.3.8. provide the right of use and right of way to the Operator, in respect of the space for parking of Contracted Buses, together with the right to use and right of way for such space only for the purposes set forth in this Agreement;

28.3.9. have the right to levy damages and or fines as provided in this Agreement and in the event the Operator fails to make payments of such fines, the Authority shall have the right to deduct the same from the payments for Km charge and / or Performance Security

28.3.10. have the right to issue operating instructions and any other advisory or instruction as deemed necessary to maintain highest standards of Bus Services including safety, functionality and operationality of the Bus Services.

29. INSURANCE

29.1. Insurance During the Contract Period

29.1.1. The Operator shall, from day one from the date of signing of Agreement at its cost and expense, purchase and maintain insurances, as per law of India and as per prudent market practices starting from COD and handover of Parking Space Premises upto the end of the Contract Period such, including but not limited to the following;

29.1.2. Insurance of Contracted Buses and payment of RTO registration charges as per Motor Vehicle Act for registration of Buses in name of Operator and insurance / RTO charges if any for all subsequent years of contract.

29.1.3. 100% replacement cost for any loss and damages to the Authority's Property/Project Asset/Premises/Parking Space with Authority as beneficiary. Shortfall in insurance cover, if any, shall be borne by the Operator.

29.1.4. Operator's all risk insurance with the Authority as co-beneficiary;

29.1.5.

a) The Operator shall obtain Comprehensive thirdparty liability insurance for all the contracted Buses as per MV act for every year of Contract Period.

b) The Operator shall obtain Comprehensive third party liability insurance for Transformer and Chargers as per applicable laws.

29.1.6. 100% insurance of employee compensation and other liability as per Workmen's Compensation Act 1923.

29.1.7. Any other insurance that may be necessary to protect the Operator, its employees and the Project Asset against loss, damage or destruction at replacement value including all Force Majeure Events that are insurable and not otherwise covered in items 29.1.2 to 29.1.6 with the Authority as beneficiary/co-beneficiary.

29.1.8. The Operator shall be responsible to pay the premium regularly and maintain the insurance policies specified above all the time during the Contract Period. Operator shall be solely responsible for failure of its renewal and liabilities arising thereof shall be payable by operator.

29.1.9. Apart from above, any liabilities arising out of or incidental to accidents in which Contracted Buses are involved shall be on account of the Operator and shall have to borne by the Operator including any compensation payable, whether such compensation payments becomes claimed, or paid during or after the currency of the contract. Authority shall not be responsible for payment of any such compensation to aggrieved parties on accounts of accidents of any kind involving the Contracted Buses.

29.2. Evidence of Insurance Cover

29.2.1. The Operator shall at the time of entering into Agreement with the Authority and thereafter from time to time, provide to Authority copies of all insurance policies (or appropriate endorsements, certifications or other satisfactory evidence of insurance) obtained by it in accordance with Operator Agreement.

29.2.2. If Operator shall fail to effect and keep in force the insurance for which it is responsible pursuant hereto, Authority shall have the option to take or keep in force any such insurance, and pay such premium and recover all costs thereof from Operator.

29.3. Application of Insurance Proceeds

29.3.1. Subject to the provisions of this Agreement, all moneys received under insurance policies shall be promptly applied by the Operator towards repair or renovation or

restoration or substitution of the Project Asset or any equipment/part thereof or Third party Property which may have been damaged or required repair/modification.

29.3.2. The Operator shall carry out such repair or renovation or restoration or substitution in such manner that Project Asset, or any part thereof, shall, after such repair or renovation or restoration or substitution shall be in the same condition as they were before such damage or destruction.

29.3.3. For insurance policies where the Authority is the beneficiary and where it received the insurance proceeds, only such sums as are required from the insurance proceeds for restoration, repair and renovation of the Project Asset.

29.4. Validity of Insurance Cover

29.4.1. The Operator shall pay the premium payable on such insurance Policy/Policies so as to keep the insurance in force and valid throughout the Contract Period and furnish copies of the same to the Authority for each year/policy period. If at any time the Operator fails to purchase, renew and maintain in full force and effect, any and all of the Insurances required under this Agreement, Authority may at its option purchase and maintain such insurance and all sums incurred by the Authority therefore shall be reimbursed by the Operator forthwith on demand, failing which the same shall be recovered by the Authority by encashment of Performance Security, exercising right of set off or otherwise.

30. DAMAGE TO CONTRACTED BUSES DUE TO VANDALISM

30.1. In the event that any damages or need for repairs to the Contracted Buses, Bus Station, Terminals and Bus Station/or Parking Spaces or any other asset provided by the Authority arises during the Contract Period on account of Vandalism, the Operator shall be required to make good the damages and repair the Contracted Buses to the original conditions at the cost of Operator. No re-imbursemnt of any kind shall be available to the Operator for any such damage or loss, including for loss of full bus. In case of loss of full bus, Operator shall replace the lost bus with another bus of same configuration, specifications, make and vintage. In all cases, the repair, servicing and rectification Service or replacement shall be undertaken by the Operator at its own cost to the satisfaction of Authority.

For the purpose of this clause, "Vandalism" is defined as destroying or damaging Contracted Buses, Transformers , chargers and the electrical and civil infrastructure deliberately and/or for no reasons attributable to omission of act or breach of obligation of the Operator by the persons other than the employee or sub-contractor of the Operator.

Provided however, damage to Contracted Buses or any part thereof due to regular wear and tear, or breach of maintenance obligations or any other obligations by the

Operator and/ or omission of act by the Operator shall be the liability of the Operator.

In such cases, the repair, servicing and rectification Service shall be undertaken by the Operator at its own cost to the satisfaction of Authority.

31. FINES/DAMAGES

31.1. Without prejudice to and notwithstanding any other provision of this Agreement pursuant to which the Operator is liable to pay fines/damages, the Operator shall be liable to pay damages/fines during the Payment Period to the Authority in respect of the deficiencies/events provided in Annexure of this Agreement ("Fines").

31.2. Fines in respect of said specified deficiencies/events for Contracted Bus shall be as provided in Annexure 1 to this Agreement.

31.3. The total Fines payable to the Authority in any Payment Period in terms of this clause in respect of all the categories of buses shall be computed by arriving at the arithmetic sum computed for each such category ("Aggregate Fines").

32.MONITORING

32.1. Evaluation of Performance of Operator

32.1.1. The Authority shall review the performance of the Operator, based on three sets of parameters, indicated broadly as follows;

Sr. No.	Performance Parameter	Appraisal Time Period	Mode of appraisal
1	Bus Maintenance	Monthly and Random Checking	Physical checking
2	Bus Operations	Daily basis	By actual survey or through GPS system connected with Central Control Centre and operations registers to be maintained by the Operator and inspected by the Authority.
3	Staff Behaviour	Through random checking	Physical checking during operation hours, complaint call and letters from passengers

32.1.2. In the event the Operator fails to perform any parameter as highlighted in sub-clause (i) above it shall be liable to pay damages to the Authority for such non-performance in accordance with ANNEXURE 1 to this Agreement.

32.1.3. In the event the Operator fails to pay the damages and/or fines for non-performance in accordance with the terms contained hereof, such fines and/or damages shall be deducted from the Operation Payment to be made by the Authority against the Invoice raised by the Operator.

33. CONFIDENTIALITY OBLIGATIONS OF OPERATOR

33.1. Protection of Confidential Information

The Operator shall not without Authority's prior written consent use, copy or remove any Confidential Information from Authority's premises, except to the extent necessary to carry out Operator's obligations hereunder. Upon completion or termination of each assignment hereunder, Operator shall return to Authority all documents or other materials containing Authority's Confidential Information and shall destroy all copies thereof.

For the purpose of this Clause, the term "Confidential Information" means the information or document which is specifically marked by the issuer/provider of information as confidential or otherwise clearly marked as confidential or proprietary, and shall include any proprietary or confidential information of Authority relating to the Bus Services provided under the Agreement in relation thereto and information relating to Authority's business or operations.

Confidential Information shall not include information which:

Is or becomes generally available to the public without any act or omission of Operator;

Was in Operator's possession prior to the time it was received from Authority or came into Operator's possession thereafter, in each case lawfully obtained from a source other than Authority and not subject to any obligation of confidentiality or restriction on use;

Is required to be disclosed by court order or operation of law; in such event, Operator shall so notify Authority before such disclosure; and

Is independently developed by or for Operator by persons not having exposure to Authority's Confidential Information.

33.2. The Operator is under an obligation to protect Confidential Information under this Clause for a period of three (3) years after the expiry or termination of this Agreement.

33.3. Intellectual Property Rights

Operator shall acknowledge and agree that any and all hardware, software, and / or firmware developed by Authority in relation to the Project and any modifications thereto or works derived there-from shall be the exclusive property of Authority at all times and Authority shall retain all right, title and interest in and to the same. Provided however that the Operator shall have the right to possess and use the same during the Agreement Period for purposes of effective implementation, operation and maintenance of the Project on specific approval of the same by Authority.

After the expiry or termination of the Agreement Operator shall have no right, title or interest in or to any work including without limitation the designs, software, modifications or facilities developed at the allotted sites by Operator for Authority under the Project for any purpose whatsoever.

For purposes of the Agreement the terms "software", "software programs" shall include without limitation the specifications, documentation, technical information, and all corrections, modifications, additions, improvements and enhancements to any of the foregoing provided at the sites by the Operator in relation to the Project pursuant to the Agreement.

34. EVENT OF DEFAULT AND TERMINATION

34.1. Operator's Event of Default

Any of the following events shall constitute an Event of Default by the Operator("**Operator'sEventofDefault**") unless such event has occurred as a result of a Force Majeure Event:

34.1.1 Operator is in breach of any of its obligations under this Agreement and the same has not been remedied for more than [60 (sixty)] days;

34.1.2 A resolution for voluntary winding up has been passed by the shareholders of the Operator;

34.1.3 Any petition for winding up of Operator has been admitted and liquidator or provisional liquidator has been appointed or Operator has been ordered to be wound up by Court of competent jurisdiction, except for the purpose of amalgamation or reconstruction, provided that, as part of such amalgamation or reconstruction the

amalgamated or reconstructed entity has unconditionally assumed all surviving obligations of the Operator under this Agreement;

34.1.4 Operator fails to comply with the Applicable laws, rules and regulations.

34.1.5 Operator does not abide by Consortium conditions specified in Agreement and elsewhere in the RFP.

34.1.6 Operator does not share APIs and Interfacing protocols of its ITS equipment with Authority.

34.1.7 Any representation made or warranties given by the Operator under this Agreement or under the RFP document is found to be false or misleading.

34.1.8 Operator fails to maintain/ refurbish/ replenish the Performance security as per terms of this Agreement.

34.1.9 Operator stands incapable of supply of single fully built bus as per the specifications.

34.1.10 Operator suspends or abandons the operations of Contracted Buses without the prior consent of Authority, provided that the Operator shall be deemed not to have suspended/ abandoned operation if such suspension/ abandonment was as a result of Force Majeure Event and is only for the period such Force Majeure is continuing, oris on account of a breach of its obligations under this Agreement by the Authority.

34.1.11 The Operator repudiates this Agreement or otherwise evidences an intention not to be bound by this Agreement.

34.1.12 The Operator failed to make any payments/damages/damages due to Authority within period specified in this Agreement or indicated by Authority without any valid reason.

34.1.13 The Operator failed to perform any of the Operator's obligations, which has a Material Adverse Effect on the Agreement

34.1.14 Operator creates an Encumbrance over the Contracted Buses, Bus Depot, Terminals or Parking Spaces.

34.1.15 Operator fails to adhere to the timelines set forth in the Agreement for performance of Operator's obligations there under; and reason thereof damages as provided in Clause 31 exceeds value of Performance Security;

34.1.16 Repeated occurrence of breach of Operator's obligations specified in this Agreement and which shall not be remedied in Remedial Period specified by Authority; and

34.1.17 Any other default/breach of its obligation by the Operator, for which default/breach termination has been prescribed in terms of this Agreement.

34.1.18 The Operator fails to repay any debt / loan raised by the Operator for the purpose of financing the Bus Body Building from institutional Lenders such as Banks.

35. AUTHORITY'S EVENT OF DEFAULT

35.1. Any of the following events shall constitute an Event of Default by the Authority (**Authority'sEvent of Default**) unless such event has occurred as a result of a Force Majeure Event:

35.1.1. The Authority is in Breach of any of its obligations under this Agreement and has failed to cure such breach within 60 (sixty) days of occurrence thereof.

35.1.2. The Authority has unlawfully repudiated this Agreement or otherwise expressed its intention not to be bound by this Agreement (for example Authority fails to renew stage carriage license/permit, demands withdrawal of the Contracted Buses etc.)

36. TERMINATION DUE TO EVENT OF DEFAULT

36.1. Termination for Operator's Event of Default

Without prejudice to any other rights or remedies, which the Authority may have under this Agreement, upon occurrence of an Operator Event of Default, the Authority shall be entitled to terminate this Agreement by issuing a Termination Notice to the Operator; provided that before issuing the Termination Notice, the Authority shall by a notice inform the Operator of its intention to issue such Termination Notice and grant minimum 45 (Forty Five) days or such other reasonable period as the Authority deems fit at its sole discretion to the Operator to remedy the default ("Remedial Period") and/or make representations, and may after the expiry of such Remedial Period on non-remedy of breach/default to the satisfaction of the Authority, whether or not it is in receipt of such representation, issue Termination Notice and then terminate the Agreement.

Upon Termination by Authority on account of occurrence of **Operator Event of Default** after COD, Authority shall pay to the Operator by way of Termination Payment

(a) 90% (ninety per cent) of the Debt Due less Insurance Cover; and
(b) 70% (seventy per cent) of the amount representing the Additional Termination Payment:

Provided that if any insurance claims forming part of the Insurance Cover are not admitted and paid, then 80% (eighty per cent) of such unpaid claims shall be included in the computation of Debt Due.

For the avoidance of doubt, the Operator hereby acknowledges that no Termination Payment shall be due or payable on account of an Operator Default occurring prior to COD.

36.2. Termination for Authority's Event of Default

Without prejudice to any other right or remedies which the Operator may have under this Agreement, upon occurrence of Authority's Event of Default, the Operator shall be entitled to terminate this Agreement by issuing a Termination Notice to the Authority; provided that before issuing the Termination Notice, the Operator shall by a notice inform the Authority of its intention to issue such Termination Notice and grant 45 (Forty Five) days or reasonable period to the Authority to remedy the default and/or make representations, and may after the expiry of such Remedial Period on non-remedy of breach/default, issue a Termination Notice.

36.2.1 Upon Termination on account of an Authority Default, the Authority shall pay to the Operator, by way of Termination Payment, an amount equal to:

(a) Debt Due;
(b) 150% (one hundred and fifty per cent) of the Adjusted Equity; and
(c) 115% (one hundred and fifteen per cent) of the amount representing the Additional Termination Payment.

36.2.2 Additional Termination Payment due and payable in respect of Real Estate Development forming part of Specified Assets shall be limited to the lowest of:

(a) Adjusted Depreciated Value thereof;
(b) the replacement value thereof, as assessed by an Approved Valuer, who shall be selected and appointed by the Authority, within 15 (fifteen) days of Termination, for submitting his assessment within 30 (thirty) days of his appointment hereunder; and
(c) [40% (forty per cent)] of the sum of Total Project Cost, if any.]]

("Adjusted Depreciated Value" means the amount arrived at after adjusting the depreciated book value of an asset (as stated in the books of account of the Operator) to reflect the variation occurring in WPI between the date of procurement thereof and the Transfer Date)

36.2.3 Termination Payment shall become due and payable to the Operator within [60 (sixty)] days of a demand being made by the Operator to the Authority with the necessary particulars, and in the event of any delay, the Authority shall pay interest at a rate equal to [3% (three per cent)] above the Bank Rate on the amount of Termination Payment remaining unpaid; provided that such delay shall not exceed [90 (ninety)] days; provided

36.2.4 Other rights and obligations of the Authority

Upon Termination for any reason whatsoever, the Authority shall:

(a) take possession and control of the Buses and Maintenance Depots forthwith;
(b) take possession and control of all materials, stores, implements, plants and equipment on or about the Maintenance Depots;
(c) be entitled to restrain the Operator and any person claiming through or under the Operator from entering upon the Maintenance Depots or any part of the Authority premises;

36.2.5 Termination Payment, not being Additional Termination Payment, due and payable under this Agreement shall be limited to the Debt Due and Adjusted Equity, as the case may be, which form part of the Total Project Cost in accordance with the provisions of this Agreement; provided that the amount payable in respect of any Debt Due expressed in foreign currency shall be computed at the Reference Exchange Rate for conversion into the relevant foreign currency as on the date of Termination Payment. For the avoidance of doubt, it is agreed that within a period of 60 (sixty) days from COD, the Operator shall notify to the Authority, the Total Project Cost as on COD and its disaggregation between Debt Due and Equity, and only the amounts so conveyed shall form the basis of computing Termination Payment, and it is further agreed that in the event such disaggregation is not notified to the Authority, Equity shall be deemed to be the amount arrived at by subtracting Debt Due from Total Project Cost.

37. FORCE MAJEURE AND CHANGE OF LAW

37.1. Force Majeure

37.1.1 Force Majeure Event

As used in this Agreement, a Force Majeure Event shall mean occurrence in India of any or all of Non Political Event, Indirect political Event and/or Political Event as defined hereinafter which prevent the Party claiming Force Majeure (the "Affected Party") from performing its obligations under this Agreement and which act or event (i) is beyond the reasonable control and not arising out of the fault of the Affected Party, (ii) the Affected Party has been unable to overcome such act or event by the exercise of due diligence and reasonable efforts, skill and care, including through expenditure of reasonable sums of money and (iii) has a Material Adverse Effect on the performance of the Affected Party.

37.1.2 Non-Political Force Majeure Events

For purposes of this Clause, Non-Political Force Majeure Events shall mean one or more of the following acts or events:

a. acts of God or events beyond the reasonable control of the Affected Party which could not reasonably have been expected to occur, exceptionally adverse weather conditions, lightning, earthquake, cyclone, flood, volcanic eruption or fire (to the extent originating from a source external to the Concession premises) or landslide;
b. Radioactive contamination or ionizing radiation;
c. Strikes or boycotts (other than those involving the Concessionaire, Concessionaires or their respective employees/ representatives or attributable to any act or omission of any of them) interrupting supplies and services to the public for a period exceeding a continuous period of Thirty (30) days,
d. any judgment or order of any court of competent jurisdiction or statutory authority in India made against the Concessionaire in any proceedings for reasons other than failure of the Concessionaire to comply with any Applicable Law or Applicable Clearances or Approvals or on account of breach thereof, or of any contract, or enforcement of this Agreement or exercise of any of its rights under this Agreement by HMRL;
e. an act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, blockade, embargo, riot, insurrection, terrorist or military action, civil commotion which prevents or restricts the performance by the Concessionaire of its obligations under this Agreement for a period exceeding a continuous period of Thirty (30) days;
f. industry wide or State wide or India wide strikes or industrial action which prevent the Concessionaire from providing the services under the Concession Agreement for a period exceeding a continuous period of Thirty (30) days;
g. Any event or circumstance of a nature analogous to any of the foregoing.

Indirect Political Force Majeure Events

For purpose of this Clause, Indirect political Event shall mean an act of war (whether declared or undeclared), invasion, armed conflict or an act of foreign enemy, blockade, riot, insurrection, terrorist or military action, civil commotion or politically motivated sabotage which prevents the Concessionaire from operating the Stage Carriage Services for a period exceeding a continuous period of seven (7) days in a year.

Political Force Majeure Events

For purposes of Clause, Political Event shall mean one or more of the following acts or events by or on account GOI, HMRL or any other Governmental Agency:
Change in Law, only when provisions of this Agreement cannot be applied;
Expropriation or compulsory acquisition by any Governmental Agency of the entire Scheme.

Notice of Force Majeure Event
As soon as practicable and in any case within 7 days of the date of occurrence of a Force Majeure Event or the date of knowledge thereof, the affected party shall notify other party of the same, setting out, inter alia, the following in reasonable detail:

The nature and extent of the Force Majeure Event.
The estimated Force Majeure Period.
The nature of and the extent to which, performance of any of its obligations under this Agreement is affected by the Force Majeure Event.
the measures which the Concessionaire has taken or proposes to take to alleviate/mitigate the impact of the Force Majeure Event and to resume performance of such of its obligations affected thereby; and
Any other relevant information concerning the Force Majeure Event, and /or the rights and obligations of the Parties under this Agreement.
Termination due to Force Majeure Event
a. If a Force Majeure Event leads to a situation that in the reasonable judgment of the Parties, the Concession contract cannot be restored ("Total Loss"), the Parties may mutually decide to terminate this Agreement or continue this Agreement on mutually agreed revised terms.

(b) Notwithstanding anything contained in this Agreement, on determination of Total Loss or if a Force Majeure Event subsists for a period exceeding 180 days either Party shall be entitled to terminate this Agreement by a notice in writing in respect thereof.

(c) Following the issue of notice to terminate this Agreement, as provided for in this Article, the Operator shall promptly take all such steps as may be necessary or required to handover the assets and other facilities given by HMRL to the Operator subject to other provisions of this Agreement.

Termination Payment for a Force Majeure Event

If Termination is on account of a Non-Political Event, the Authority shall make a Termination Payment to the Operator in an amount equal to 90% (ninety per cent) of the Debt Due less Insurance Cover.

If Termination is on account of an Indirect Political Event, the Authority shall make a Termination Payment to the Operator in an amount equal to:

(a) Debt Due less Insurance Cover; provided that if any insurance claims forming part of the Insurance Cover are not admitted and paid, then 80% (eighty per cent) of such unpaid claims shall be included in the computation of Debt Due;

(b) 110% (one hundred and ten per cent) of the Adjusted Equity; and

(c) an amount equivalent to the Additional Termination Payment less Insurance Cover; provided that if any insurance claims forming part of the Insurance Cover are not admitted and paid, then 80% (eighty per cent) of such unpaid claims shall be included in computation of the amount payable hereunder.

If the Termination of this Agreement is on account of a Political Event, the Operator shall be entitled to receive by way of Termination Payment as per clause 36.2.

38. CHANGE OF LAW

38.1. Change in Law shall mean the occurrence or coming into force of any of the following, after the date of execution of this Agreement:

a. The enactment of any new law;

b. The repeal, modification or re-enactment of any existing law;

c. A change in the interpretation or application of any law by a court of record;

d. Any order, decision or direction of a court of record; and

e. Any change in the rate of any of the taxes that have direct effect on the Agreement;

Provided, however, Change in Law shall not include:

a. Coming into effect, after the Execution Date, of any provision or statute which is already in place as of the date of execution of this Agreement;

b. Any new law or any change in the existing law under the active consideration of or in the contemplation of any government as of the

c. Effective Date which is a matter of public knowledge;

d. Non availability of any spare part, equipment, component due to price escalation or otherwise

38.2. Upon occurrence of a Change in Law, the Operator shall notify the Authority of the following:

a. The nature and the impact of Change in Law on the Agreement and Project; and

b. Upon receipt of the notice of Change in Law issued by Operator pursuant to preceding sub-clause, the Authority and the Operator shall hold discussions in relation thereof.

39. HANDBACK ON TERMINATION

39.1. The Operator shall retain the title and ownership of Contracted Buses in relation to the Project under this Agreement during the Agreement Period.

39.2. After successful completion of agreement period, Operator shall hand over all transformers, Chargers , entire Electrical and civil infrastructure including Electrical and civil systems, its sub systems , its parts used for Project , hardware, software, firmware, and deliverables under the Project in sound and operating conditions condition to the Authority , besides any equipment's, parts, installed by the Authority in sound condition.

39.3. In case of any early termination of the Agreement before its normal expiry with the efflux of time, for whatever reason, the Operator shall handover all transformers, Chargers, entire Electrical and civil infrastructure including Electrical and civil systems, its sub systems , its parts used for Project , hardware, software, firmware, and deliverables under the Project in sound and operating conditions condition to the Authority , besides any equipment's, parts, installed by the Authority in sound condition.

39.4. In case of any early termination of the Agreement before its normal expiry with the efflux of time, for whatever reason, the Operator shall handover free from

Encumbrances the peaceful possession of all awarded/allotted space within Bus Depots, Parking Spaces, Terminals, and any other assets installed or developed by Authority including without limitation any and all hardware, software, firmware, and deliverables in sound condition.

39.5. The Operator shall have no right to seek the transfer of the Bus Parking Spaces or any other Movable or immoveable asset that may be provided by the Authority to the Operator, and the Authority shall retain the title, and ownership in relation to such assets at all times.

39.6. Any immovable infrastructure, which may be constructed by the Operator shall be transferred by the Operator to the Authority in sound condition.

40. DISPUTE RESOLUTION

40.1. Amicable Resolution

40.1.1. Save where expressly stated otherwise in this Agreement, any dispute, difference or controversy of whatever nature howsoever arising under, out of or in relation to this Agreement including non-completion of the Agreement between the Parties and so notified in writing by either Party to the other (the "Dispute") in the

first instance shall be attempted to be resolved amicably by the Parties and failing such resolution of the same, in accordance with the procedure set forth below.

40.1.2. Either Party may require the Dispute to be referred to the Managing Director, Jabalpur City Transport Services Limited for amicable settlement. Upon such reference, both the Operator and Managing Director, Jabalpur City Transport Services Limited shall meet at the earliest mutual convenience and in any event within 15(fifteen) days of such reference to discuss and attempt to amicably resolve the dispute. If the Dispute is not amicably resolved within 15(fifteen) days of such meeting, either Party may refer the Dispute to arbitration in accordance with the provisions of clause 40.2 below.

40.2. Arbitration

40.2.1. Arbitrator

In the event of any dispute arising between the Parties in relation to or under this Contract, the same shall be settled by arbitration conducted by a sole arbitrator being appointed by the Authority. The decision of the arbitration tribunal shall be final and binding.

40.2.2. Place of Arbitration

The place of arbitration shall be Jabalpur City of Madhya Pradesh.

40.2.3. Language

The request for arbitration, the answer to the request, the terms of reference, any written submissions, any orders and rulings shall be in English/Marathi and, if oral hearings take place, English/Marathi shall be the language to be used in the hearings.

40.2.4. Procedure

The procedure to be followed within the arbitration and the rules of evidence which are to apply shall be in accordance with the Arbitration and Conciliation Act, 1996.

40.2.5. Enforcement of Award

Any decision or award resulting from arbitration shall be final and binding upon the Parties. The Parties hereto agree that the arbitral award may be enforced against the Parties to the arbitration proceedings or their assets wherever they may be found and that a judgment upon the arbitral award may be entered in any Court having jurisdiction thereof.

40.2.6. Fees and Expenses

The fees and expenses of the arbitrators and all other expenses of the arbitration shall be initially borne and paid by respective Parties equally subject to determination by the arbitrator .The arbitrators may provide in the arbitral award for the reimbursement to the prevailing Party of its costs and expenses in bringing or defending the arbitration claim, including legal fees and expenses incurred by the said Party.

40.2.7. Performance during Arbitration

Pending the submission of and/or decision on a Dispute, difference or claim or until the arbitral award is published; the Parties shall continue to perform all of their obligations under this Agreement without prejudice to a final adjustment in accordance with such award.

41. SUB CONTRACT

41.1. The Operator shall be allowed to sub contract the Bus Operation and Bus Maintenance with approval from Authority provided;

a. Sub-contractor for Bus Operation shall meet minimum qualification criteria specified in Volume 1 of RFP with prior approval from the Authority.

b. Maintenance of Contracted Buses, Transformers, chargers, complete electrical and civil infrastructure shall be the responsibility of Lead Bidder, i.e. Bus Manufacturer.

42. INDEMNITY

42.1. The Operator shall at all times, i.e. during the Contract Period and at any time thereafter, defend, indemnify and hold the Authority harmless from and against all claims (including without limitation claims for infringement of intellectual property, breach of contract, death or injury to person or injury to property, or other tort claims) and expenses (including costs incurred in defending itself in court proceedings) arising out of or relating to the breach by Operator of any covenant representation or warranty or from any act or omission of the Operator or his agents, employees or sub-contractors.

42.2. The Operator shall be liable for and make good any damages which may be caused to Authority or to third parties, for non-compliance of any of its statutory/ contractual obligations and responsibilities with respect to any party.

42.3. The Operator shall be liable and make good to Authority any damages or statutory claim like Motor Accident Claim which may be caused to Authority for any negligence on the part of Operator or its employees.

43. MISCELLANEOUS

43.1. Governing Law and Jurisdiction

43.1.1. This Agreement shall be governed and interpreted in accordance with the laws of India.

43.1.2. The Courts of Madhya Pradesh alone shall have exclusive jurisdiction over all matters arising out of or in respect of the Agreement.

43.2. No waiver of rights and claims

Any forbearance, toleration or delay in invoking any of the rights or claims accruing in favour of any party under the terms of this Agreement shown or made by such a party in whose favour such rights or claims might have vested by virtue of this Agreement shall neither constitute nor be construed to be a waiver of such rights or claims accruing in respect of such a party.

43.3. Schedules and Annexure

All schedules and annexures and other explanatory details attached to this Agreement shall be deemed to be a part of this Agreement.

43.4. Supersession of earlier Agreements

This Agreement represents the entire Agreement between the Authority and the Operator, and all agreements, correspondence, notes or any other document submitted or understandings made or reached by and between the Parties inter se in respect of the subject matter of these presents prior to the date hereof shall be deemed to have been superseded and revoked on the execution of this Agreement.

43.5. Notices

Unless otherwise stated, notices to be given under this Agreement shall be in writing and shall be given by hand delivery/ recognized international courier, mail, telex or facsimile and delivered or transmitted to the Parties at their respective addresses set forth below:

If to Authority

(Name of the Concerned Official)

Jabalpur City Transport Services Limited.

AUTHORITY

If to the Operator

_____

_____

_____

_____

All notices under this Agreement shall be in Marathi/English.

43.6. Counterparts

This Agreement may be executed in two counterparts, each of which when executed and delivered shall constitute an original of this Agreement but shall together constitute one and only one Agreement.

43.7. Assignment

No assignment of this Agreement, or any rights or duties hereunder shall be made in whole or in part by any Party at any point of time during the Contract Period.

Provided, however, the Operator may sub-contract operation of the Bus Services with the prior approval of the Authority as per clause 41.

Provided, further that, under no circumstances shall the Operator be absolved of his rights, duties, obligations under the terms and conditions of this Agreement, and the Operator shall be solely and exclusively responsible for the implementation of this Agreement.

43.8. No Partnership

Nothing herein contained shall be construed to constitute a partnership between Authority and the Operator, or to constitute either party as the agent of the other and neither party shall hold itself out as such.

43.9. Severability

If any provision of this Agreement shall be declared illegal, void or unenforceable, the same shall not affect the other provisions herein which shall be considered severable from such provision and shall remain in full force and effect.

43.10. Representation and Warranties

43.10.1. Representation and Warranties of the Authority

The Authority hereby represents, assures, confirms and undertakes to the Operator as follows:

That it is duly incorporated under the laws of India and has the power to conduct its business as presently conducted, and to enter into this Agreement;

That it has full power, capacity and Authority to execute, deliver and perform this Agreement and has taken all necessary sanctions and approvals and followed all the procedure required to authorise the execution, delivery and performance of this Agreement;

Nothing in this Agreement conflicts with its constitutional Authority, mandate, or any law or any other agreement, understanding or arrangement or any judgment, decree or order or any statute, rule or regulation applicable to it; and

All approvals and permissions as are necessary for the execution of this Agreement have been obtained, all the required procedure for the due execution of this Agreement have been adhered to, and this Agreement will be valid, legal and binding against it under the Applicable Law.

43.10.2. Representation and Warranties of the Operator

The Operator hereby represents, assures, confirms and undertakes to the Authority as follows:

That it is duly incorporated under the laws of India, and has the power to conduct its business as presently conducted and to enter into this Agreement;

That it has full power, capacity and Authority to execute, deliver and perform this Agreement, and has taken all necessary sanctions and approvals (corporate, statutory or otherwise) to authorise the execution, delivery and performance of this Agreement;

Nothing in this Agreement conflicts with its Memorandum and Articles of Association or any other agreement, understanding or arrangement or any judgment, decree or order or any statute, rule or regulation applicable to it; and

this Agreement will be valid, legal and binding against it under the Applicable Law.

43.10.3. Exclusion of Consequential Losses

Notwithstanding anything to the contrary contained in this Agreement, the indemnities herein provided shall not include any claim or recovery in respect of; any cost, expense, loss or damage of an indirect, incidental or consequential nature, including loss of profit, except as expressly provided in this Agreement.

IN WITNESS WHEREOF the Parties hereto have placed their respective hands and seals hereto on the day and year first herein above mentioned.

SIGNED, SEALED AND DELIVERED BY:

For and on behalf of JCTSL

_____

_____

_____

_____

(Phone No.)

Email:

SIGNED, SEALED AND DELIVERED

For and on behalf of

_____

Operator,

_____

_____

_____

(Phone No.)

Email:

44. SHORT CLOSURE OF PROJECT

The Authority reserves the right to short close the agreement due to administrative/technical/safety/financial reasons in the interest of common cause with a prior notice of 6 (six) months in writing at any time from COD.

Annexure 1

DEFICIENCY AND INCIDENT WISE DAMAGES/ FINES

1. **Vehicle – Fine per deficiency per bus**

Sr. No.	Deficiencies	Fine in Terms of Km Charges per day per bus
1	Modification of the design destination board or paintwork of the exterior or interior of the bus without the authorization of Authority	50
2	Missing bus body panels on the exterior/interior of the bus	50
3	Defective or malfunctioning headlights, rear lights, brake light, turning indicators and parking lights, broken mirrors at the time of Bus Operations	50
4	Dirty vehicle(i.e. dusty handrails, chairs and floor, litter of any kind on floor, foul odour; dirty windows and glass panels, Spots) inside or outside, at the time of start of first shift in the morning	50
5	Broken/damaged windows, fixed glass, front windshield or rear windshield	25
6	Fire Extinguisher missing or beyond expiry date	25
7	Malfunctioning passenger door	50
8	Broken/Loose/Missing Passenger Seat	25
9	Loose or missing handrails, roof grab rails and/or with Sharp edges	25
10	Visible dents more than 6” beyond 1 week on the bus exterior	25
11	Malfunctioning/Broken Light in the passenger compartment	25

Sr. No.	Deficiencies	Fine in Terms of Km Charges per day per bus
12	Placing any decorative article/religious figure or symbol or political symbol inside or outside the bus without prior approval of the Authority	25
13	Placing any poster/advertisement/stickers or similar items inside or outside the bus which may or may not generate any revenue for the Operator unless authorized by Authority	25
14	Damage to the any vehicle tracking equipment or any Intelligent Transit Management System installed by Authority	200
15	Deterioration of Bus Speed or AC Performance due to inefficiency/ malfunctioning of Battery Pack AND /OR Any other System, sub system, part	100
16	Defective brake	50
17	Damaged Tyre	100
18	ACs not running up to design capacity and /or any stoppages and/or leakages of water.	25

1. **Bus Operation – Fine shall be applied per incident**

Sr. No.	Incidents	Fine in Terms of Km Charges per day per bus
1	Arriving for a shift more than 10 min late than as given in Operating Plan for a given route for a given bus for Buses as per Assured Fleet Availability	25
2	Delay of more than 20 min beyond the end of shift.	10
3	Driver not responding to more than 3 consecutive directions sent by Authority Control Centre.	25
4	Stopping at Bus Station for longer than authorized by Authority	25
5	Improper Docking of the Buses	25
6	Letting passengers access bus at locations other than Bus Station and Terminals or as designated by Authority	25
7	Not stopping at Station designated as per Operating Plan unless authorized by Authority	25
8	Stopping at Station not designated as per Operating Plan unless authorized by Authority	25
9	Changing bus route without authorization of Authority	25
10	Bus breakdown inside the BRTS Bus Lane	50
11	Bus breakdown during operating hours at location other than BRTS bus lane	25
12	Abandoning bus during operating hours on the roads (not limited to Bus Stations, Terminals and Bus Lane)	200
13	Operating bus with Defective/Broken Headlights, Rear lights, Brake lights, Turning indicators, Parking lights	25
14	Use of electronic equipment like Radio or Music system unless authorized by Authority	25
15	Use of Cell phone by Driver while driving	25
16	Driver not wearing clean uniform as designed by Authority	25
17	Driver in drunken state	100 (Operator shall change driver immediately)
18	Misbehaviour by driver with Authority officials and with passengers	25

Sr. No.	Incidents	Fine in Terms of Km Charges per day per bus
19	Cause accident due to irresponsible driving	50
20	Drive above speed limit set by Authority	25
21	Withdrawal of bus for one day (ie., of different days in a month) without permission (Penalty per day)	225
26	Non-performance of schedule trips without valid reasons	50
27	Deliberate non-adherence of the schedule timings including late running	25 (Operator should change the driver before next working day)
28	Driver committing fatal accident	50 (Operator should change the driver before next working day)
29	Deliberate non-reporting to duty on time	50 (Operator should change the driver before next working day)
31	Any other offence	As fixed by the Managing Director or officer empowered by him/her except overloading
32	Insurance policy not in force	10000 (Liable for termination of agreement)
33	Any bus provided for operation during the contractual period found deficient	The bus shall be terminated for operation of the Authority
34	Parking buses in undesignated areas without prior permission	25

Annexure 2

DETAILS OF CONTRACTED BUSES AND THE INDICATIVE HANDOVER SCHEDULE OF CONTRACTED BUSES

Details of Buses

Sr. No.	Manufacturer and Bus Type	Model Number	Registration	Lot Number	Date of Commencement of Operation

Annexure 3

INDICATIVE LAYOUT OF THE PARKING SPACE

(To be Attached at the time of Signing of the agreement)

Annexure 4

INDICATIVE BUS SERVICE AREA AND FLEET DEPLOYMENT PLAN

Note:

For Intracity Routes 9 M Midi Fully built AC Electric bus:

For Intercity Routes 12 M Fully built Electric AC bus:

Following table shows the tentative breakup of the routes and their operational characteristics for the city of Jabalpur. The electric buses shall ply on these routes and must provide the required Level of Service as desired by the SPV.

1. Intra-City Buses

1. If the buses employ ***opportunity charging*** will be provided a maximum of 30-minute window including Travel time charging station shall be provided in the regular operations to charge the buses.. Bus should be capable of running min of 200 kms + 20% contingency in a day with AC, Passengers/Sand bags (load details will be specified during trials), traffic conditions for 18hrs with one-time shift changeover time of not more than 30 minutes including travel time to charging station.

2. If the buses employ ***battery swapping,*** then a window of 5 minutes will be provided to swap the battery of the bus. This window shall be given at the end of every 50km of operations. However, cumulative time for multiple swapping(s) per day shall not exceed more than 30 minutes including Travel time to charging station.

S.no	Route No.	Route Description	Length (Km.)	Stops	No. of Buses	Trips/Day/Bus	km/Day/Bus
1	2	Surtalai to Ghana (Ranjhi)	29.5	37	18	8	236
2	13	ISBT to Bhedhaghat (via Sagra)	24	26	12	9	216
3	12	ISBT to Gwarighat (via Teen Patti)	13	18	10	16	208

2. Inter-City Buses (Sub Urban)

For Intercity routes, the buses will be given ***opportunity charging/battery swapping*** time after every 200 + 20% contingency km (with 80% SOC).

S.no	Route No.	Route Description	Length (Km.)	Stops	Total Electric Buses	Trips/Day/Bus	km/Day/Bus
1	-	Jabalpur to Bargi(Dam)	38	6	2	6	228
2	-	Jabalpur to Gotegoan Via Sahpura	62	2	2	4	248
3	-	Jabalpur to Sihora	46	4	2	6	276
4	-	Jabalpur to Jabera via Katangi	60	4	2	4	240
5	-	Jabalpur to Tendukheda via Patan	52	2	2	4	208

Note:

1. "**Operating Plan**" **or** "**Operations Plan**" means the detailed Route plan and trip schedule for the Bus Service, which is developed and finalized by the Authority and has been provided as a part of the Fleet Deployment Plan. Authority reserves right to utilize the vehicle engaged under hire on any route and at anytime. The Authority may at any time make changes to the Routes, frequency, schedules of Bus due to any reason whatsoever including but not limited to special circumstances, festivals, and seasonal requirements, road blocks, traffic diversions or specialtrips.

2. However last 20% SOC (status of charge) of the Battery capacity shall be maintained during trials and throughout the contract period as reserve battery capacity to successfully overcome the unforeseen events like Traffic blocks, Passenger ridership and Peak summer higher temperatures in Jabalpur city.

Annexure 5

INDICATIVE LIST OF EQUIPMENT TO BE PROVIDED BY THE OPERATOR

The below is only an Indicative requirement. However, the Authority reserves the right to review the equipment details and quantities at the time of entering into agreement

Sl no	Equipment Description	Qty required per Depot
1	Air Compressors	
2	Bus Washers	
3	Brake and clutch liner riveting Machine	
4	Pedestal Drilling machine	

5	Hydraulic press	
6	Brake units testing machine	
7	Electric Welding Machine	
8	Spray painting machine	
9	Tyre pressure gauges	
10	Hub pullers	
11	Decanting Pump	
12	Torque wrenches	
13	Hydraulic Jacks	
14	Pit trolleys	
15	Bench vices	
16	Working tables	
17	Greasing machine	
18	Gas Welding machine set	
19	Battery Chargers for Charging Battery used for Vehicle Accossories	
20	Matra Jack	
21	Electric clamp meter	
22	Meager and Cable testing Equipment	
23	Generator depending on Transformer rating	
22	Bench Grinder	
23	Portable drilling machine	
24	Wheel alignment gauge	
25	Hot plates for tube repairing	
26	Chassis stands	
27	Tool Box set	

Annexure 6

LIST OF AUTHORITY CLEARANCES AND OPERATOR CLEARANCES

Sr. No.	Permission/ Clearance	Party responsible
1	Vehicle Registration	Operator
2	Insurance for Electric Buses, Electrical & Civil Infrastructure and other Authority owned assets like Depot	Operator
3	Stage Carriage Permit	Authority
4	No Objection Certificate from State Transport Department or RTA or from State Transport Undertaking as applicable	Authority
5	Fare Notification	Authority
6	Pollution Under Control Certification	Operator
7	Road worthiness Certificate / Fitness Certificate for Electric Buses	Operator
8	Passenger Tax	Authority

Annexure 7

PARKING SPACE LICENSE AGREEMENT

JCTSL having its registered office at Jabalpur, Madhya Pradesh (hereinafter referred to as "The Authority" which expression shall include its successors and permitted assigns);

AND

_____ having its office at [_____] (hereinafter referred to as "the Operator", which expression shall include its successors and permitted assigns);

ANDWHERE AS

1. The Parties have entered into a Bus Operator's Agreement dated [__/__/20__] whereby the Authority has appointed the Operator for implementation of the Project as defined in Operator Agreement.

2. Pursuant to the Bus Operator's Agreement, the Authority is providing to the Operator the right to use and the right of way to the bus parking space for Parking and Charging of Electric Buses("Parking Space") (the details of which are provided in the Schedule 1 to this Parking Space License Agreement) for the limited purpose of implementation of the Project.

3. The Parties are hereby entering into this Parking Space License Agreement to specify the terms and conditions of the use of the Parking Space by the Operator.

4. The actual memorandum of handover of Parking Space to the Operator along with relevant Parking Space details is placed as Annexure to this Agreement.

NOW THEREFORE IT IS AGREED AS FOLLOWS:

1. All capitalized words used but not defined herein shall have the meaning specified in the Bus Operator's Agreement.

2. The Authority hereby provides on a license basis the Parking Space (the details of which are provided in Schedule 1 to this Agreement) and the Operator hires the Parking Space on the terms and conditions of this License, it being recorded that the Authority warrants that the Parking Space will, save for reasons beyond its reasonable control, be fit for the purpose for which it is to be used by the Operator, namely to provide a reasonable space for the Contracted Buses while not in use and to facilitate the charging , cleaning, repair and maintenance of the Contracted Electric Buses.

3. Provided, however, the Operator shall have no right, title, interest or any ownership rights over the Bus Parking Space or any part thereof.

4. This Parking Space License Agreement shall come into operation on the date of execution hereof and shall terminate on the termination or cancellation of this Parking Space License or the Bus Operator's Agreement for whatever reason, whichever is the earlier ("License Period").

5. Authority will assist the operator to take the bulk power connection available at DepotSpace. All the cost of the connection, monthly electric cost etc shall be borne by the operator. Operator will arrange for site level distribution of power to its charging points along with related equipment and infrastructure for charging including any civil and other ancillary work required for parking, charging and maintenance. The decision on number of chargers to be provided is left to the Operator according to his solution. Operator shall bear all the charges like Electricity, housekeeping etc for routes charging station & space shall be allocated by the Authority for the contract period.

6. The Operator shall be liable to pay bills for utilities such as electricity (for lighting, use of equipment's for repair and Maintenance etc), water etc. on actual basis in relation to the area of the Bus Depot/Parking Space allotted to the Operator.

7. Insurance

   a. The Operator shall not keep or do in or about the Parking Space anything which is liable to increase any of the risks against which the Parking Space infrastructure (or any part thereof) is insured for the time being to the extent

that such insurance is rendered void or voidable or the premiums of such insurance are, or become liable to be increased.

b. Without prejudice to any other right of action or remedy that the Authority may have arising out of a breach of the foregoing provision, the Authority may recover from the Operator on demand the full amount of any increase in insurance premiums in respect of the Depot attributable to such breach.

c. For the purposes of the above provisions, the Operator shall be entitled to assume that the Depot is at all material times insured against such risks, on such terms, for such amounts, and at such premiums as are for the time being usual in respect of similar buildings in similar locations.

d. The Operator shall, in accordance with its obligations pursuant to the Bus Operator's Agreement, obtain and maintain contract works insurance and public liability insurance in relation to the Depot.

8. Cession and Subletting

The Operator shall not be entitled to:

a. cede all or any of its rights or delegate any of its obligations under this Parking Space License Agreement;
b. sublet the Parking Space in whole or part; or
c. give up possession and/or control of the Parking Space to any third party, without the Authority's prior written consent.

9. Operator's Obligations

The Operator shall:

a. keep the Depot clean, tidy and commercially usable at all times;
b. be responsible for the handling of all waste and effluent in accordance with the Applicable Law;
c. not use the Parking Space or allow it to be used, in whole or part, for any purpose other than that of implementing the Project;
d. not bring into the Parking Space any article which, by reason of its weight or other characteristics, is liable to cause damage to the Depot;
e. not leave refuse or allow it to accumulate in or about the Parking Space except in the refuse bins provided;
f. refrain from interfering with the electrical or plumbing serving the Parking Space if so available , except as may be strictly necessary to enable the

Operator to carry out its obligations of maintenance and repair in terms of this Agreement;

g. not permit any person to permanently dwell in the Parking Space
h. provide at the Operator's own expense all electric, fluorescent and incandescent light bulbs required in the Parking Space from time to time;
i. Provide Bus Charging Infrastructure.
j. co-operate with any other Operator or third party using the Parking Space or a part thereof as notified by the Authority from time to time; and
k. allow for use of the Parking Space by one or more other bus Operators at the written request of the Authority, provided that such use shall not materially adversely affect the Operator's ability to implement the Project under the Bus Operator's Agreement.

10. Maintenance and Repairs

The Operator shall at its own expense and without recourse to the Authority:

a. throughout the License Period maintain in good order and condition the interior and exterior of the Parking Space and all parts thereof, including (without limitation of the generality of this obligation) all, appurtenances, fixtures and fittings contained in the Parking Space.
b. promptly and properly repair or make good all damage occurring in the interior and exterior of the Parking Space from time to time during the License Period, whatever the cause of such damage, and including damage to any part of the interior of the Parking Space or to any window, door, appurtenance, fixture or fitting, and replace all such items (as well as any keys) which have been broken, lost or destroyed (again regardless of cause); and
c. on the termination or cancellation of this Parking Space License Agreement, forthwith return the Depot and all such parts thereof (including all keys) to the Authority in good order, condition and repair, normal wear and tear excepted.
d. The Parking Space shall be deemed, at the commencement of this Parking Space License Agreement, to be in good order and condition except to the extent that the Operator notifies the Authority in writing within [15 (fifteen)] Business Days after having taken possession of the Parking Space of the need for any repairs to in the Parking Space or of the fact that any part of

the Parking Space including any appurtenance, fixture or fitting, is damaged, missing, or out of order.

e. Upon receiving a notification contemplated in sub-clause (d) above the Authority shall promptly cause the necessary repair or replacement to be effected to the Parking Space at the Authority's own expense.

f. The Operator shall be responsible for the maintenance of, and for all repairs and replacements becoming necessary from time to time in or to, the Parking Space and all parts thereof.

g. In the event the Operator fail to carry out any of its obligations under this Agreement with regard to any maintenance, repair or replacement, the Authority shall be entitled, without prejudice to any of the Authority's other rights or remedies, to effect the required item of maintenance, repair or replacement and to recover from the Operator on demand, all reasonable amounts incurred by the Authority in respect thereof.

11. Alterations, additions and improvements

a. The Operator shall not make any alterations or additions to the Parking Space without the Authority's prior written consent.

b. If the Operator does alter or add to the Parking Space in any way, whether in breach of sub-clause (a) or not, the Operator shall, if so required in writing by the Authority, restore the Depot on the termination or cancellation of this Agreement to the same condition as it was prior to such alteration or addition having been made, normal wear and tear excepted. Unless this Agreement is terminated or cancelled by the Authority as a result of a breach hereof by the Authority, the Authority's requirements aforementioned shall be communicated to the Operator not less than [10 (ten)] Business Days prior to the termination or cancellation. For the sake of clarity, the Parties agree that this sub-clause (b) shall not be construed as excluding any other or further remedy which the Authority may have in consequence of a breach by the Operator of sub-clause (a).

c. Save for any alteration or addition which is removed from the Depot as required by the Authority in terms of sub-section (b), all alterations or additions made to the Parking Space shall, or termination or cancellation of this Parking Space License Agreement, become the property of the Authority and may not be removed from the Parking Space at any time. Subject to any prior written agreement to the contrary between the Parties,

the Operator shall not, whatever the circumstances, have any claim against the Authority for compensation for any alterations or additions to the Depot.

12. Exclusion of Liability

a. The Operator shall have no claim against the Authority for any loss or damage suffered by the Operator by reason directly or indirectly of:

i. any negligent act or omission of the Authority or any agent or servant of, or Operator to, the Authority, including (without limiting the generality of the foregoing) any negligent act or omission of any cleaner, maintenance person, handyman, artisan, labourer, workman, watchman, guard or commissionaire, excluding gross negligence and/or wilful default;

ii. any failure or suspension of, or any interruption in, the supply of water, electricity, heating, or any other amenity or charging infrastructure orservice to the Parking Space (including, without limiting the generality of the foregoing, any cleaning service), whatever the cause;

iii. any breakdown of, or interruption or delay in the operation of, any machinery, plant, equipment, installation, or system situated in or on, or serving, the Parking Space, and including (but without limiting the generality of the foregoing) any geyser, boiler, burglar alarm or security installation or system, again regardless of cause;

iv. any interruption of, or interference with, the enjoyment or beneficial occupation of the Parking Space or any parts of the common Parking Space caused by any building operations or other works to or in the Parking Space , whether by the Authority or by anybody else; or

v. any other event or circumstance beyond the Authority's reasonable control occurring, or failing to occur, upon, in, or about the Parking Space, whether or not the Authority could otherwise have been held liable for such occurrence or failure, and the Operator indemnifies the Authority and holds it harmless against any and all liability to any employee or agent of the Operator, its guests and other invitees, and all other persons who may occupy or be entitled to occupy the Depot or any parts thereof through or under the Operator.

b. The Authority shall not, however, be excused from specific performance of any of the Authority's obligations under this Agreement, whether express or implied, and particularly (but not only) the Authority's obligations to afford

the Operator occupation and enjoyment of the Depot as contemplated by this Agreement.

13. Authority's Right of Entry and Carrying Out of Works

The Authority may at all reasonable times, without thereby giving rise to any claim or right of action on the part of the Operator or any other occupier of the Parking Space:

a. enter the Parking Space in order to inspect it, to carry out any necessary repairs, replacements or other works, or to perform any other lawful function in the bona fide interests of the Authority; or
b. carry out elsewhere on the Parking Space (or any part thereof) any necessary repairs, replacements or other works, provided that the Authority shall ensure that this right is exercised with due regard for, and a minimum of interference with, the beneficial enjoyment of the Depot by the Operator.

14. Damage to or destruction of Parking Space

a. If the Parking Space is destroyed or so damaged that it can no longer be beneficially occupied, this Parking Space License Agreement shall, unless the
b. Parties agree otherwise in writing, terminate when that happens in respect of that Parking Space.
c. If the Parking Space is damaged but can still be beneficially occupied, this Parking Space License Agreement shall remain in force and the Authority shall repair the damage without undue delay.

15. Special Remedy for Breach

a. Should the Operator be in breach of any of the terms or conditions of this Parking Space License Agreement or the Bus Operator's Agreement, in any way whatsoever, and fail to remedy such breach within [7 (seven)] Business Days after receiving a written demand that it be remedied, or such longer period as may reasonably required in the circumstances and agreed upon in writing by the Parties, the Authority shall be entitled, without prejudice to any alternative or additional right of action or remedy available to the Authority under the circumstances, to terminate this Depot License Agreement with immediate effect, be repossessed of the Parking Space , and recover from the Operator such damages sustained as a result of the breach and the termination of this Parking Space License Agreement.

b. Nothing in sub-clause (a) above shall be construed as excluding the ordinary lawful consequences of a breach of this Parking Space License Agreement by either party (save any such consequences as are expressly excluded by any of the other provisions of this Parking Space License Agreement) and in particular any right of termination of this Parking Space License Agreement on the ground of a material breach of this Depot License Agreement.

c. In the event of the Authority having terminated this Parking Space License Agreement or this Agreement justifiably but the Operator remaining in occupation of the Parking Space with or without disputing the termination, the Operator shall be obliged to pay, all amounts which would have been due and payable by the Operator but for the termination, for so long as the Operator continues to occupy the Parking Space or any part thereof.

16. Right to Negotiate Renewal

If the Bus Operator's Agreement is renewed and/or extended beyond its Term, the Parties agree to negotiate in good faith for renewal of this Depot License Agreement on such terms and conditions as may be agreed between the Parties in writing prior to the expiration of this Agreement.

IN WITNESS WHEREOF the Parties have executed and delivered this Agreement by their duly authorised representative on the date first above written:

SIGNED ON BEHALF OF THE AUTHORITY

_____(Signature)
_____(Name)
_____(Designation)

SIGNED ON BEHALF OF OPERATOR by the hand of its authorized representative

_____(Signature)
_____(Name)
_____(Designation)

SIGNED ON BEHALF OF SELECTED BIDDER by the hand of its authorized representative

_____(Signature)
_____(Name)
_____(Designation)

Schedule 1 to License Agreement
Details of Parking Space Infrastructure handed over to Operator during execution of Agreement

Date of Handover	
Address of Parking Space	
Area of Parking Space:	
Facilities	
Utilities	
Security	

We have inspected the above Parking Space premises and are satisfied as to its condition. We undertake to maintain the above premises in good working condition as per standard practices and terms and conditions of the Agreement. We understand that the premises above are only being licensed to us for the purpose of parking, charging and maintenance of the Contracted Electric Buses, Transformers and charges and associated Electrical and Civil Infrastructure during the Contract Period and shall not be used for any other purpose. We confirm to return the above premises to the Authority at the end of the Contract Period in the same condition as found when we took over. The Authority shall not bear liabilities arising from the use of thesePremises.

We have accepted the right to use the Space allotted in Depot(s) on _____ (date)

For Operator

Name, Sign, Time and Place

Annexure – 8

Tentative Route Details:

Note:

For Intracity Routes 9 M Midi Fully built AC Electric bus:

For Intercity Routes 12 M Fully built Electric AC bus:

Following table shows the tentative breakup of the routes and their operational characteristics for the city of Jabalpur. The electric buses shall ply on these routes and must provide the required Level of Service as desired by the SPV.

3. Intra-City Buses

3. If the buses employ ***opportunity charging*** will be provided a maximum of 30-minute window including Travel time charging station shall be provided in the regular operations to charge the buses.. Bus should be capable of running min of 200 kms + 20% contingency in a day with AC, Passengers/Sand bags (load details will be specified during trials), traffic conditions for 18hrs with one-time shift changeover time of not more than 30 minutes including travel time to charging station.

4. If the buses employ ***battery swapping,*** then a window of 5 minutes will be provided to swap the battery of the bus. This window shall be given at the end of every 50km of operations. However, cumulative time for multiple swapping(s) per day shall not exceed more than 30 minutes including Travel time to charging station.

S.no	Route No.	Route Description	Length (Km.)	Stops	No. of Buses	Trips/Day/Bus	km/Day/Bus
1	2	Surtalai to Ghana (Ranjhi)	29.5	37	18	8	236
2	13	ISBT to Bhedhaghat (via Sagra)	24	26	12	9	216
3	12	ISBT to Gwarighat (via Teen Patti)	13	18	10	16	208

4. Inter-City Buses (Sub Urban)

For Intercity routes, the buses will be given ***opportunity charging/battery swapping*** time after every 200 + 20% contingency km (with 80% SOC).

S.no	Route No.	Route Description	Length (Km.)	Stops	Total Electric Buses	Trips/Day/Bus	km/Day/Bus
1	-	Jabalpur to Bargi(Dam)	38	6	2	6	228
2	-	Jabalpur to Gotegoan Via Sahpura	62	2	2	4	248
3	-	Jabalpur to Sihora	46	4	2	6	276
4	-	Jabalpur to Jabera via Katangi	60	4	2	4	240
5	-	Jabalpur to Tendukheda via Patan	52	2	2	4	208

Note:

3. "**Operating Plan**" **or** "**Operations Plan**" means the detailed Route plan and trip schedule for the Bus Service, which is developed and finalized by the Authority and has been provided as a part of the Fleet Deployment Plan. Authority reserves right to utilize the vehicle engaged under hire on any route and at anytime. The Authority may at any time make changes to the Routes, frequency, schedules of Bus due to any reason whatsoever including but not limited to special circumstances, festivals, and seasonal requirements, road blocks, traffic diversions or specialtrips.

4. However last 20% SOC (status of charge) of the Battery capacity shall be maintained during trials and throughout the contract period as reserve battery capacity to successfully overcome the unforeseen events like Traffic blocks, Passenger ridership and Peak summer higher temperatures in Jabalpur city.

Jabalpur City Transport Services Limited

REQUEST FOR PROPOSAL (RFP) FOR SELECTION OF BUS OPERATOR FOR PROCUREMENT, OPERATION AND MAINTENANCE OF AC FULLY BUILT ELECTRIC BUSES AND ALLIED ELECTRICAL & CIVIL INFRASTRUCTURE ON GROSS COST CONTRACT BASIS FOR 50 BUSES

Volume 3: 9m Electric AC Bus Specifications

April, 2019

Jabalpur , Madhya Pradesh

Part I: General Requirements

1. Introduction and Scope

i. End-use requirement oriented specifications, with maximum make / model neutrality, for fully built electrically propelled air-conditioned (AC) Midi buses operations are brought out here. Manufacturer/Bodybuilder/Operator of buses would furnish technical details for assemblies / sub-assemblies/ systems/ equipment as per Technical Specification of this Section in appropriate formats.

ii. The specifications cover end use based design, evaluation, fabrication & testing features of AC Midi bus for AUTHORITY operations for transportation of passengers mainly in Madhya Pradesh Metropolitan Regions. The bus design should be energy efficient, environment friendly, safe, efficient and reliable besides meeting all statutory, CMVR, legal and other requirements including UBS-II, as also those related to easy passenger accessibility including for persons with disabilities (PwDs), passenger comfort, driver's work place, internal and external aesthetics, ease of repair and maintenance etc.

iii. Offered bus Specifications would comply with all applicable Central, State and local laws (including Acts, Rules & Regulations). These would include, but not be limited to, the provisions of Disability Act 1995 as amended till date as well as state and local accessibility, safety, noise and other requirements. The bus would meet or exceed the Central Motor Vehicles Rules (CMVR) of India / Safety Norms, noise & other norms applicable at the time of supply. In the event of any conflict between requirements emanating from these specifications and those as per any statutory/legal, etc in force, the superior/ higher requirements/Standards would prevail.

iv. The word "Bus" wherever used in the specification means the "9200±300 mm long Electrically (Battery powered) propelled (Electric Propulsion System or EPS) or electric air-conditioned Midi bus with 900mm floor height as per specifications given in this document. The urban bus would have right hand drive.

v. For operations, a fully built bus as per specs detailed in this document and those of UBS II is envisaged.

General Design Features of the Bus

2.1. Bus would generally be designed and manufactured in accordance with the UBS II specifications & 'Code of Practice for Bus Body Design and Approval' (AIS 052 AS amended time to time) hereinafter referred to as Bus Code-; as applicable to buses in India/CMVR rules/Madhya Pradesh motor vehicle rules whichever is superior. Details of relevant standard followed would be indicated against each item.

2.2. Bus body design would consider all other aspects / provisions to be made on proposed bus body facilitating ease of its mounting /erection on the acquired chassis without causing any damage / defect to chassis / its aggregates etc and further facilitating ease of repair and maintenance of all other fitments / aggregates provided on bus chassis, etc.

2.3. Bus would be designed to carry commuters in the urban/municipal areas mainly in the corridors of Jabalpur Region, with ease of boarding and alighting especially for ladies, senior citizens and Persons with Disabilities (PwDs).

2.4. Bus design would be suitable for daily operation of 18 to 20 hours in cities of Madhya Pradesh Regionwith peak loading of about 60 passengers (Seating + standee) (each passenger weighing 68 Kgs on an average and carrying a load of 7kgs each), average journey speed of about 25Kms per hour with frequent starts/stops, say, after every 300 to 1000 mtrs. The max attainable speed of the bus would be in range of 75±5 kmph max without Speed Limiter and the Provision speed Limiting function as per AUTHORITY requirements – ie. Electronic/ mechanical speed governor.

2.5. Bus design would be eco-friendly, energy efficient, safe, and comfortable meeting specified standards / norms (as amended up to date of supply).

2.6. Bus must be of proven design suitably modified to climatic & operational conditions, infrastructure and road conditions as obtaining in urban/municipal areas Jabalpur.

2.7. Bus design should meet all statutory requirements applicable for the city of Madhya Pradesh Metropolitan Regionin all respects.

2.8. The bus structure would meet requirements of structural strength, stability, deflection, vibration, crashworthiness, roll over protection etc. amongst others for at least the following main loads including those as per annexure 3 of UBS II:

- Static loads
- Dynamic loads
- Single wheel bump loads
- Double wheel bump (diagonally opposite) loads
- Braking and acceleration loads
- Front impact loads
- Roll over loads

- Speed breaker induced loads

2.9. Bus/ bus-body design would be a proved design duly evaluated by agencies authorized as per CMVR using Finite Element Analysis for above loads/performance requirements for values for above loads/ conditions /performance parameters as given in subsequent paragraphs.

2.11. The bus, loaded to Gross Vehicle Weight (GVW), with crush load and under static conditions, would not exhibit deflection or deformation that impairs the operation of steering mechanism, doors, windows, passenger escape mechanisms and service doors, etc.

2.12. Manufacturer's certificate supported by testing and type approval agency's certificates along with the bus as also technical specifications/drawings required for inspection, performance assessment as above to be supplied along with the bus. Besides meeting the statutory requirements the bus would be designed with respect to its body and different aggregates/systems /sub systems to operate satisfactorily in urban transport service for at least 7 years or 7,00,000 Kms whichever is later.

2.13. Detailed schematic drawings of bus structure, seats, interior/ exterior fittings, electrical systems, wiring looms / harness, photometric items and other accessories along with complete details of materials used, their specification, manufacturing tolerances etc. would be provided by the bus manufacturer/ Bodybuilder. Additionally, details / drawings of mounting / fastening bus body to chassis1 to be provided along with the bid specifically bringing out whether bus body would be welded and integrated to chassis or fastened using fasteners along with applicable mechanism system /arrangement. Detailed Circuit diagrams for electrical be also provided by the bidder/bus manufacturer. Electric wiring in the bus (other than EPS) would be of multiplexing type. Additional details of wiring for electric propulsion system, inter-alia indicating location of battery packs, traction controller, cooling system, safety mechanisms, etc with appropriate colour code etc would be supplied with the bid.

2.14. Details of general appearance, seating layout and structural of roof, floor, sides, front & rear show and driver's cab, etc. would be supplied. Main dimensions of the fully built bus i.e., overall length, overall width, overall height, saloon height, pillar to pillar distance, seat pitch, number of seats (excluding seat for the driver),entry/exit gates/fastening arrangement and the accessibility mechanism, etc., mounting arrangement for battery packs, drive motor/s, traction controller, etc would be supplied along with the schematic diagrams/printed literature of the bus.

2.15. Material used in construction of buses would be as per Bureau of Indian Standards (BIS)/ Automotive Industry Standards (AIS)/ specifications and/or other international specifications meeting/ surpassing performance & other requirements as given in the Bus Code. In absence of above specifications, Association of State Road Transport Undertakings (ASRTU) specifications could be followed. Wherever Indian Standards are not available,

internationally acceptable Standards may be referred. Specifications/ Standards followed would conform to Specification/Standards as amended /up dated/ or the latest published by the concerned agencies. Wherever no specifications of any item have been notified as International/ National Standards etc. actual specifications of that item used be mentioned. Guaranteed life of the bus and its other aggregates be indicated item by item. Periodical maintenance schedule for obtaining the said life of the bus be also indicated.

2.16. BIS Standards are normally available from Bureau of Indian Standards, Manank Bhawan, 9-Bahadur Shah Zafar Marg, New Delhi-110002. Web site: http://www.bis.org.in. Similarly, AIS Standards are available from Automotive Research

2.17. Association of India, Post Box No.832, Madhya Pradesh-411 004. Web site: http://www.araiindia.com. ASRTU Specifications are available from Association of State Road Transport Undertakings, Sector 12, Dwarka, NewDelhi. Web site: http://www.asrtu.org.

2.18. Suitable traps/openings with appropriate sealing and covers would be provided for repair and maintenance of various aggregate/systems/sub systems / chassis / body/ their components, etc of the bus.

2.19. Any restriction in design, manufacture and mounting of bus body on chassis, as provided by chassis manufacture, as a part of detailed instructions for this purpose, be meticulously followed while mounting / joining / integrating bus body to bus chassis.

2.20. The bus would be so designed as to maintain operational stability requirement as per Bus Code (AIS 052). Interior noise and pass by noise of the vehicle would conform to IS: 12832:2010 or latest and BIS: 3028:1998 as amended from time to time

2.21. It would be ensured that the design, manufacture, certification (wherever called for) & installation of major bus sub-components and systems are compliant with all such subcomponent vendors' requirements & recommendations within the frame work of any statutory, CMVR, legal and or any other lawful/functional requirements. A certificate of compliance would be shown on demand. Components used in the vehicle would be of heavy-duty design.

2.22. Any other provisions/fitments required for safe and efficient operation and or for fulfilling statutory requirements be provided in the offered bus.

4 Electric Propulsion System

3.1 Electric propulsion system /Pure Electric Power Train would have adequate power/rating to obtain desired performance in respect of its adequacy of power, bus acceleration levels, specific power consumption, energy density, etc. Electric propulsion system to have adequate power not only to propel the bus at its GVW but also to operate efficiently all other auxiliary devices, and the air conditioning systems fitted to bus, simultaneously, etc. As the

bus is required for operation in urban services, characterised by frequent stops and starts, electric propulsion system of adequate power for efficiently negotiating such frequent stops and starts and urban area gradients, achieve bus acceleration etc at full load, be considered for use. The power/battery rating, control mechanism, etc for obtaining above performance levels be indicated by the bidder in his bid along with other details called for in the annexure

3.2. Performance data / curves / charge - discharge cycle curves and other details of the electric propulsion system have to be supplied. A detailed set of calculations indicating adequacy of said electric propulsion system for proposed urban bus be provided along with all performance parameters of selected electric propulsion system.

3.3. The electric propulsion system and its accessories would be easily replaceable. Electric propulsion system mounting would be such as to minimize transmission of vibrations, if any, besides sustaining its loading impact to bus structure. Electric propulsion system mounting, structural design & foundation etc would be so designed / positioned as to facilitate easy accessibility & replacement. Electric propulsion system design would be such that it would not be overheated during normal operating conditions of vehicle. An arrangement for audio-visual signal would be provided in the event of electric propulsion system and or any of its subsystems getting overheated excessively. The temperature at which signal operates would be indicated. Similar arrangement for other sub-system of electric propulsion system with their monitorable indicators be made on dashboard. The electric propulsion system would be equipped with electronic controller / management and on-board diagnostic system.

3.4. Electric propulsion system compartment/s would be insulated to avoid transmission of heat and noise to saloon area. This firewall would preclude or retard propagation of an electric propulsion system compartment fire into passenger compartment. Only necessary openings would be allowed in the firewall, and these would be fireproofed. Wiring may pass through only if connectors or other means are provided to prevent or retard fire propagation through the firewall. Electric propulsion system access panels in the firewall would be fabricated of fireproof material and secured with fireproof fasteners. These panels, their fasteners, and the firewall would be constructed and reinforced to minimize warping of panels during a fire that will compromise integrity of the firewall. Bus manufacturer would provide relevant details toAUTHORITY.

3.5. The electric propulsion system would be suitably designed to operate optimally under Madhya Pradesh and Pimpri-Chinchwad’s peak summer heat and dust.

3.6. Electric propulsion system noise and chemical, electro-magnetic emission levels, if any, must conform to the national / international and or any other Indian Standards, adopting the most superior one.

3.7. Specific power consumption of electric propulsion system in terms of kms per KW hour at Standard operating conditions (Indian urban operating cycle) would be indicated along

with guaranteed energy consumption level (kilometres per kilowatt hour i.e. km per kwh) under GVW and the standard urban operational conditions / cycle.

3.8. For sound-proofing & for protection against fire risk in electric propulsion system compartment/s, no flammable material or material liable to soak chemical fumes, or any combustible material would be used in electric propulsion system compartment/s unless the material is clad by an impermeable fireproof sheet. A partition of heat– resistant material would be fitted between the electric propulsion system compartment/s & any other source of heat.

3.9. The vehicles would have high voltage / high current lines designed /protected / laid out in a manner as to provide adequate safeguards against any and all operational problems and safety hazards arising out of / caused by these items.

3.10. Details of make / model etc of various items of electric propulsion system and its subsystems would be provided as part of bid.

5 Battery Cooling System

4.1. Cooling system would efficiently dissipate heat from the electric propulsion system and its subsystems. Replacement/ maintenance of battery cooling system and its items be also easily carried out. Details of battery cooling system specifications, cooling capacity, cooling medium, repair and maintenance procedures etc would be supplied.

5 Traction Controller System

5.1. An efficient traction controller and or any other appropriate mechanism / device to efficiently regulate speed-power relationship for the electric propulsion system be provided for facilitating smooth, effective and jerk free drive of the bus. All operational controls/buttons/switches etc be conveniently located within easy reach of the driver. The traction Controller System and the controls/operational sub systems be easily accessible for repairs and also be easily replaceable. Complete system details need to be supplied with the bus.

5.2. Traction Controller System be fitted with a mechanism which makes it possible to operate reversing mechanism only when vehicle is stationary.

5.3. Details of make / model etc. of various items of traction Controller System would be provided as part of bid.

6 Suspension

6.1 The bus would be fitted with air-suspension suspension system at front and rear axle. The suspension system would be fitted with shock absorbers, suitable for trouble free

operation and jerk free comfortable ride in existing road conditions of cities in Madhya Pradesh \

7 Steering System

7.1. Hydraulic re-circulating ball type power steering would be provided.

8 Braking System

8.1 The braking system would be full pneumatic type with fail-safe dual circuit having four way protection valve, auto slack adjuster, disc type brakes in front and rear, with non-asbestos brake lining having temperature and wear characteristics suitable for harsh urban operations. Brake squeal would be absent under normal conditions of operation. An air compressor/dryer which minimizes oil carry over would be fitted. Braking system would be fitted with air dryer and oil/ water separator system. Buses would also be provided with hand operated pneumatic flick valve type parking brakes at rear wheels. Air pressure line would be treated for corrosion resistance.

8.2. In the event of failure of EPS and or loss of air in system, adequate provision be made for obtaining effectiveness of service brake system and or for deactivating the spring actuated brakes.

8.3. Regenerative Braking system of appropriate design / specification be provided

8.4. Buses shall be fitted with ABS with disc brakes in front and.

9. Wheels and Tyres

The bus would be fitted with steel radial tubeless tyres of optimal size and design conforming to IS 15633-2005with wheel rims of corresponding size conforming to IS: 9438 - 1980 as amended from time to time. The bus would be supplied with 7 sets of tyres (two on front and four on rear wheels) fitted on the bus plus one set as spare Stepney.

9.1. Details of type, specifications, capacity, make, model etc. of tyres/wheel rims would be provided as part of the bid.

9.2. Suitable guards/ Spray suppression system to be provided near wheels to prevent damage/ for obtaining safety from stones hurled from tyres.

9.3. Splash aprons of minimum 6.50mm thickness composed of rubberized fabric would be installed behind the wheels as needed to reduce road splash and protect under floor components. Splash aprons would extend downward to within 100mm of road surface at static conditions. Apron widths would be no less than tyre widths, except for the front apron,

which may extend across the width of the bus. Splash aprons would be bolted to the bus under structure. Splash aprons and their attachments would be inherently weaker than the structure to which they are attached. The flexible portions of splash aprons would not be included in road clearance measurements. Other splash aprons would be installed where necessary to protect bus equipment.

10 Axles

10.1. Solid beam front axle & grease type front bearings & seals of reliable & proven design of adequate capacity to take care of maximum Gross Vehicle Weight (GVW) & crush loading expected during life span of the bus of minimum 7 years or 7, 00,000 Kms. whichever is later

10.2. The bus would be driven by a single heavy-duty rear axle of proven design, adequate capacity to take care of maximum GVW & crush loading expected during life span of bus of minimum 7 years or 7, 00,00 Kms. whichever is later. Transfer of gear noise to bus interior would be minimized. Lubricant drain plug would be magnetic type, external hex head. If a planetary gear design is employed, oil level in the planetary gears would be easily checked through plug or sight gauge.

10.3. The drive shaft, if any, would be guarded to prevent it striking floor of the bus or the ground in the event of a tube or universal joint failure.

10.4. Details of type, specifications, capacity, make, model etc. of Front& Rear Axles would be provided at in the bid.

11. Battery Packs with Minimum Safety Standards:

11.1 Electrically propelled vehicles must meet and satisfy all requirements of "code of practice for Electric Propulsion system vehicles", safety and other requirements as per AIS 052 (Bus Code), safety and type approval as per AIS 049, and as per any other applicable standard and procedures; regulatory requirements as per CMVR / MMVR and any other applicable regulations for operation in the State of Madhya Pradesh.

11.2 Battery packs of requisite capacity would be appropriately mounted on to the bus keeping in mind convenience of battery maintenance /charging / replacement etc, safety of system and its maintainability, operation in the corridors of Madhya Pradesh.

11.3. Capacity of the battery packs would be adequate for running 200 + 20% contingency kms in a day on actual condition with Passengers, GVW and AC, 18 hourscould be with flash charging, fast charging or battery swapping.

11.4. Battery packs and other components of electrically propelled vehicles should conform to applicable AIS / BIS standards or International Specs / standards in absence of AIS /BIS specs. Battery packs and other components / units of Electric Propulsion system be tested

and certified to conform to said standards not more than six months prior to fitment on buses. Detailed drawing indicating location and mounting details of Battery packs /and other sub-systems of Electric Propulsion system be provided along with the bid

11.5. Make, model, capacity, etc of each Battery packs and the number of such Battery packs fitted, be submitted along with the bid. Similar details be also submitted for traction controller and other subsystems of the Electric Propulsion system.

11.6. All requirements of AIS / BIS / CMVR/MMVR etc for Battery packs, Electric Propulsion system / sub-systems and components, etc be fully met and test certificate for the same be provided.

12. Under Frame & Structure

12.1. The under frame and super structure would be suitably designed to carry dense crush load of over 42 passengers (assuming an average weight of 68 kg per passenger and hand luggage of 7kgs each) consisting of seated and standee passengers, the superstructure of steel tubing, bus tare weight, all other fitments such as AC system, etc and meet performance requirements under various loads indicated earlier. The structure would be designed to withstand the transit service conditions of operation throughout its service life.

12.2. Bus would be of integral construction /Monocoque/ fastened to chassis frame depending upon the chassis design, with the super structure fabricated using steel tubing (ERW– Rectangular / Square Sections) conforming to BIS 4923-1985 or latest, of grade Yst – 240 or superior.

12.3. A comprehensive multi-stage anti-rust treatment would be provided to bus flooring, sides, roof, under-structure, axle suspension components etc. for resistance to corrosion or deterioration from atmospheric conditions & road salts so as to enable them & the bus frame to last for at least 7 years or 7, 00,00 Kms whichever is later.

12.4. Samples of all materials & connections would withstand a two weeks (336 hours) Salt Spray test in accordance with ASTM procedure B117 with no structural detrimental effect to normally visible surfaces & no weight loss of over 1%. Details of treatment provided with relevant specification details be indicated along with suitable calculations to reflect that the corrosion prevention treatment meets the requirements of minimum 7 years life in Madhya Pradesh Metropolitan Region operational environment. Details of the system followed for corrosion prevention of internal surfaces of structural tubing would be supplied. A certificate of testing from an authorised test lab be provided.

12.5. Front and rear structure design would be energy absorption type to reduce impact stresses into under frame/side structures/ other areas of the vehicle. Damaged area of the vehicle would be easily repairable and or replaceable in the event of any major damage at

normally available workshop facilities and without any need for specialised tools / fixtures and equipment.

12.6. Entire surface of bus under floor and sides exposed to ground would be covered with appropriate corrosion prevention &flame retardant paint coating for protection against harmful effects of water, mud etc and to retard flames, if any. Wheel housings would be constructed to contain tyre bursts during operation and be flame retardant in case of tyre fire.

12.7. Sufficient clearance & air circulation would be provided around the tyres, wheels & brakes to preclude over-heating when the bus is operating

12.8. MIG welding would be used for steel structural member's fabrication.

12.9. All structural members would be MIG welded besides suitable gussets/ brackets of adequate size & thickness be provided on floor, side, front, rear & roof structure to ensure structure rigidity & integrity. Material, shape size and specs of such gussets / brackets would be provided by the bus supplier in their supplied drawings.

12.10. After anti corrosive treatment, structural members would be coated with red oxide/ Zinc Chromate primer & superior quality black paint.

12.11. During structural assembly operations, a number of holes are drilled and or weldments made after the corrosion prevention treatment of components/structural items/members causing loss of such treatment and exposing these items to corrosion. Manufacturer would take sufficient care to carry out corrosion prevention of items so exposed to effectively prevent corrosion.

12.12. Under floor to sidewalls would be sealed to prevent dust and water ingress.

13. Panelling

13.1. Bus exterior side panels would be fitted with stretched GP/stainless steel/Aluminium sheet at waist level. The exterior front-end panelling would be of GP/stainless steel/ Aluminium sheet while roof, rear, sides & skirt panelling would be of aluminium. All interior panelling would be of Acrylonitrile Butadiene Styrene (ABS)/Pre coated Aluminium Sheet conforming to relevant National or International Standards.

13.2. Wherever aluminium is joined with steel or with/ any dissimilar metals together, the involved joints would be treated with thick layer of approved quality dielectric paint conforming to relevant Indian/ International Standards, before assembly. Adequate treatment be also provided to avoid any incidence of galvanic corrosion between dissimilar metals.

13.3. Panels would not have any waviness & would be so mounted as to present smart aesthetic exteriors. Details of the above said panelling including specifications / thickness/ sizes of panels, fittings, rivet/ bolt pitch etc would be supplied.

13.4. All side skirt panels below stretch panel be of such design as would facilitate quick replacement of any damaged panel(s) with pre-painted panels. The side skirt would be able to withstand side impact as per provisions of BIS: 14682-2004 or latest (SUPD). Similarly, rear end would be able to withstand rear impact as per the provisions of BIS: 14812-2005 or latest (RUPD).

13.5. Anti-drumming compound/thermocole/glass wool/PU Foam as per Bus Code (AIS 052) would be provided between interior and exterior panel.

13.6. Roof structure would be thermally insulated with flame retardant Polyurethane or glass wool of minimum 40 kgs/m3 density as per Bus Code (AIS 052). The specifications/ BIS Standards for aforesaid insulating material would be supplied. Insulation would also be provided at other locations for improved performance of air conditioning system.

13.7. TIG welding for fabrication of aluminium components would be used.

13.8. Rain gutters would be provided to prevent water flowing from the roof onto the passenger doors, driver's side window, and exterior mirrors. When the bus is decelerated, gutters would not drain onto windshield, or driver's side window, or into the door boarding area. Cross sections of the gutters would be adequate for proper operation.

13.9. Entire front end of the bus would be sealed to prevent debris accumulation behind the dashboard and to prevent driver's feet from kicking or fouling wiring and other equipments as per AIS 047. Front end would be free of protrusions that are hazardous to passengers standing or walking in front of the bus during rapid acceleration.

13.10. Interior panels would be attached so that there are no exposed unfinished or rough edges or rough surfaces. Panels & fasteners would not be easily removable by passengers.

14. Paints

14.1. All structural members of the bus would be treated for corrosion prevention internally as well as externally and painted wherever required. Polyurethane (PU) painting base spray paint of approved Indian standard or equivalent conforming latest/ international Standards as applicable would be used for exteriors painting of bus including interiors wherever required. Colour shade would match to the shades as per BIS: 5-1978 or latest. Details of paints used, surface treatment & preparation, corrosion prevention treatment, base primer coatings, number of paint coats to be applied etc would be supplied.

14.2. All exterior surfaces would be smooth & free of wrinkles & dents. Exterior surface to be painted would be properly prepared as required by paint system supplier, prior to application of paint to ensure a proper bond between the basic surface and succession coat of original paint for stipulated service life of the bus. Paint would be applied smoothly and evenly with the finished surface free of dirt and following other imperfections:

- Blisters or bubbles appearing in the topcoat film.
- Chips, scratches, or gouges of the surface finish.
- Cracks in the paint film.
- Craters where paint failed to cover due to surface contamination.
- Overspray.
- Peeling.
- Runs or sags from excessive flow and failure to adhere uniformly to the surface.
- Chemical stains and water spots.

15. Colour Schemes

15.1. Exterior, interior colour schemes and logo/ graphics would be painted as directed by AUTHORITY. Information, on seats, for reservation for persons with disabilities, ladies, senior citizens would be marked as per the details provided by the AUTHORITY.

16. Service Doors

16.1. Two service doors to be provided (passenger entrance / exit) with steps would be provided as indicated in summarised specification in Part II. The location of front service door shall be ahead of front axle and the location of rear service door shall be ahead of rear axle.

16.2. The Selected Bus Operator/ Chassis manufacturers /Bus Body builder will be required to provide options with regards to position of the such door(s) on the near side.

Doors would be Power operated, jack-knife type or Inswing.

16.3. Operation of entrance and exit doors would be electro-pneumatically controlled by driver with internal and external emergency operational controls as per Bus Code. In an event of an emergency, it would be possible to open doors manually from inside the bus by using a force no more than about 10 Kg. after actuating and unlocking device at each door.

Unlocking devices would be clearly marked as an emergency device & would require two distinct actions to actuate.

16.4. Doors, operating mechanisms, door hinges and locks would comply with safety requirements as per Indian IS:14225/International Standards (to be specified and supplied by the bus manufacturer). Overall dimensions and construction of entrance and exit doors would be identical so that doors and door operating mechanisms are interchangeable. Closing and opening time of doors should be in the range of 4 seconds each as per Bus Code. There would be maximum opening area in longitudinal & vertical directions in fully open condition. Door operating mechanisms, brackets etc would be maintenance free and designed with lifetime durability of minimum 7 years or 7,00,000 Kms. whichever is later.

16.5. A pilot lamp on the driver's dashboard would be provided to warn that the door is 'Open' or not fully closed.

16.6. Entrance and Exit doors would be provided with suitable support in form of grab handles for boarding/ alighting passengers on JK door flaps or Inswing door. Electronic / other suitable sensors would be installed at all entrance and exit doors to retract door automatically if any obstruction to door occurs during door closing. It must be effective until door is fully closed.

16.7. Colour shade would match to the shades as per BIS: 5-1978 or latest.

16.8. A red "Door Closing" sign would be installed above exit doors. The sign will blink when doors are closing.

16.9. A suitable device to prevent doors from opening as long as bus is in motion would be provided.

16.10. Service Doors' operation would be controlled with help of separate push buttons and one switch for each door mounted within 200mm within vicinity of service doors as per Bus Code requirements. One red master button to close all entrance and exit doors at same time would also be provided on driver dashboard.

16.11. All button and switches would be labelled on driver dashboard and shall comply with AIS047 requirements.

16.12. Heavy-duty prominent nosing of bright yellow colour would be used to protect edge at entrance/exit.

16.13. Access door would be provided with heavy-duty sealing to avoid ingress of dust and water into passenger compartment. Upper & lower section of both front & rear doors would be glassed for not less than 45% of the respective door opening area of each section. Glazing material & glass in doors would be same as in side windows.

16.14. Details of above service doors including electro-pneumatically controlled door closing system with complete circuit diagram would be supplied Photo-cell controlled opening / closing functions of doors and a "sensitive edge" made for safe entry exit be fitted.

16.15. Doors would be fitted with heavy-duty hinges as per bus code.

16.16. Doors would be fitted with heavy-duty locks with & without lock & key depending upon their use. Striker plate would be fitted at the closing end of locks.

16.17. All handles shall be fitted with anti-skid sleeves.

16.18. Doors would open or close completely in about 4 seconds from the time of control actuation and would be subject to closing force requirements and adjustment requirements. Front door would remain in commanded state position even if power is removed or lost. Operation of & power to, passenger door would be completely controlled by driver. A control or valve in driver's compartment would shut off power to, and/or dump the power from, front door mechanism to permit manual operation of front door with bus shut down.

16.19. Bus should not be capable of moving ahead unless the doors are closed.

17. Stepwell Guard

17.1. Stepwell Guard: Suitable stepwell guard shall be provided in areas such as service doors entrance/exit area where seated passengers are likely to fall into as a result of panic braking. Guard height would be minimum 800mm from bus floor, and guard would extend inward from the wall at least 100mm more than the centre line of the seating position of the passengers who are prone to this risk or as per AIS052.

18. Windows

18.1. Windows would of large size for panoramic view. They would be in single piece window glasses. Toughened glass wherever used in bus body would be 4.8 mm to 5.3 mm thick aesthetically installed. Size and shape of the glasses would enable even the standees to have maximum outside view without kneeling. General requirements of windows would be as per the provisions of bus code (AIS 052).

18.2. Windows would have provision of suitable sealing to avoid ingress of dust and water and would have proper/ efficient drainage system as per Bus Code.

18.3. Details of window design; fitment etc would be supplied by the bidder along with the bid.

20. Emergency Exit

20.1. Emergency exits would be provided in bus as per the provisions of Bus Code – AIS 052 / CMVR. Two emergency exits are to be provided. One of the emergency exits shall be in the form of emergency door situated at opposite side of service door as per Bus Code requirement. Details of Emergency exits including their numbers, locations, sizes, markings etc would be supplied by the bidder along with the bid.

21. Roof Hatch/Escape Hatch

21.1. Two escape hatches/Roof hatches to be provided in additional to emergency exits, as per bus code. However, Roof hatches are mandatory in AC fitted buses for ventilation in case of A.C. failure.

22. Steps

22.1. All steps shall be provided with anti skid surface (Aluminium chequered plate/ grooved vinyl sheet or any non-slip coating). The anti skid surface shall meet the requirements specified in AIS standard as and when notified.

22.2. Dimensional requirements of steps shall be as per Bus Code(AIS052).

23. Floor

23.1. Bus floor design would be without internal steps in floor area.

23.2. The height of the floor measured in relation to the ground shall be 900mm with the vehicle unladen condition.

23.3. deleted

23.4. Drain holes to be provided in the floor design for easy cleaning including that of sweeping & drainage of water.

23.5. Floor would be fitted with fire retardant 19mm thickness phenolic resin bonded densified laminated compressed wooden floor board (both side plain surface) having density of 0.95 - 1.25 gms/cc conforming to IS 3513(Part-3): type VI 1989 or latest. The flooring should also be boiling water resistant as for marine board BIS:710-1976/ latest and fire retardant as per BIS:5509-2000(IS15061:2002) or chequered plywood 19mm thick.

23.6. The said floor would be covered with anti-skid type vinyl flooring with silicon grain material of minimum 3mm thickness meeting Indian/ International Standards (to be indicated by the bus manufacturer in the bid),ISO 877/76 for colour, IS15061 for fire retardancy. Adequate sealing would be provided in the floor to prevent ingress of dust, gases, water etc.

24. Gangways

24.1. Gangway-from entry/exit gate walls through the entire bus length, would have clear space of minimum 600 mm for passenger movement and would be generally as per the provisions of the Bus Code (AIS 052)/ UBS II and meet statutory requirements.

25. Handrails and Handholds

25.1. Handrails and Handholds would be provided as per provision of bus code (AIS 052) /AIS 046.The surface of handrails & handholds would be colour contrasting and slip resistant sleeves.

25.2. All handrails would be of MS tubing of 32 mm dia and 3 mm thick or SS of 1.6mm thick or as per AIS 052. Depending upon the size of the bay (i.e. between two consecutive roof hand rail brackets), minimum 2 to 4 numbers handholds per bay would be provided so that every standee passenger even during crush load, is able to grab a hand hold.

25.3. Hand holds be made of transparent polycarbonates with provision for display of advertisements. Hand holds be appropriately fastened to the hand grab rails so as to prevent their axial sliding and or rotation. Details of the handrails & handholds fitted would be supplied.

26. Stanchions

26.1. Vertical stanchions would be so positioned to facilitate access to seats for those standing. Stanchions would be of 40.0 mm dia and 3.15 mm thick MS tubing with surface of colour contrasting and slip resistant sleeves or SS tubing without sleeves or As per AIS 052...

26.2. Stop request switch to be provided on each alternate stanchion at 1200 mm height.

27. Passenger Seats

27.1. Passenger seats would be front/reverse facing, comfortable, durable & maintenance free complying to 'AIS023 with cushion at seat and seatback and other requirements as per the Bus Code (AIS 052).

27.2. Seat pitch would be maintained at 650 mm (minimum) as per AIS 052.

27.3. Details of seat design, material, specifications, pitch and other relevant data and the seating layout would be supplied by the manufacturer for approval of AUTHORITY.

27.4. Details of seating lay out, accommodating maximum number of seats in 2x2 layouts meeting requirements of the bus code would be supplied. Seating capacity would be minimum 31+D.Standee capacity of bus worked out as per system given in bus code (AIS

052) / CMVR would be indicated by manufacturer. Seating and standee capacity of bus would be minimum 42(as worked out as per AIS 052)/CMVR.

27.5. Construction/ fitting of the seat would be such as to be easily replaceable and repairable.

28. Seat Belts and its Anchorages

28.1. Seat belts would be provided for the seats as per the provisions of CMVR & Bus Code (AIS 052). Any seats provided at rear end of bus, seats in centre (facing the gangway) would necessarily be provided with seat belts. Seat belts and its anchorages would conform to the requirements of AIS 005 and AIS 015

29. Driver's Work Area

29.1. A driver door of not less than 1250 mm height and 650 mm width/ As per AIS 052 and with requisite steps would be provided for entry and exit to driver's work area. Proper hand holds and steps would be provided for easy access to driver's cabin. All other requirements of driver's work area would be as per the provisions of Bus Code -AIS 052 and AIS023. Driver's work area would have lighting arrangement to provide general illumination and it would illuminate half of the steering wheel nearest to the driver. Brake Pedal Angle would be determined from a horizontal plane regardless of slope of cab floor. Driver entrancecum-exit door would be provided as per Bus Code (AIS 052) with a provision of maximum width of sliding window using material like glazing

Glass as used in other side window glasses. Driver work area would be equipped with a 24V DC, 200mm diameter fan mounted at proper height on side structure. Colour of fan would match the interior decor of the bus.

29.2. Driver's visibility in front of the bus, seated on driver seat, be as per bus code (AIS 052) / CMVR

29.3. Driver's seat would meet the requirements of AIS 023.

29.4. Driver partition would be provided as per AIS 052.

29.5. A driver partition between driver and front passenger seat would be provided. The driver partition would minimize glare & reflection in windscreen directly in front of partition from interior light during night time operation.

29.6. Dashboard Instrumentation and Control System

29.6.1. Bus would have ergonomically designed moulded type dash board and instrument panels made out of FRP material. Details of materialsused their specifications etc of

dashboard and instrument panel would be provided by the manufacturer and should meet the requirements of AIS 047.

29.6.2. Bus would have dash board with full instrumentation and control panel. All the dashboard controls and instrumentation system shall be as per the AIS 071.

29.6.3.On board electronic diagnostics system would be provided as per UBS II/CMVR.

30. Rear-view Mirrors- Interior and Exterior

28.1. Rear-view mirrors would be provided on both sides of bus to enable driver to have clear side/rear views. One interior rear-view mirror would also be fitted for viewing saloon area by driver. Installation and performance requirements of rear-view mirrors would conform to AIS 001 and AIS 002. Exterior rear-view mirrors would also enable the driver to view object near bumper area.

31. Sun Visor

31.1. Adjustable roller type sun visors would be provided for windshield & driver's side window. Visors would be shaped to minimize light leakage between visors & windshield. Adjustment of visors would be made easily by hand with positive locking & releasing devices and would not be subject to damage by over-tightening. Sun visor construction & material would be strong enough to resist breakage during adjustment. Visors may be transparent but would not allow a visible light transmittance in excess of 10%. Visors where deployed would be effective in driver's field of view at angles more than 5o above horizontal.

32. Electric Horn

An electric horn conforming to IS: 1884-1993 or latest and installation requirements conforming to IS :15796 :2008 would be fitted in bus and further conforming to the provisions of CMVR.

33. ITS Device

The ITMS project is being implemented presently by Authority appointed ITMS Service Provider which includes Automated Vehicle Locating System (AVLS), Passenger Information System (PIS), Vehicle Scheduling and Dispatch System, Incident Management System (IMS), Enterprise Management System (EMS), Business Intelligent System (BI) etc City Bus Operation. All requirements should be in line with UBS II

The Project is intended to enhance commuter satisfaction by improving reliability, safety and punctuality of bus operations. Authority intends Each Contracted Midi AC Electric Bus shall

come fitted with ITS Equipment such as PIS Display boards and Tracking Device. The Operator shall make necessary fitments for ITMS on the buses provided under hiring as per AUTHORITY requirements. The detailed Specification of ITS Devices are specified hereunder;

34.1. PIS Destination boards

Specification PIS –On Bus - Four numbers: Front, side, Rear & inside of the bus.
PIS System
Usability/Functionality/Capability
All drivers related interfaces for PIS must be provided on Information Control Unit ICU
The route programming file to be uploaded on ICU *via USB upto 8GB minimum*
Route selection function is to be provided on ICU *with easy sorting of Routes*
All driver related route information to be displayed on ICU
Amber colored, alphanumeric with graphic capability
In-built light sensor with continuously variable brightness control to enable the display intensity to change based on ambient light conditions
Viewing distance
Front, side and rear signs 30 meters minimum, for single line text, in day and night.
Inner 15 meters minimum, for single line text in day and night.
Display Characteristics
Fixed, scrolling and flashing mode (with fixed route number, upto 6 characters, on front, side and rear signs).
Capability to show customized graphics.
Two lines English /one line local language.
Total display height should accommodate two lines in English language and the Individual heights of each line should be adjustable to enable one line to be larger/smaller than the second line. However, during next stop announcement only single line text is required
It should be possible to display, concurrently, different messages on each of the signs (front, rear, side and inner).

It should be able to display special signs like signs for 'PWD enable bus', 'ladies special'.
Capability to show special characters like (, ` " . ! + - * : ?)
Signs should have ability to retain the last message displayed in the memory of the sign even in the event of power failure and without the message being reloaded. from ICU. Test will be performed by disconnecting the ICU from the sign and power to the sign will be switched 'off' and 'on' to see if the Last message is retained and displayed.
Display and voice announcement in English and local languages using Microsoft fonts via window based software package –Window 8.1
The system should have a programming capability as under
Minimum 300 routes UP and DOWN (150 numbers of destinations) on front, side and rear signs.
GPS triggered next stop display on Inner sign with synchronized voice announcement for minimum 100 stops on each route.
The inner sign should be able to display and announce upto three languages, one after the other in sequence. For example make display and announcement in English, then Hindi or gujarati to be followed by local language for benefit of the passengers. Display and announcements should be possible "before arrival" of the bus at the bus stop, "on arrival" of the bus at bus stop and "after departure" of the bus from the bus stop.
In event of GPS failure the above functionality should be possible through manual intervention on ICU.
Display driver and conductor ID once in between the stops on Inner sign
Inner sign should be able to display text and customized graphics and announce upto pre-recorded messages by driver selecting 1~9 on ICU display panel of the controller.
Display customized graphics plus synchronized voice announcement – preferably location based in case of Million plus population cities
Functionality of Display'clock'-GPS based or 'Default Messages' on Inner sign
Emergency 'stop' request function- by pressing an emergency switch placed anywhere in the bus the inner sign should display 'stop' message and buzzer located near the driver makes the sound alerting the driver to stop the bus.

In case one or more signs get disconnected (malfunction), the rest of the Signs should continue to function regardless (including fresh communication from ICU)
Sign should be able to store 'diagnostic trouble codes' (DTC)','parameters identifiers (PID) and data should be retrievable.
To comply with test standards as per Separate List
Dimensions and technical specifications of signs
Display size / Board Size
Front ,1800 x 220 mm Rear and Side minimum 220x900 mm –one no each AIS 052 2.2.15 Destination Board for Public Service Vehicles Inner: minimum100 x 900 mm –one
Pitch
Front- maximum. H 13.4 mm x V14.1 mm
Side and rear maximum. H10.5 mm x V 14.1mm
Inner 8 x 8 mm maximum.
LED and display quality front, side and rear signs
Amber colored LED, dominant wave length 591~595nm
UV resistant, diffused lens 4 mm (minimum)
Wide viewing angle 120º horizontal & 80º Vertical
Ensure enhanced readability with full clarity on scrolls and long life usage by incorporating non multiplexed system (constant current drive circuit) with typical LED Intensity 400~700 mCd at If =20 mA,
LED and display quality inner sign
LED amber dot matrix viewing angle 45º all around, intensity minimum 40 mCd, dominant wave length 591 ~595 nm
Structure
Front ,side and rear signs : light weight structure with toughened glass fixed with UV resistant adhesive in front
Inner sign: light weight structure with poly glass /acrylic/toughened glass.
Conformal coated PCBA and ROHS Compliant
ICU architecture
Usability/Functionality/Capability

The ICU should control complete Public Information System on Bus including Destination Signs, External Amplifier and Speakers.
The Driver has to select a 'Route', from a Pre-loaded Route Data Base and all information will be displayed and or announced automatically based on Bus Location (GPS).
Provide capability to upload firmware on Signs via RS 485.
A 'beep' sound is made when vehicle speed exceeds set speed limit. The limit is configurable through Software and preset at 50 Kmph
Should be possible to check Firmware Version, Route Data base version.
Technical specifications: ICU
Operating Voltage 9~32 Volts
Processor : 32 bit minimum
Operating system: embedded Windows (8.1) /Linux with programming software
Memory : 256 MB minimum
Interface minimum : RS 485, RS 232, USB, GPS Antenna
Conformal coated PCB boards
Route Data upload on Controller from PC via USB port (USB 1.1, USB 2.0, FAT, FAT 32, 8 GB capacity). Devices prone to pilferage e.g. SD Card is not permitted. Buzzer indication when loading is complete
Integrated with External GPS Receiver and Antenna' via RS 232 using Standard NMEA 1083 GPRMC sentence, transmission Protocol to be provided by the Manufacturer under a 'NDA'.
In-built MP3 files storage/playback function and compatibility with external two channel amplifier minimum 10 Watts rms each suitable for 2 ~8 Ohm impedance with input for external microphone
LCD Panel (resolution 64 x 256 minimum), Illuminated with automatic brightness Control and Backlit Keypad with minimum 20 soft keys including alphanumeric.
Mounting in Radio Slot acc ISO 7736
Programming Software (including simulation, Brightness control, scroll speed control, scroll direction, Template configuration, Graphic library, customised graphics)
Amplifier, Speakers and Wire Harness (with water proof connectors)

All the test compliances to be submitted for the ITS as per the UBS II standards and approved by the ARAI/ CIRT/ or any other Govt. Of India certified competent authority.

34.3. GPS based Tracking Device as per the UBS II or above standards:

GPS Units of following specifications shall be provided for Electric midi-buses.
Following specifications of GPS Units shall be applicable Including the camera and MDVR functionality. Operator may provide the separate consul for the GPS system & cameras.
The Service Provider shall have to provide any approved Test Agency certificate for this product before initiating the procurement of this product to Authority for approval.
1. System Functions:
a) GPS Vehicle Tracking
b) Vehicle Health Status –CAN integration.
c) Driver Assessment
d) e-mail and SMS communication for configured alarms and events
e) On –Board Recording and Server Log
f) Remote Monitoring including Mobile Data Terminal Server/ Client Applications g) MIS
h) Should be able to function independent of Other Systems –However it should be able to provide GPS input to PIS Controller via RS232.
i) CCTV with minimum of 4 No. Of 2 MPixel IP cameras and should have minimum of 15 days data recording facility.

2. System Main Elements
a) Analog AHD Cameras
b) Emergency Button
c) Data Logger (Driver Behavior and Vehicle Health)
d) Driver Display (Live View one or more Camera, Two way voice communication,
Text messaging with Voice from back office, Driver Log in/out RFID)
e)Wifi AP (detachable for depot use)
f) On-Line UPS (optional)
g) All 'Applications' will be supplied and licensed for all time use.

3 Wi-Fi AP
a) Improve working efficiency of system maintenance, saving time and cost.
b) USB 2.0 interface, plug and play
c) Support(802.11b/g/n) 2.4GHz LAN -10 Meters
d) Support 'Easy configuration' via laptop or iOS, Android Mobile Terminal
e) Image preview for 'adjust angle'
f) Preview, Playback, Search, Setting
g) Support external 64 GB SD card file backup
h) Support Data Export from m DVR
i) Transmission Rate 20 Mb/s

j) Power supply from m DVR :500 m A @5V
k) Operation Temperature: -10deg C ~ +50deg C
l) Relative Humidity :<80% non condensing
m) Only a few units required per depot

4 Safe Driving System (data logger)
a) Integrated 6-axis G-sensor
b) Data Management , Analysis :Collect data of six-axis sensor and OBD II to manage driving behavior Harsh Acceleration/braking, Sharp Turns, collision and oil consumption, speed, driving time, long idling etc
c) Data type K line, CAN ISO 11898/ ISO15765-4 high speed, intermediate speed and low speed CAN, RS485, OBD II
d) Acceleration ±16g, Angular Rate ±2000°/sec
e) Power supply from m DVR : 500 m A @5V
f) Operation Temperature: -10deg C ~ +60deg C
g) Relative Humidity : 95%
h) Ingress Protection IP 54 minimum
i) Test compliances : As detailed later in this document

5 Driver Display Unit
a) 7" TFT LCD Touch Screen with Arrow Keys and Number Buttons
b) Resolution 800*480 , Live view Video Surveillance
c) Luminance 400cd/m2, Visual Angle 70/70/50/70 (Typ.)(CR dot 10)(Left/Right/Up/Down)
d) Maximum Number of Display Color 262K/16.7M(6bit/6bit+Dithering)
e) Scale 16:9
f) Back-light Type White LED
g) Built –in Speaker Speaker(16Ω, 2W)x2
h) Built-in RFID module to sign in/out, When Driver & Conductor swipe the ID card, then the SERVER will get the information and send a message to driver & conductor (and others) to inform them sign successfully. The same functionality when used in a School Bus will inform parents. Supports standard card of Mifare protocol ISO14443 Type A , working frequency 13.56MHz
i) Two Way Voice Communication with Back Office
j) Text Message from Back Office
k) Live View and Play Back -One or More Camera
l) 'Reverse camera only' when reverse gear is engaged (via digital I/O)
m) 'Door Facing Camera only' when 'Door Open" (via digital I/O)
n) Recording On –Green mark, 'Event' Recording –Red mark
o) GPS Date/Time/Speed, GPS Loss, Vehicle ID, All 'Events', Channel Name, Ignition Status
p) Power supply from m DVR: 200 m A@12V
q) Operation Temperature: -10deg C ~ +60deg C
r) Relative Humidity: 95%
s) Ingress Protection IP 53 minimum
t) Installation Bracket on Dashboard

u) Test Compliances : As detailed later in this document

6. Performance and Durability Testing & Environmental Test

Test Compliances for Data Logger + Driver Console (together):
Verification Report of ARAI/ICAT/CIRT or any competent authority is mandatory.

34.4. Integration requirement with Existing ITMS System

Operator shall mount ITS Equipment as specified herein above on Buses. Operator shall also ensure to supply equipment compatible with existing ITS System of Authority so as to enable smooth integration. Operator shall be responsible for regular maintenance ITS equipment installed by it during the Contract Period. Operator and Authority are hereby agree to share interfacing protocols and Active Programming Interface with each other for smooth integration of ITS equipment provided by Operator with Authority's ITS System. Authority shall mount CCTV cameras etc on the Bus through a separate vendor appointed by it.

35. Emergency/Panic Buttons

35.1. Panic button to be provided to each row of seat as per AIS 140.

36. Bumpers

36.1. Bus would be provided with front and rear bumpers of Steel or impact resistant polymer or combination of both meeting requirement of an energy absorbing system. The bumper would be easily repairable/ replaceable. Bumpers would conform to the requirements of CMVR/Bus Code/any other international Standards (to be specified by the manufacturer). Details of above bumpers along with drawings including thickness of bumpers, section, profile etc would be supplied by the Successful bidder.

36.2. Bus manufacturer would provide details of materials used, their specifications and process followed for their repair and maintenance along with material required.

37. Towing Device

37.1. Heavy-duty ring type towing devices would be provided at front and rear.

38. Wind Screens

38.1. Front wind screen in the bus would be in single piece design, plain/ flat with curved corners, PVB film laminated safety glass of adequate thickness.

38.2. Rear windscreen would also be in single piece design, flat in centre and curved on corners toughened glass of thickness of 5.0 mm (+ 0.3mm). Windscreen glasses would meet the requirements of IS 2553: Part II-1992 or latest and that of CMVR and Bus code (AIS 052).

38.3. The glazing used for fitment of glasses would be Ethylene Propylene Dien Monomer (EPDM) rubber of black colour or pasted with adhesive material conforming to Indian/

International Standards to be specified by the manufacturer. A grab handle and suitable handles on the outside of windshield centre at waist level would be provided to facilitate manual cleaning of the windscreens.

39. Wind Screen Wipers

39.1. Electrically operated windscreen wiper system having two wiper arms with blades would be provided at the bottom of the front windscreen. Wiper motor would be heavy-duty steel body for minimum of two-speed operations. Wiper arms would rest horizontally when not in use. The sweep angle would be sufficiently wide for clear view during rainy days. Windscreen wiping system would be 24V, having variable speed, with fitment of time delay relay. Windshield washer system would spray washing fluid on windshield & when used with the wipers, would evenly & completely wet the entire wiped area. Windshield washer system would have a minimum of 2.5 litres capacity tank suitably located for easy refilling from inside the bus and two nozzles at suitable location for proper spray of fluid. Reservoir pumps, lines & fittings would be corrosion resistant & reservoir itself would be translucent for easy determination of fluid level. The windscreen wiping system would be in accordance with CMVR/ IS:15802, latest.

40. Fire Extinguishers

40.1. Multipurpose fire extinguishers would be ISI marked conforming to BIS: 13849-1993 or latest, dry powder type (Stored pressure) duly filled, of capacity and quantity as per the provisions of GSR-853 (E) dated 19.11.2001 notification of Government of India, Bus Code, UBS II. Fire extinguishers should be of 10kg (6+4).One in driver compartment and other in passenger compartment.

40.2. In addition FDSS has to be provided as per AIS135 or as per applicable.

41. First Aid Kit

41.1. First aid kit complete with items, medicines, bandages etc. would be provided as per provisions of CMVR fitted near driver seat at appropriate position and level on side with proper reinforcement.

42. Provisions for Persons with disabilities

42.1. The manufacturer would provide for ease of accessibility, guidance, positioning of aids etc system for Persons with Disabilities (PwDs) that meets the requirements as given in the Bus Code and CMVR.

43. Battery / power supply system for auxiliary systems / aggregates of bus

43.1. Power supply system for operation of bus aggregates other than electric propulsion system would be of 24V & minimum 100 Amps-hour capacity, low maintenance type lead

acid batteries or any other source, which shall be brought out by bus manufacturer in his bid. Such supply system would be well secured to a hinged/ pivoted or slide out type carrier for ease of access for repair & maintenance, replacement and suitably ventilated for escape of fumes, if any, but insulated against ingress of dust and moisture. In the event of separate batteries/power supply for these systems, the battery box/power supply system would be appropriately mounted and would be well secured, easily accessible & ventilated. Performance requirements of batteries would conform to BIS: 7372-1995 (or latest).

43.2. In the later case at 41.1. battery terminals, if batteries provided, with positive locking system (e.g. angle type terminal with provision for double bolting) duly protected against all possible short circuit risk would be provided.

43.3. Each power supply cable shall meet the requirement of IS: 2465 with flame retardant and shall be properly encased & clamped.

43.4. A relay controlled Heavy-duty type battery/supply cut-off switch (isolator switch) capable of carrying & interrupting total circuit load would be provided 1 each near battery/supply system and near driver for disconnecting all battery positives/supply system except for safety devices such as fire suppression system & other systems as specified. Two points of battery/supply cut off switch would be connected with battery/supply source and two points would be connected with self-starter. The battery/supply Cut-off switch with power plant operating, would not damage any components of electrical system in off position. The battery / power supply Cut-off switch would be capable of carrying & interrupting the total circuit load.

44. Electrical equipment and wiring for bus aggregate supply system/ source As per details given in UBS II and generally as under:

44.1. The bus would have 24 Volt D.C with multiplex wiring system for all its electrical equipments except in unavoidable circumstances to avoid sparking in buses. A separate system/ mechanism would be provided for discharge of electro static charge induced during the operation of vehicle. Adequate precaution would be taken in case of single pole wiring to avoid spark in any of the items etc.

44.2. An adequate capacity power supply system / source of 24V DC, minimum 150Ah rating with consistent output to take care of high idling periods of city operation would be provided and so located as to minimise ingress of oil or rain water into it. Bus Manufacturer may, if so required, have to install two separate power supply systems / sources one each for Air Conditioning System and bus Auxiliary systems.

44.3. Details of specifications of Battery / power supply sources for vehicle auxiliary systems / air conditioning etc, the starting mechanism, if any, along with circuit diagrams would be furnished by the manufacture along with their bids.

45.4. Electrical equipment and wiring would conform to Indian/ international Standards, bus code and UBS II. All cabling would be as per provisions of Bus code / UBS II. The wiring would be multiplex system, flame proof, ISI marked conforming to BIS: 2465-1984 or latest. As far as possible electrical system would be 24V double pole multiplex wiring system except in unavoidable condition. However, in case of single pole wiring all power & ground wiring would have double electrical insulation, which would be waterproof conforming to the Indian/ International Standards. Wiring would be grouped, numbered & colour coded. Wiring harnesses would not contain wires of different voltage classes unless all wires within the harness or insulated for highest voltage present in harness. Kinking, grounding at multiple points, stretching & exceeding minimum bend radius would be prevented.

46.5. Wiring looms/ harness for electrical system of bus would be properly routed, encased/ concealed type so mounted to eliminate chances of any spark. Details of above wiring loom including circuit diagram; layout of controls etc would be supplied by the bidder along with the bid Wiring support would be protective & non-conducting at areas of wire contact & would not be damaged by heat, water, solvents or chafing.

46.6. All electrical fittings and lights would be fully wired up, running in flame retardant black colour PVC sleeves as per applicable Indian Standards (to be specified by the manufacturer) and installed in a manner to facilitate easy inspection/ rectification/ replacement etc as & when required without disturbing internal finish/ décor of the bus. Whenever any wire or cable or PVC sleeve carrying cable etc passes through holes in sheet metals/ structural member, suitable rubber grommets/ Bakelite inserts would be provided in these holes to avoid direct contact between cables and sheet metal causing damage to insulation coating.

46.7. Bus manufacturer would furnish details of above wires/cables and battery / auxiliary items supply system cables.

46.8. Design of electrical, electronic & data communication systems would be modular so that each major component, apparatus panel or wiring bundle is easily separable with Standard hand tools or by means of connectors. Each module except main body wiring harness would be removable & replaceable. Power Plant wiring would be an independent wiring module. Replacement of power plant compartment wiring module would not require pulling wires through any bulkhead or removing any terminals from the wires.

46.9. Electrical system & its electronic components would be capable of operating in area of the vehicle in which they will be installed. Electrical & electronic equipments would not be located in an environment that will reduce performance or shorten life of the component or electrical system. No vehicle component would generate or be affected by electro-magnetic interference or radio frequency interference (EMI/RFI) that can disturb performance of electrical / electronic equipments.

46.10. Bus manufacturer would furnish recommendations regarding methods to prevent damage from voltage spikes generated from welding, jumps start shorts etc.

46.11. All electrical & electronics hardware would be accessible & replaceable easily. It would be mounted on an insulating panel to facilitate replacement. Mounting of hardware would not be used to provide sole source ground and all hardware would be isolated from potential EMI/ RFI.

46.12. All electrical/ electronic hardware mounted in interior of bus would be inaccessible to passengers & hidden from view unless intended to be viewed.

46.13. All electrical/ electronic hardware mounted on exterior of bus i.e. not designed to be installed in an exposed environment would be mounted in a sealed enclosure.

46.14. All electrical/ electronic hardware & its mountings would comply with shock & vibration requirements.

46.15. Bus manufacturer would provide a certificate of testing/estimation of electrical load for each system.

46.16. Electric supply systems' over voltage output protection would be provided.

46.17. All branch circuits would be protected by circuit breakers or fuses sized to requirements of the load. Circuit breakers or fuses would be sized to larger than total circuit load current as per UBS II. Current rating for wire used for each circuit must exceed size of circuit protection being used.

46.18. Electronic Circuit protection for power supply for starting mechanism / device if any would be provided to prevent engaging of for long time / to prevent overheating.

46.19. To the extent practicable, wiring would not be located in environmentally exposed locations under the vehicle. Wiring & electrical equipments necessarily located under the vehicle would be insulated from water, heat, corrosion & mechanical damage. Where feasible front to rear electrical harnesses should be installed above the window line of vehicle.

46.20. All electrical motors/subsystems would be easily accessible for servicing.

46.21. Separate additional out-lets, as required in UBS II, are to be provided with appropriate relays & fuses in wiring harness for fitment of electrical auxiliary devices/ systems to be added later on in buses, if required.

46.22. AC (Alternating Current) out-let of 220V, as required in UBS II if any, be provided at suitable location for charging of electrical/electronic equipment, etc.

46.23. If any electronic components have an internal clock, it would be provided with its own power supply back up to monitor time when electric propulsion system power is disconnected.

46.24. All electronic components/equipment would have self-protecting capability in event of shorts in cabling and also in over voltage and reverse polarity conditions. If an electronic component is required to interface with other components it would not require external pull up and/ or pull down resisters.

46.25. RF components such as global positioning system (GPS) etc. whenever provided would use coaxial cable to carry the signal. The RF systems require special design consideration for losses along the cable. Connectors would be minimized, since each connector & crimp has a loss, which will attribute to attenuation of signal. Cabling should allow for removal of antennas or attached electronics without removing the installed cable between them.

47. Lights and Lighting System

47.1. Interior saloon lighting in driver compartment and passenger compartment shall be provided as per the requirements of AIS 052.

47.2. Exterior lighting such as Headlamps, fog lamp, direction indicator, side marker lamp, rear combination lamp, top lights, etc. shall meet CMVR statutory requirements. The installation of the same as per bus code/ AIS 008..

47.3. A well-lighted bus registration number plate would be fitted at rear as per provisions of CMVR duly complying with directives/ regulations regarding high security number plates as notified by Government of India / Government of Madhya Pradesh if any.

47.4. No Electrical fittings would be mounted on front and rear bumpers.

47.5. Switches, circuits and fuses would be fitted as per bus code.

47.6. A reverse buzzer would be installed at the rear of bus to sound intermittently when reverse gear is engaged.

47.7. A suitable light would also be provided in electric propulsion system compartment for ease of maintenance/ emergency repairing.

47.8. Following circuit diagrams would be supplied along with buses:
i) Complete circuit drawings for exit/entrance door control system, door mechanism.
ii) Complete door sensor electrical circuit drawing. iii) Complete circuit drawing for sensitive door edge system.

iv) A layout drawing for all door control switches, gauges, warning lights on driver's dashboard.
v) A layout drawing for all lighting and wiring circuits, control switches fuses and fitment details and diagrams along with item specs and types in each case.
vi) Complete circuit diagram for the electric propulsion system inter-alia highlighting high, medium and low voltage cable, safety / protection systems, etc

48. Performance Statement

48.1. Bus manufacturers would furnish following information for performance evaluation of bus chassis and/ or complete buses supplied to other customers and now in service for at least 2 years. The information should be furnished separately order wise:
a) Type/Model
b) Name and address of the bus operating agencies where this model is operating
c) Number of the buses supplied
d) Order no. against which buses have been supplied.
e) Date of supply and date from which in service
f) Maximum/minimum turning radius.
g) Maximum climbing ability/ gradeability
h) Type of bus body
i) Electric propulsion system details such as max power, battery data, usable power, max min battery charging and discharge data, controllers, safety devices/provisions, SPECS AND STDS against each item,
j) Electric propulsion system - load speed performance curves and data, range (Kms) between two consecutive charging,
k) Battery charging system, charging rate, charging time, types of batteries, battery pack mountings, etc
l) Specific energy consumption – bus kms operation per unit energy(kwh) consumed, specific weight of batteries (weight per kwh rating), annual deterioration factor of batteries with age wrt specific energy consumption,
m) GVW of buses
n) Noise emission Norms
o) Type of suspension system
p) Dimensions- Length, width, height, floor height, wheel base,
q) Angle of approach, departure and ramp over
r) Axle –rear and front
s) Passenger carrying capacity – seated and standees as worked out by using AIS 052
t) Any other performance data.

49. Technical Information

Technical information required to be furnished by bus manufacturers along with Bid wrt the following amongst others:

49.1. Bus manufacturer's technical information of the bus i.e. General Drawings comprising of elevations –sides, front & rear ends along-with main dimensions i.e. overall length, overall width, overall height, saloon height, pillar to pillar distance, isometric views, exterior & interior details, seating layouts, no. of seats (excluding seat for driver), environmental friendly colour scheme as per AUTHORITY etc would submit same along-with the Bid.

49.2. General appearance & structural details of roof, floor, sides, front & rear show and driver's cab would be provided by the bidder along with their bids. Details of main structural members, material specifications, shape, size, thickness, etc be indicated on the above drawings.

49.3. Power Point presentation material on a DVD for offered design of bus (indicative) and minimum 1:15 scaled Model (indicative & non-working) duly furnished/ painted in environmental friendly colour scheme as given by AUTHORITY would be submitted along-with the bid. The presentation will cover elevations –sides, front & rear ends along-with main dimensions, isometric views, exterior & interior details, seating layouts, colour scheme etc.

50. Tools, Gauges and Testing Instruments

50.1. Bus manufacturers would furnish a list of special tools, gauges and testing instruments for inspection, repair and maintenance of buses along with a complete list of spare parts recommended for:

- Normal wear and tear; and
- Emergency requirements for any breakdowns, damages etc.

51. Operation and Maintenance Manual

51.1. One hard bound copies, for each bus, of operation and maintenance manual containing essential technical information required for satisfactory operation, inspection and maintenance would be supplied by bus manufacturers.

i. One set of Coloured wall charts would also be provided of following units for every ten buses or part thereof showing assembly details:

ii. Chassis lubrication and brake system.

iii. One set of Coloured wall charts of following units amongst others for every 25 buses showing assembly details:

- Electric propulsion system, batteries / packs, motor,
- Traction Controller system, power input system for auxiliary systems/aggregates of bus
- Drive line and Rear axle
- Front axle
- Steering system, suspension system, etc
- Brake system, ABS etc
- Regenerative braking system
- Safety devices

- Bus AC System
- Any other necessary for skill development of operator staff

52. Training

52.1. For each lot of up to 15 buses or part thereof, bus manufacturer would arrange orientation training at Cities of Madhya Pradesh for two days for 60-70 drivers in batches of 20-25 (up to a total of 150 man days) besides similar orientation training at Cities of Madhya Pradesh for 3 days for 50 technicians/ supervisors/ engineers in batches of 25 (Total 75 man-days).

52.2. Bus/ energy/ available facilities will be provided by Bus Operator and course materials will be provided by bus manufacturer on free of cost basis. This training will be provided free of cost, as and when required by AUTHORITY / Bus Operator within one year of purchase of buses.

53. Tool Kit

53.1. Bus manufacturer would provide a suitable tool kit and other mandatory items as per CMVR 138 (4)/ other applicable rules comprising of common tools and other essential items required. Complete list of tools in tool kit to be supplied with every bus would be supplied by the manufacturer. One Hydraulic Jack per bus of a capacity of at least 10 Ton as per design of bus would also be supplied.

54. Inspection and Testing

54.1. Bus will be inspected at various stages of fabrication by AUTHORITY and CIRT 's representative at manufacturer works. Inspection would comprise of ensuring that all materials, components, items, accessories and assemblies used in fabrication of buses conform to contractual specifications. Wherever required to ensure this, laboratory test would be carried out at bus manufacturer's cost.

54.2. The inspection will be undertaken at any and or all stages such as component fabrication stage, chemical pre-treatment stage, fabrication of assembly, sub assembly stage, structure, panelling and equipping stage and Pre-dispatch inspection as per the discretion of AUTHORITY.

54.3. Final Inspection of buses would be carried out at manufacturer's facilities and or at a place finalised by AUTHORITY. After the bus is finally inspected, it would be subjected to test run and trials as required by AUTHORITY.

54.4. The bus would be taken over by AUTHORITY after satisfactory final inspection, testing and trials in Cities of Madhya Pradesh.

55. Maintenance Spares and Materials

55.1. Bus manufacturer would provide details of components/spares required for maintenance of vehicle for twelve months' operation taking daily utilisation of bus of up to 225+30% contingency Kms.

55.2. Manufacturer would also provide complete details of vendors, for every component/ spares for complete bus and the spare parts catalogue in 2 sets for every 25 buses or part thereof.

55.3. Manufacturer would ensure that during service life of 7 + 3 or more years or 10,00,000 Kms. (whichever is later) of service, adequate spare parts in kit form/ individual components are made available in time to AUTHORITY on demand along with other essential items required.

55.4. All spare parts availability would be more than 98% at any time

56. Maintainability

56.1. Design and fabrication of bus would be such as facilitates easy access for repair & maintenance, removal, replacement of various bus components/ assemblies/ subassemblies/ systems by providing suitable traps/ flaps etc. Also removal and re-fitment of electric propulsion system , traction controller system, differential, battery cooling system, door closing mechanism, PIS etc. would be easy for repair & maintenance purpose. Enough space would be provided between wind screen glasses and PIS boards for facilitating cleaning of glasses.

56.2. Battery cooling system coolant top up/ filling and electric propulsion system charging inlets would be easily accessible with suitable closing devices complete with locking arrangement/-holding arrangement.

56.3. Also an easy access would be provided for attending to other assemblies mounted in the vehicle.

57. Warranty/ Guarantee

57.1. Fully built bus would be covered under Warranty/ Guarantee for up to 2, 50,000 Kms. or 24 months whichever is later from the date of putting bus into operation after registration. All assemblies, sub-assemblies, fitments, components would be covered under Warranty Period as per commitment of bus manufacturer at the time of supply of bus

58. General Requirements

58.1. AUTHORITY reserves the right to alter, modify, change specifications as per requirement to suit the latest provisions of CMVR/ any other Notifications, safety aspects, regulatory aspects besides any practical/ operational difficulties etc. faced/likely to be faced by AUTHORITY . Vehicle Manufacturer would ensure that all alterations, changes or modifications in specifications, if necessary, as mentioned above would be carried out in buses built by them as per the advice of AUTHORITY without attributing any additional cost to AUTHORITY.

58.2 Ministry of Road Transport & Highways, Government of India (MORT&H) vide Notification No.GSR-853 (E) dated 19.11.2001 in the Gazette of India, inter-alia stipulated the following measures which need to be complied with for enhancement of safety by the Vehicle Manufacturers as per the statutory requirement for registration of vehicles

• While registering every bus, Vehicle Manufacturers & transport authority would jointly examine the bus prior to registration. The registration of such a vehicle be done only after signing the report jointly by all concerned along with the transport authority.

• For electrical installations, flameproof cables would be used, especially positive terminals would be locked firmly with all cables & pipes with proper looming to take care of vibrations, fire retardant material would be used for seats, roof & sidewalls. Safety instructions about fire hazards would be displayed.

• Details of structural members, their material specifications & dimensions i.e. cab & saloon flooring, cross bearers, various angles, floor longitude, main body pillars, dummy/stump pillars, cant rail, vent rail, waist rail, skirt rail, wheel arch section, sole bar, seat rail, roof sticks & roof longitudes, diagonal bracing, Rub rail tube, stretch & body panel stiffeners, gussets etc. would be provided by bus manufacturers.

• Similarly, details of aluminium sheets/sections & their alloys/specifications, aluminium sheet, rub rail, decorative mouldings, wire cover, wearing strips, footsteps edging, various panel beadings, window frames and its sections, finishers, water gutter channel, roof grab rail brackets would be provided by bus manufacturers.

• All edges would be rounded off and would not cause injury to bus occupants.

• Complete bus would be rattle-free.

• All the rivet and bolt holes would be jig drilled as far as possible. The rivet holes should be drilled before the corrosion treatment. Holes drilled after the corrosion treatment be suitably treated with anti corrosion materials. Rivet heads neatly formed and each bolt/ rivet would be tightened after full mating of the surfaces to be fastened.

• All safety aspects should be considered while designing and fabricating the bus.

• Continuous length piano type hinges and tower bolts of stainless steel would be used as per relevant Indian Standards.

• Similarly Aluminium extruded sections wherever not painted would be anodized.

• All flaps wherever provided should have heavy-duty support to keep it open for ease of maintenance.

• All miscellaneous M.S pipes would be phosphated with the coating of 2.16 to 2.70 gm/m2 or by any other pre-treatment process conforming to Indian/ international Standards (to be specified by the manufacturer). Samples of all materials & components would withstand a

two weeks (336 hours) Salt Spray test in accordance with ASTM procedure B117 with no structural detrimental effect to normally visible surfaces & no weight loss of over 1%.
• Anodized decorative aluminium mouldings/ beadings etc would be used.
• All M.S pipes used in the bus would be ERW conforming to BIS 3601:1984 or latest, of grade WT –160.
• All rubber items used on the bus body would be made of Ethylene Propylene Dien Monomer (EPDM) rubber of black colour conforming to the Indian/ International Standards to be specified by the Manufacturer.
• EPDM rub rail of aesthetic profile would be fitted in anodized extruded aluminium channel between stretch panel and skirt rail longitudinally at the widest portion of the bus. The quality of EPDM material would be as per the Indian/ International Standards to be specified by the Bidder.
• Every trap/-opening flap would be secured in a manner that the vibrations can't dislodge it. Lifting devices must not protrude above the flap.
• Ease of accessibility to electric propulsion system & other aggregates for easy maintenance would be ensured. Assemblies / units would be so mounted that they are easily accessible & can be removed without disturbing other components / assemblies.
• All structure, body, and panel-bending mode frequencies, including vertical, lateral, and torsional modes, would be sufficiently removed from all primary excitation frequencies to minimize audible, visible, or sensible resonant vibrations during normal service.
• Exterior protrusions if any would conform to the provisions of relevant CMVR/ AIS/ Bus Code. The exterior rear-view mirrors and required lights and reflectors are exempted from the protrusion requirement. Advertising frames would protrude no more than 22mm from the body surface and would have the exposed edges and corners rounded to the extent practicable. Grills, doors, bumpers and other features on the sides and rear of the bus would be designed to minimize the ability of unauthorized riders to secure toeholds or handholds. The exterior body features would be shaped to allow complete & easy cleaning by automatic bus washers without snagging washer brushes or retaining water & dirt.
• Hydraulic Grease Nipples would be provided for ease of proper lubrication & maintenance.
• Front panels, bumpers and grill should be designed such that there are no pointed or sharp protrusions to minimise injuries to vulnerable road users in case of impact.

59. Quality Assurance

59.1. Bus manufacturer would use materials including fasteners conforming to relevant Indian/ International Standards and would get the same tested before use, meeting requirements of all specified parameters to ensure quality of material specified. However, random sample of materials picked up and duly sealed by representative of AUTHORITY in presence of bus manufacturer, out of purchased lot at works of the manufacturer or out of the bus under fabrication/ completed bus and be sent for testing quality of components at CIRT/ARAI/BIS approved testing laboratories having testing facilities for testing all parameters of specifications of materials/ items. In the event of failure of samples in lab tests, testing would be conducted in same way again from fresh lot. The bidder would replace failed materials by those duly passed in lab tests.

59.2. In the event of failure of material/ items in laboratory test, failure of material/ items (removed from completed bus) in laboratory test, acceptance decision about bus be taken by AUTHORITY after obtaining compensation/ recoveries of liquidated damages from bus supplier as per system decided by AUTHORITY. Wherever, failure of material on one parameter or more than one parameter, recoveries for complete lot of materials used in bus would be made from manufacturer plus 20% damages thereof.

59.3. Completed bus would be subjected to water leakage test conforming to BIS: 11865-1986.

60. Statutory Requirement

61.1. Bus manufacturer would ensure that all statutory requirements in respect of each and every item of bus are fully met. Manufacturer would also obtain type approval certificates etc. for bus & any other items from testing agencies specified in the CMVR namely VRDE/CIRT/ARAI or any other Test agencies as specified by the Central Government as defined under CMV rule 124 and 126. A certificate showing details of make/type/model of various units like electric propulsion system items, Traction Controller system items, rear axle, batteries, tyres, steering, instruments on the panel, air compressor, shock absorbers, suspension system items, etc. would be furnished.

61.2. Bus Manufacture/ Bodybuilder must make sure that the Fully built bus complies with standards and regulations for Electrically propelled vehicle provided in the AIS-052, AIS 049 and any other applicable standard; CMVR 1989 as amended from time to time, and MMVR 1989 and all amendments thereto.

62. Manufacturer's VIN Plate

62.1. Manufacturer's VIN plate shall be fixed as per CMVR.

63. Vehicle Guidance system for properly aligning bus with bus stops / gates:

63.1. The bus manufacturer has to make provision for affixing RFID TAG on the driver side glass on door window. The successful bidder has to match (shall be compatible) with the existing AUTHORITY infrastructure.

64. Bus Air Conditioning System

Air conditioning system capable of maintaining prescribed cabin temperature while operating even in harsh ambient conditions of 45 – 48 degree C ambient temperature, dusty and humid conditions in cities of Madhya Pradesh.

64.1. Power required for air conditioning system operation should not adversely affect operational performance of bus particularly wrt its acceleration, Gradiability, load pulling capability, etc. even when the bus is loaded to capacity and the air conditioning is on.

64.2. Bus entry exit doors are assessed to operate (Open, dwell, close for a average period of 45 seconds each time) at headways of about 2 minutes, for boarding/ alighting etc of passengers.

64.3. Estimated Peak hour load in bus may be considered as at 1.5 times bus capacity

64.4. Air conditioning system's test reports as provided in UBS II / as given in this doc be submitted. On site testing may be undertaken by AUTHORITY at their discretion and Bus supplier would make all arrangements for the same at their cost.Air conditioner capacity should be minimum 28 kW.

65. Any other provisions to make the bus fully functional.

65.1. Notes indicated in this doc form part of the specs / bus body building requirements. Should however there be any conflict details contained in notes would over-ride others.

However, AUTHORITY reserves the right to accept/reject over-ride if any.

66. Specifications related to Fire Detection and Suppression System (FDSS) General Requirements

66.1. FDSS provision is to be made in the bus at appropriate location(s) for detection and suppression about any likely fire at all fire prone systems (bus supplier to identify such fire prone systems and make above provisions)

66.2. Vehicles shall be equipped with fire detection & suppression system detecting fires in the fire prone areas based on sensors that senses either abnormally high temperature or rate of temperature rise, or both.

66.3. Upon detection of fire in the fire prone areas, the system referred in clause no 1.1, shall provide the driver with both an audio and a visual signal, and activate the hazard warning signal. The placement of the visual alarm shall be such that it is visible unobstructed while viewed from the driver seat.

66.4. The detection & suppression system shall be operational irrespective of whether electrical propulsion system of bus has been started and the vehicle's attitude.

66.5. The installation of the fire detection & suppression system shall comply with the following requirements;

66.6. The fire detection & suppression system shall be installed according to the system manufacturer's installation manual.

66.7. An analysis shall be conducted prior to the installation in order to determine the location of fire detectors and suppression system. Potential fire hazards within the fire prone areas shall be identified such that the fire detectors shall be positioned to cover the fire hazard. The system shall also be ensured to work properly regardless of the vehicle's altitude, road conditions etc.,

66.8. Fire hazards to be taken into account in the analysis shall at least consist of the following: Components whose surface may reach temperatures above the auto-ignition temperature for fluids, gases or substances that are present in the fire prone areas and electrical components and cables with a current or voltage high enough for an ignition to occur as well as hoses and containers with flammable liquid or gas (in particular if those are pressurized). The analysis shall be fully documented.

66.9. The Fire Detection and Suppression System (FDSS) installed in the AC Midi Buses shall comply with the requirement of AIS 135, UBS II, CMVR.

66.10. Make, model, specs etc of various components / sub-systems / system of FDSS be clearly indicated for each item as part of the offer. A detailed drawing of the system details / specs be also provided for.

67. Electric Bus Battery charging requirements

67.1. The Electric Buses shall be operated with Single/Multiple Charging throughout the day depending on the solution worked out. The Buses shall be available for charging during night after completion of scheduled trips. The Bus Operator is required to install and operate adequate charging stations at the Depot/Parking space provided by the AUTHORITY.

67.2. Under No circumstances should the performance of the buses suffer in case of low battery charge status. If buses showing are such performance, Operator shall have to forthwith remedy the situation, shall attract damages and persistent and repeated failures on this count shall constitute a material breach of the performance conditions.

67.2.1. AUTHORITY will make bulk power available at identified Spaces for parking, charging and maintenance. Operator will arrange for site level distribution of power to its charging points along with related equipment and infrastructure for charging including any civil and other ancillary work required for parking, charging and maintenance. The decision on number of chargers to be provided is left to the Operator according to his solution. The Operator is expected to pay for the power itself. Information regarding Electricity Rates applicable may be obtained directly from Power suppliers MSEB. Operator /Service Provider will present the best solution in terms of bus, capacity of batteries, charging infrastructure

required, charging time etc. looking to the operational requirements of AUTHORITY AC Midi buses.

67.2.2. The Operator will support the procurement, supply, operation and maintenance of the Bus including battery charging, maintenance /replacement in all respects throughout the Agreement Period. It will make its appropriately trained and qualified technical staff available for any solutions, challenges and fine tuning.

67.2.3. Bidder must provide details of his proposed solution in terms of charging time, charging stations requirement, space requirements, scheduling and charging plan etc.
62.3. Bidder must commit to keep upgrading his technology is and as required based on approval of Authority.

PART II – Specifications of Fully Built Electric Air conditioned (AC) Midi, 9200±300 mm long, 900mmFloor Height for Authority based on UBS II, CMVR, Bus code-AIS 52 and AIS 049.

Sr. No.	Description	Technical Specification
	Bus characteristics	
*	Bus Floor height	900 (±10mm)
1	Propulsion system	Electrically propelled Bus using electric propulsion system
2	Type of Battery	Li-ion or Li-ion Phosphate Battery or Li NMC or superior.
3	Battery pack rating and energy / power available for propulsion; Any deterioration in propulsion power with usage and consequently reducing charge; Min & max charging % Maximum Thirty Minutes Power (kW)Motor/s capacity	180 KW (min) 1. No of Motors/ batteries as per the Bus manufacturer's design. 2. Power consumption ≤ 1.2 Kwh per km. 3. Electrical Regeneration required. 4. Charging mode: AC or DC charging required. 5. Off board/ On board charging required. 6. Charging time: less than 3 hours. 7. Safety: Short circuit /over temperature/lightening protection mandatory 8. CMVR certification mandatory

Sr. No.	Description	Technical Specification
		Charges and Technology should be as per OEM.
3.1	Battery cooling system	Efficient and robust battery cooling system calling for minimal maintenance
3.2	Battery life (No. of charging cycles)	Battery life: Batteries to last for 7 years (This can be used as a guideline)
3.3	Batter Charging System	To be decided by the Bus Operator
3.4	Electric drive motor/s	Optimal rating, type, make, model of electric drive motor requiring minimum maintenance
3.5	Electric propulsion system motor rating / power sufficient to provide:	
a	Rated performance at GVW in a stop/start urban operations	Attain bus maximum speed of 75±5 kmph (without speed limiter) at GVW load, air conditioning and other sub-system operational.
b	Acceleration (meter/sec^2)	≥ 0.8
c	Attain bus speed of 0-30 kmph in Seconds	≤ 10.5
d	Maximum speed	maximum speed 75±5 kmph with speed governor.
e	Minimum Operation Range per bus per day	200 + 20% contingency kms in a day with or without flash/ fast/ swapping (On actual condition with Passengers, GVW and AC, 18 hours as per Annexure 4.
f	Grade ability from stop at GVW	17%
g	Rated HP/torque preferably at lower rpm range	Rated HP at low rpm and Maximum torque required at lower range of motor RPM and spread over a wider range of motor RPM. Sufficient torque to meet the acceleration, gradeability, AC and range requirement.
h	Power requirements for Air conditioning system, ITS, etc	Required to be provided by electric propulsion system

Sr. No.	Description	Technical Specification
3.6	Noise norms	As per CMVR.
3.7	Electric propulsion system	Electric propulsion system / subsystems (batteries) temperature, motor speed in RPM, vehicle speed, Motor % load (torque), diagnostic message (electric propulsion system batteries, cooling system, motor, Traction Controller specific) SOC of the Vehicle Health Monitoring System. (Battery health + regenerative brake charging)
3.8	Electric propulsion system operational requirements	Electric propulsion system should be able to operate efficiently at ambient temperatures / environmental conditions of Cities of Madhya Pradesh.
3.9	Electric propulsion system / subsystems location	Optional/ preferably Battery location below floor.
3.10	Transmission	Automatic
4	Operational safety	Transmission system to be fitted with a mechanism which makes it possible to engage reverse gear only when vehicle is stationary (applicable for automatic & automatic manual transmission)
5	Clutch (where applicable)	Not applicable for automatic transmission
5.1	Rear axle	Single reduction, hypoid gears, full floating axle shafts with optimal gear ratios or with in wheel hub driven mechanism suitable for urban operations
5.2	Front axle	Heavy duty reverse Elliot type axle suitable for various floor heights (To be considered as a guideline)
6	Steering system	Hydraulic power steering with angle adjustment
7	Suspension system	Air suspension at front and rear.
7.1	Front	Air bellows - 2 numbers

Sr. No.	Description	Technical Specification
7.2	Rear	Air bellows – 4 numbers
7.3	Kneeling	Not applicable
7.4	Anti-roll bars/stabilizers	Required at front and rear
7.5	Shock absorbers	Hydraulic double acting 2 at front & 4 at rear
7.6	Controls (optional)	Electronically controlled air suspension system
8	Braking system	Braking system: Mandatory ABS with Disc brake in front and rear mandatory
8.1	Anti-skid anti-brake locking system (ABS)	Mandatory.
8.2	Electronic controls	Required
9	Electrical system for bus ancillaries	24-volt DC
9.1	Batteries (ancillaries equipment and light and light signaling devices) :	Low maintenance type lead acid batteries for 24 V & Min 100Ah system-performances as per BIS: 14257-1995 (latest). 2X12V of commensurate capacity. Maintenance free batteries preferred.
9.2	Electrical wiring & controls - type	Multiplexing type -- As specified separately under ITS specifications and Conforming to IP67.
10	Speed limiting device (optional)	Mandatory as per CMVR. SLF
11	Tyres	Steel Radial Tube-less. Size and performance as per CMVR.
12	Range:	Vehicle shall cover minimum 200+20% contingency Km (at 80% SOC) with AC, Passenger Load and Traffic conditions with overall Intermediate charging time of not more than 30 minutes including travel time and as per Annexure 4.
13	Bus characteristics	

Sr. No.	Description	Technical Specification
13.1	Bus dimensions' mm	
a	Overall length (over body excluding bumper)	9200±300 mm
b	Overall width (sole bar/floor level- extreme points)	2600 (maximum)
c	Overall height (unladen - at extreme point)	3800 (maximum)
d	Wheel-base	4000-5000mm
i	Front Overhang	To accommodate minimum 800 mm wide door ahead of front axle.
ii	Rear Overhang	As per CMVR
13.2	Maximum turning circle radius (mm)	As per CMVR
13.3	Floor height above ground (mm)	900 (±10) mm
13.4	Clearances (mm)	
a	Minimum Axle clearance (mm)	Minimum 175 mm
b	Wheel area clearance (mm)	> 220 mm for parts fixed to bus body &> 170 mm for the parts moving vertically with axle.
c	Minimum ground clearance (un-kneeled) at GVW	Within the wheelbase not less than 240mm.
13.5	Angles (degrees)	
a	Angle of approach (unladen)	Not less than 8.5°
b	Angle of departure (unladen)	Not less than 9.0°
c	Ramp over angle (half of break-over angle)	Not less than 4.8°
14	Bus Gates/Doors	
14.1	Type of doors	LH Side doors – Power operated doors, JK type / Swing in door 800mm width one no. ahead of front axle and one no. 800 mm width preferably behind rear axle or ahead of rear axle.

Sr. No.	Description	Technical Specification
a	Operating mechanism	Electro pneumatically controlled
b	Opening/Closing time in seconds per operation (maximum)	4
c	Positions of door controls	On dashboard and also inside & outside of doors as per AIS 052.
d	Passenger safety system - allowing bus motion on doors closing and doors opening only when the bus is stopped	Mandatory
14.2	Front service doors (refer "A" in fig -1 of UBS II - (near side/non- driver side)	
a	Minimum door aperture (without flaps) in mm	800
b	Minimum clear door width (fully opened) in mm	650 ± 50
c	Minimum door height in mm	1900mm
d	Positioning front service gate	Ahead of front axle
e	Number of gates	1
14.3	Rear service doors (Near side/non-driver side)	
14.3.1	Rear service doors (near side/non- driver side)	Behind rear axle
14.3.2	Rear service doors -refer "C" in figure 1 of UBS II (near side/non- driver side); steps required for non BRTS operations, steps not required for level boarding	
a	Minimum door aperture (without flaps) in mm	800 (minimum)
b	Minimum clear door width (fully opened) in mm	650 ± 50
c	Minimum Door height in mm	1900
d	Positioning rear door	Preferably behind of rear axle or optional ahead of rear axle
e	Number of gates	1
	Maximum first step height (mm) from ground - unladen & un-kneeled	

Sr. No.	Description	Technical Specification
14.6	position in buses with:	
a	Stepped type entry (maximum)	400 mm
b	Level entry (at station platform height)	Not applicable
14.7	Maximum height (mm) of other steps (where required)	
a	if door ahead of rear axle	250
b	if door behind rear axle	250
14.8	Ramp for wheel chair at the gates wherever required	Not applicable
a	Dimensions	Not applicable
b	Material	Not applicable
c	Load carrying capacity (in kilograms)	Not applicable
d	Device to prevent the wheel chair roll off the sides when the length exceeds 1200mm	Not applicable
e	Device to lock wrapped up ramp	Not applicable
f	Kneel ramp control: (applicable in reference of clause 7.3)	Not applicable
g	Requirement for passengers with limited mobility	Required
i	Wheel chair anchoring - minimum for one-wheel chair	Required
ii	Priority seats - minimum 2 seats	Required
iii	Stop request	Required
h	Emergency doors/exits or apertures (Numbers)	As per AIS 052 Refer Cl. 20 and 21 of Part I for detail description.
	Dimensions in mm	As per AIS 052
i	Door closing requirements for bus movement -	Bus could move only after door closing completed

Sr. No.	Description	Technical Specification
i	Power operated service door - construction & control system of a power operated service door to be such that a Passenger is unlikely to be injured/trapped between the doors while closing.	As per AIS 052
ii	Door components	As per AIS 052
iii	Door locks/locking systems/door retention items	As per AIS 052
iv	Door hinges	As per AIS 052
15	Bus body	
15.1	Design type approval	As per CMVR, Annexure 3 of UBS II
15.2	Bus structure - materials specifications etc.	OEM should ensure GI tubular structure of 60x40x2, 40x40x2, 50x50x2, 40x20x2 etc. To meet the requirements of Annexure 3 of UBS II. Exterior panels: a) Stretch panel: 1.0mm GP sheet b) Skirt and roof panels: Aluminium 1.2mm Interior panels: Roof and side pre-coated Aluminium sheet of 1.2mm (0.7+0.5) as per AUTHORITY requirement
15.3	Insulation	FR grade material as per IS 15061
a	Roof structure	FR Grade material glass wool, PU foam or thermocole. As per AIS:052
b	Battery Pack compartment	
15.4	Aluminium extruded sections for:	
a	Rub rail	Aluminium extrusion IS 733/1983 or

Sr. No.	Description	Technical Specification
b	Decorative moulding	better
c	Wire cover	
d	Wearing strip	
e	Foot step edging	
f	Panel beading	
g	Window frame	
h	Roof grab rail brackets	
15.5	Floor type/Materials etc.	
a	Type of Floor	Uniform floor with steps at rear passenger saloon area
b	Steps on floor	Uniform floor with steps at rear passenger saloon area, except where required for entry/exit
c	Maximum floor slope	As per Bus code AIS:052
d	Floor surface material	19mm thickness phenolic resin bonded densified laminated compressed wooden floor board (both side plain surface) having density of 0.95 - 1.25 gms/cc conforming to IS 3513 (Part-3): type VI 1989 or latest. The flooring should also be boiling water resistant as for marine board BIS:710-1976/ latest and fire retardant as per BIS:5509-2000 (IS15061:2002) or Chequered Plywood 19mm thick
g	Anti – skid material	3 mm thick anti-skid type silicon grains ISO 877/76 for colour, IS:15061:2002 for FR grade.
15.6	Safety glasses and fittings:	
a	Front windscreen (laminated) glass:	Single piece laminated safety glass, plain, lat/curved with curved corners with PVB film IS 2553 (Part-2)-1992/latest. Standard designs for each variant of buses to be followed (Refer Annexure 1 of

Sr. No.	Description	Technical Specification
		UBS II)
	Size:	Standard designs for each variant of buses to be followed. (Refer Annexure 1 of UBS II)
b	Rear windscreen: (wherever provided)	Single piece flat/curved toughened glass-plain/flat/curved at center& curved at corners IS:2553 (Part-2)–1992/latest
	Size:	Standard designs for each variant of buses to be followed. (Refer Annexure 1 of UBS II)
c	Side windows:	Flat, single piecedesignfixed/pasted toughened glass IS 2553 (Part-2)-1992/latest.
d	Glass specifications	Toughened glass IS2553 (Part-2)-1992/latest
	Glass thickness:	4.8-5.3mm
e	Window & other glasses - material specs, thickness etc.	Toughened as per IS:2553 (Part-2)–1992/latest of 4.8-5.3 mm thickness
f	Safety glass	As per CMVR
g	Rear view mirrors	As per CMVR
15.7	Seating and gangway etc.	
15.7.1	Passenger seating for ordinary type-1 buses	As per AIS 052
a	Seat layout in the low floor area	2x2
b	Seat layout in the higher floor area	2x2
c	Seat area/seat space per Passenger (width*depth) mm	400X350
d	Seat pitch - minimum (mm)	As per AIS 052
	Minimum backrest height-from floor to top of seat/headrest	As per AIS 052

Sr. No.	Description	Technical Specification
e	Seat base height-distance from floor to horizontal front upper surface of seat cushion mm.	As per AIS 052
	Seat back rest height mm	375
f	Torso angle (degrees)	Minimum 12º
g	Seat materials	As per AIS:023 ,Seats with cushion at seat & back
h	Seat frame structure material where required:	Frame structure of ERW steel tube
i	Free height over seating position (mm)	More than 900
	Seat base height:	As per AIS 052
j	Clearance space for seated Passenger facing partition (mm)	Minimum 350
k	Seat back/Pad material/Thickness:	Polyurethane Foam IS: 15061:2002 (padding is optional)
	Type:	MDI Moulded IS: 5509
	Upholstery:	Pile Fabric/Jekard 0.7-1.0 mm thickness
l	Area for seated passengers (sq. mm.) type 1 NDX/SDX:	400X350
m	Area for standee passengers (sq. mm.):	As per AIS 052
n	Number of seats including one for wheel chair	31seats + driver
o	Number of standees	Calculation as per AIS 052
p	Sitting/Standing Ratio	Not required
q	Headrest	Not required
r	Seats side facing location	Not required
s	Seat arm	Seat arm required for aisle seats and seats opposite to service door and above wheel arches.
t	Magazine pouch	Not required

Sr. No.	Description	Technical Specification
u	Individual seat row fans	Not required
v	Reading lights	Not required
w	Seat back rest	Fixed
x	Seat belts & their anchorage	As per CMVR
y	Performance & strength requirements of:	Required
i	Driver seat	As per AIS 023
ii	Passenger seats	As per AIS 023
15.7.2	Gangway:	
a	Minimum interior head room (Centre line of gangway) (mm)	1900±100 mm including that in the rear overhang area.
i	At front axle:	As per AIS 052
ii	At rear axle:	As per AIS 052
iii	Other areas	As per AIS 052
b	Gangway width (mm) from gates to longitudinal space between seats (access to service doors)	(Ref figure-1) minimum 600 mm excluding armrests (armrests are not required) and including stanchions- will be measured from seat edge to seat edge.
c	Gangway width (mm) in longitudinal space between seats	As above
d	Gangway width (mm) in longitudinal space between seats (rear of rear edge of the rear door in rear engine bus)	As above
e	Driver's working space	As per AIS 052
	Driver's seat	As per AIS 052
15.8	Corrosion prevention & painting	As per clause 3.17 of AIS 052
a	Corrosion prevention treatment	
	Internal surfaces of structural members	
	External surfaces of structural	

Sr. No.	Description	Technical Specification
	members	
	After drilling holes/welding	
	Inter metallic galvanic corrosion prevention	
b	Primer coating	
c	Painting	
16	Electrical system	As per AIS 052.
16.1	Electrical cables	BIS marked, Copper conductors with fire retardant as per IS/ISO:6722:2006 as per appropriate class. Conductor cross-section varying as per circuit requirements, minimum cross-section 0.5 sq mm. Quality marking may also be as per equivalent or better European, Japanese, US standards, Conforming to IP 67 water& air tight for traction battery. For Bus Body Building IS 2465 / Multiplex wiring /ISO 6722
16.2	Conductor cross section	
16.3	Safety requirements of electrical	As per AIS 052 Two nos. one Manual Battery cut - off switch (isolator switch) near driver's seat and one electronic on drivers dash board
a	Fuse	
b	Isolation switches for electrical circuits where RMS value of voltage exceeds 100 volts	
c	Location of cables away from heat sources	
d	Type approval of circuit diagram as per standards related to electric equipment's/wiring	
e	Battery cut - off switch (isolator switch):	
16.4	Wind screen wiper:	
a	Wiper motor:	

Sr. No.	Description	Technical Specification
b	Wiper arm/blade:	As per CMVR: IS 15802
16.5	Driver cabin fan	Required.
16.6	Lighting - internal & external and illumination	As per AIS 052
16.7	Illumination requirements/ performance of:	
a	Dash board tell-tale lighting/control lighting	As per AIS 052
b	Cabin lighting - luminous flux of all lamps for cabin lighting	As per AIS 052
c	Passenger area lighting – luminous flux of all lamps for Passenger area lighting	As per AIS 052
17	ITS enabled bus	Compliance to chapter 10 of UBS-II
18	Safety related items:	
18.1	Driver seat belt & anchorage duly type approved.	ELR recoil type, 3 point mounting as per CMVR & AIS 052 conforming to AIS 005 & 015
18.2	Passengers seat belt:	As per AIS 052
	Number/location	
18.3	Driver/Passenger/wheelchair seat belt anchorage	
18.4	Fire extinguisher:	FDSS as per AIS:135 or as per applicable plus 10 kgs fire extinguishers.
18.5	First aid box:	1 number, as per provision of CMVR
18.6	Handrails minimum length*diameter* height above floor in mm	Colour contrasting and slip resistant sleeves with MS tubing of 32 mm dia, 3 mm thick. Rest as per AIS 052
18.7	Handholds:	Colour contrasting and slip resistant . 2 to 4 numbers. Handholds per bay. Rest as per AIS 052
18.8	Stanchions:	MS Tubing with sleeves. 40 mm dia& 3.15 mm or SS tubing without sleeves
18.9		

Sr. No.	Description	Technical Specification
18.10	Passenger stop request signal	High visibility bell pushes/pulley chord/touch tape shall be fitted at a height of 1.2 meter on every stanchions mainly for persons with disabilities.
18.11	Window guardrails:	
a	In all school buses - minimum numbers.	Not Applicable
b	In all other buses- minimum numbers.	As per AIS 052
c	In AC super deluxe buses	As per AIS 052
d	Other details:	
i	First guard rail at a height from window sill in mm	
ii	The distance between two guard rails in mm	
18.12	Entrance/Exit guard/Step well guard:	800 mm minimum height extending ≥ 100mm more than centre line of sitting position of the Passenger.
18.13	Emergency exit doors, warning devices etc.:	R H Side emergency door mandatory Dimensions as per AIS 052/CMVR
18.14	Front/Rear door, step well lights, door open sign	As per AIS 052
18.15	Mirrors right/left side exterior/interior:	As per AIS: 001 & 002. Interior with double curvature
18.16	Towing device front/rear	Heavy duty 1.2 times (minimum) the kerb weight of the bus with 30° of the longitudinal axis of the bus. As per CMVR & IS 9760 - ring type Towing device front and rear required
18.17	Warning triangle	As per CMVR
18.18	Fog lighting	As per CMVR (Optional)
18.19	Bumpers - front and rear	Both made of steel or impact resistant polymer or combination of both meeting requirement of an energy absorbing

Sr. No.	Description	Technical Specification
		system. FRP As per CMVR and AIS 052.
	Impact strength for bumpers	As per AIS 052
19	Miscellaneous items/requirements	
19.1	Windows	
a	Type of window	Sliding/ pasted glass windows.
b	Minimum height of window aperture (clear vision)3 in mm	≥ 950
	3 Clear vision includes partition between fixed and sliding glass subject to a maximum width of 100 mm	As per AIS 052
c	Minimum height of upper edge of window aperture from bus floor	As per AIS 052
d	Minimum width of windows (clear vision zone)	As per AIS 052
19.2	Cabin luggage carrier	As per AIS 052
19.3	Life cycle requirements of bus (whichever is earlier)	10 years or 10,00,000 Lakh Km OEM to take responsibility of bus bodies as well as of chassis for the period of warranty assured period.
20	Air conditioning system - test procedure for type approval	As per UBS II
20.1	Specifications	a) For up to 42°C of saloon temperature and b) For > 42°C of saloon temperature
20.2	Target results	a) 24± 4°C (up to 42°C) b) Temperature gradient of 15° (> 42°C of saloon temperature) eg. If the saloon temperature is 45o, then the target temperature inside the bus is 45o-15o= 30o

Sr. No.	Description	Technical Specification
		c) Minimum average air velocity at air vent is 4.5 m/s
20.3	Apparatus	Lab condition and heating chamber
20.4	Procedure	1. Soak for 1 hour 2. At 2000 rpm 3.Upto 42°C: pull down time 30 minutes (maximum) (for more than 42°C of saloon temperature, pull down time within 40 minutes (maximum)) 4. Thermocouple to be placed over place minimum 20 numbers at nose level
20.5	Air curtains on entry/exit gates to avoid loss/gain of heat and or cool air when doors are frequently opened for boarding/alighting of Passenger with min air flow of 1000±50 m^3/hr. at each gate. Type of air curtains at entry exit gates their power consumption etc. be accounted for while deciding engine power, etc.	Optional
21	Additional requirements	
21.1	Air circulations and ventilation in driver's area	An air passage/duct/roof hatch to be provided in driver area at a suitable location for proper inflow of air inside the driver cab
		Drivers work area to be provided with blower or suitable device (200 mm diameter fan) to ensure proper ventilation. These devices may be capable of 3 – speed adjustment
21.2	Maximum noise levels inside the saloon (irrespective of AC,	Max 81 dba.

Sr. No.	Description	Technical Specification
	non-AC/fuel type/engine location)-test procedure as per AIS 020	
	Additional Requirements	
22	ITS requirement for public transport vehicle operation	Chapter 10 of UBS II and Compliance to AIS:140
23	Destination boards	Four destination boards, internal, front, side and rear to be provided. Front and rear destination boards should be part of the bus body structure and not fitted externally.
24	Surveillance Cameras	Three cameras, two in the passenger's saloon and one for rear view.
25	Roof hatches	Two nos. roof escape hatches
26	AMC	OEM to provide buses with AMC for 10+2 years as per AUTHORITY requirement
27	Paint	Color scheme as per AUTHORITY requirement
28	Jack	10 Tones

REQUEST FOR PROPOSAL (RFP) FOR SELECTION OF BUS OPERATOR FOR PROCUREMENT, OPERATION AND MAINTENANCE OF AC FULLY BUILT ELECTRIC BUSES AND ALLIED ELECTRICAL & CIVIL INFRASTRUCTURE ON GROSS COST CONTRACT BASIS FOR 9/12 METER - 50 Non BRTS BUSES;

Volume 3: Standard Non BRTS 12m Electric AC Bus Specifications
September, 2018

Part I – General Requirements

1. Introduction and Scope

End-use requirement oriented specifications, with maximum make / model neutrality, for fully built electrically propelled air-conditioned (AC) Standard 12 Meter buses for operations are brought out here. Manufacturer/Bodybuilder/Operator of buses would furnish technical details for assemblies / sub-assemblies/ systems/ equipment's as per Technical Specification of this Section in appropriate formats.

The specifications cover end use based design, evaluation, fabrication & testing features of electrically propelled air-conditioned (AC) Standard 12 Meter bus for operations for transportation of passengers mainly in cities of Madhya Pradesh. The bus design should be energy efficient, environment friendly, safe, efficient and reliable besides meeting all statutory, CMVR, legal and other requirements including UBS-II, as also those related to easy passenger accessibility including for persons with disabilities (PW Ds), passenger comfort, driver's work place, internal and external aesthetics, ease of repair and maintenance etc.

Offered bus Specifications would comply with all applicable Central, State and local laws (including Acts, Rules & Regulations). These would include, but not be limited to, the provisions of Disability Act 1995 as amended till date as well as state and local accessibility, safety, noise and other requirements. The bus would meet or exceed the Central Motor Vehicles Rules (CMVR) of India / Safety Norms, noise & other norms applicable at the time of supply. In the event of any conflict between requirements emanating from these specifications and those as per any statutory/legal, etc. in force, the superior/ higher requirements/Standards would prevail.

The word **"Bus"** wherever used in the specification means the "12000" mm long Electrically (Battery powered) propelled (Electric Propulsion System or EPS) or Pure electric air-conditioned Standard 12 Meter bus with minimum 900mm floor height as per specifications given in this document. The urban bus would have right hand drive.

For operations, a fully built bus as per specs detailed in this document and those of UBS II is envisaged.

2. General Design Features of Bus

2.1. Bus would generally be designed and manufactured in accordance with the UBS II specifications & 'Code of Practice for Bus Body Design and Approval' (AIS 052 AS amended time to time) hereinafter referred to as Bus Code-; as applicable to buses in India/CMVR rules/Madhya Pradesh motor vehicle rules whichever is superior. Details of relevant standard followed would be indicated against each item.

2.2. Bus body design would consider all other aspects / provisions to be made on proposed bus body facilitating ease of its mounting /erection on the acquired chassis without causing any damage / defect to chassis / its aggregates etc and further facilitating ease of repair and maintenance of all other fitments / aggregates provided on bus chassis, etc.

2.3. Bus would be designed to carry commuters in the urban/municipal areas mainly in the city corridors of Madhya Pradesh with ease of boarding and alighting especially for ladies and senior citizens.

2.4. Bus design would be suitable for daily operation of 18 to 20 hours in cities of Madhya Pradesh with peak loading of about 60 passengers (Seating + standee) (each passenger weighing 68 Kgs on an average and carrying a load of 7kgs each), average journey speed of about 25Kms per hour with frequent starts/stops, say, after every 300 to 1000 mtrs. The max attainable speed of the bus would be in range of 75±5 kmph max without Speed Limiter and the Provision speed Limiting function as per AUTHORITY requirements.

2.5. Bus design would be eco-friendly, energy efficient, safe, and comfortable meeting specified standards / norms (as amended up to date of supply).

2.6. Bus must be of proven design suitably modified to climatic & operational conditions, infrastructure and road conditions as obtaining in urban/municipal areas of Madhya Pradesh.

2.7. Bus design should meet all statutory requirements applicable for the city of Madhya Pradesh in all respects.

2.8. The bus structure would meet requirements of structural strength, stability, deflection, vibration, crashworthiness, roll over protection etc. amongst others for at least the following main loads including those as per annexure 3 of UBS II:

Static loads
Dynamic loads
Single wheel bump loads
Double wheel bump (diagonally opposite) loads
Braking and acceleration loads
Front impact loads
Roll over loads
Speed breaker induced loads

2.9. Bus/ bus-body design would be a proved design duly evaluated by agencies authorized as per CMVR using Finite Element Analysis for above loads/performance requirements for values for above loads/ conditions /performance parameters as given in subsequent paragraphs.

2.10. Minimum required performance values/ data for above load conditions may be considered as follows:

Strength (Factor of safety): minimum of 1.35 (tolerance – minus 10%) i.e. design stress would be ≤ 1/1.35th of yield stress.

Stiffness (Deflection): 5mm.

Vibrations (Lowest Natural Frequency):5Hz

Frontal Impact:

(Velocity = 56 Kmph against fixed rigid barrier)

Head Injury Criterion (HIC) = 1000

Crumbled Zone = 132mm

No part of structure would intrude into residual space.

(HIC= Head Injury Criterion calculation is based on acceleration level at the head of driver/ passenger & time duration during which maximum value of above acceleration is build up. Typical acceleration at the head should not exceed 80g continuously for 3 milli seconds to avoid head cracks).

Roll over (as per bus code – AIS 052) tests with modifications of making the bus roll from ground level instead of the raised platform:

Bus tilted to its unstable position

Bus allowed to fall freely under gravity from this position.

Gross vehicle weight of the bus is to be considered

The Energy absorbed by the structure =0.75 ER

{ER =Reference energy.-- the Potential energy of the bus in its (unstable) equilibrium position).

ER = M.g.h, Where M= Effective weight of the bus; g = Acceleration due to gravity; h= Height of C.G. above ground level in (unstable) equilibrium position.}

Angular velocity should not exceed 5 deg/sec.

The unstable position should not occur before 35 deg.

No part of structure intrudes into residual space.)

Buckling Factor would be equal to or more than four.

Various loads:

Normal Loads (Static) = No. of Passengers x wt. of passengers (68 Kgs.) + passenger luggage weight (7 Kgs). (Besides the vehicle related loads).

Bump Loads:

Bump height = As per relevant BIS/Indian Road Congress Guidelines.

Case I: Single Wheel on Bump/Pot hole.

Case II: Diagonally opposite wheels on Bump/Pot hole.

Case III: Both wheels (Front & Rear) on Bump/Pot hole.

Braking Loads:0.6g

Horizontal = 0.6g load, Vertical = 1g load, (Applied together)

2.11. The bus, loaded to Gross Vehicle Weight (GVW), with crush load and under static conditions, would not exhibit deflection or deformation that impairs the operation of steering mechanism, doors, windows, passenger escape mechanisms and service doors, etc.

2.12. Manufacturer's certificate supported by testing and type approval agency's certificates along with the bus as also technical specifications/drawings required for inspection, performance assessment as above to be supplied along with the bus. Besides meeting the statutory requirements the bus would be designed with respect to its body and different aggregates/systems /sub systems to operate satisfactorily in urban transport service for at least 7 years or 7,00,000 Kms whichever is later.

2.13. Detailed schematic drawings of bus structure, seats, interior/ exterior fittings, electrical systems, wiring looms / harness, photometric items and other accessories along with complete details of materials used, their specification, manufacturing tolerances etc. would be provided by the bus manufacturer/ Bodybuilder. Additionally, details / drawings of mounting / fastening bus body to chassis1 to be provided along with the bid specifically bringing out whether bus body would be welded and integrated to chassis or fastened using fasteners along with applicable mechanism system /arrangement. Detailed Circuit diagrams for electrical be also provided by the bidder/bus manufacturer. Electric wiring in the bus (other than EPS) would be of multiplexing type. Additional details of wiring for electric propulsion system, inter-alia indicating location of battery packs, traction controller, cooling system, safety mechanisms, etc with appropriate colour code etc would be supplied with the bid.

2.14. Details of general appearance, seating layout and structural of roof, floor, sides, front& rear show and driver's cab, etc. would be supplied. Main dimensions of the fully built bus i.e., overall length, overall width, overall height, saloon height, pillar to pillar distance, seat pitch, number of seats (excluding seat for the driver),entry/exit gates/fastening arrangement and the accessibility mechanism, etc., mounting arrangement for battery packs, drive motor/s, traction controller, etc would be supplied along with the schematic diagrams/printed literature of the bus.

2.15. Material used in construction of buses would be as per Bureau of Indian Standards (BIS)/ Automotive Industry Standards (AIS)/ specifications and/or other international specifications meeting/ surpassing performance & other requirements as given in the Bus Code. In absence of above specifications, Association of State Road Transport Undertakings (ASRTU) specifications could be followed. Wherever Indian Standards are not available, internationally acceptable Standards may be referred. Specifications/ Standards followed would conform to Specification/Standards as amended /up dated/ or the latest published by the concerned agencies. Wherever no specifications of any item have been notified as International/ National Standards etc. actual specifications of that item used be mentioned. Guaranteed life of the bus and its other aggregates be indicated item by item. Periodical maintenance schedule for obtaining the said life of the bus be also indicated.

BIS Standards are normally available from Bureau of Indian Standards, Manank Bhawan, 9-Bahadur Shah Zafar Marg, New Delhi-110002. Website: http://www.bis.org.in. Similarly, AIS Standards are available from Automotive Research Association of India, Web site: http://www.araiindia.com. ASRTU Specifications are available from Association of State Road Transport Undertakings, Sector 12, Dwarka, New Delhi. Website: http://www.asrtu.org.

2.16. Suitable traps/openings with appropriate sealing and covers would be provided for repair and maintenance of various aggregate/systems/sub systems / chassis / body/ their components, etc. of the bus.

2.17. Any restriction in design, manufacture and mounting of bus body on chassis, as provided by chassis manufacture, as a part of detailed instructions for this purpose, be meticulously followed while mounting / joining / integrating bus body to bus chassis.

2.18. The bus would be so designed as to maintain operational stability requirement as per Bus Code (AIS 052). Interior noise and pass by noise of the vehicle would conform to IS: 12832:2010 or latest and IS: 3028:1998 as amended from time to time.

2.19. It would be ensured that the design, manufacture, certification (wherever called for) & installation of major bus sub-components and systems are compliant with all such subcomponent vendors' requirements & recommendations within the frame work of any statutory, CMVR, legal and or any other lawful/functional requirements. A certificate of compliance would be shown on demand. Components used in the vehicle would be of heavy-duty design.

2.20. Any other provisions/fitments required for safe and efficient operation and or for fulfilling statutory requirements be provided in the offered bus.

3. Electric Propulsion System

3.1. Electric propulsion system /Pure Electric Power Train would have adequate power/rating to obtain desired performance in respect of its adequacy of power, bus acceleration levels, specific power consumption, energy density, etc. Electric propulsion

system to have adequate power not only to propel the bus at its GVW but also to operate efficiently all other auxiliary devices, and the air conditioning systems fitted to bus, simultaneously, etc. As the bus is required for operation in urban services, characterised by frequent stops and starts, electric propulsion system of adequate power for efficiently negotiating such frequent stops and starts and urban area gradients, achieve bus acceleration etc at full load, be considered for use. The power/battery rating, control mechanism, etc for obtaining above performance levels be indicated by the bidder in his bid along with other details called for in the annexure

3.2. Performance data / curves / charge - discharge cycle curves and other details of the electric propulsion system have to be supplied. A detailed set of calculations indicating adequacy of said electric propulsion system for proposed urban bus be provided along with all performance parameters of selected electric propulsion system.

3.3. The electric propulsion system and its accessories would be easily replaceable. Electric propulsion system mounting would be such as to minimize transmission of vibrations, if any, besides

sustaining its loading impact to bus structure. Electric propulsion system mounting, structural design & foundation etc would be so designed / positioned as to facilitate easy accessibility & replacement. Electric propulsion system design would be such that it would not be overheated during normal operating conditions of vehicle. An arrangement for audio-visual signal would be provided in the event of electric propulsion system and or any of its subsystems getting overheated excessively. The temperature at which signal operates would be indicated. Similar arrangement for other sub-system of electric propulsion system with their monitorable indicators be made on dashboard. The electric propulsion system would be equipped with electronic controller / management and on-board diagnostic system.

3.4. Electric propulsion system compartment/s would be insulated to avoid transmission of heat and noise to saloon area. This firewall would preclude or retard propagation of an electric propulsion system compartment fire into passenger compartment. Only necessary openings would be allowed in the firewall, and these would be fireproofed. Wiring may pass through only if connectors or other means are provided to prevent or retard fire propagation through the firewall. Electric propulsion system access panels in the firewall would be fabricated of fireproof material and secured with fireproof fasteners. These panels, their fasteners, and the firewall would be constructed and reinforced to minimize warping of

panels during a fire that will compromise integrity of the firewall. Bus manufacturer would provide relevant details to Authority.

3.5. The electric propulsion system would be suitably designed to operate optimally under city of Madhya Pradesh's peak summer heat and dust.

3.6. Electric propulsion system noise and chemical, electro-magnetic emission levels, if any, must conform to the national / international and or any other Indian Standards, adopting the most superior one.

3.7. Specific power consumption of electric propulsion system in terms of kms per KW hour at Standard operating conditions (Indian urban operating cycle) would be indicated along with guaranteed energy consumption level (kilometres per kilowatt hour i.e. km per kwh) under GVW and the standard urban operational conditions / cycle.

3.8. For sound-proofing & for protection against fire risk in electric propulsion system compartment/s, no flammable material or material liable to soak chemical fumes, or any combustible material would be used in electric propulsion system compartment/s unless the material is clad by an impermeable fireproof sheet. A partition of heat– resistant material would be fitted between the electric propulsion system compartment/s & any other source of heat.

3.9. The vehicles would have high voltage / high current lines designed /protected / laid out in a manner as to provide adequate safeguards against any and all operational problems and safety hazards arising out of / caused by these items.

3.10. Details of make / model etc of various items of electric propulsion system and its subsystems would be provided as part of bid.

4. Battery Cooling System

4.1. Cooling system would efficiently dissipate heat from the electric propulsion system and its subsystems. Replacement/ maintenance of battery cooling system and its items be also easily carried out. Details of battery cooling system specifications, cooling capacity, cooling medium, repair and maintenance procedures etc would be supplied.

1. Traction Controller System

5.1. An efficient traction controller and or any other appropriate mechanism / device to efficiently regulate speed-power relationship for the electric propulsion system be provided for facilitating smooth, effective and jerk free drive of the bus. All operational controls/buttons/switches etc be conveniently located within easy reach of the driver. The traction Controller System and the controls/operational sub systems be easily accessible for

repairs and also be easily replaceable. Complete system details need to be supplied with the bus.

5.2. Traction Controller System be fitted with a mechanism which makes it possible to operate reversing mechanism only when vehicle is stationary.

5.3. Details of make / model etc. of various items of traction Controller System would be provided as part of bid.

2. Suspension

6.1. The bus would be fitted with air-suspension suspension system at front and rear axle. The suspension system would be fitted with shock absorbers, suitable for trouble free operation and jerk free comfortable ride in existing city road conditions of Madhya Pradesh.

3. Steering System

7.1. Hydraulic re-circulating ball type power steering would be provided.

4. Braking system

8.1. The braking system would be full pneumatic type with fail-safe dual circuit having four way protection valve, auto slack adjuster, disc type brakes in front and rear, with non-asbestos brake lining having temperature and wear characteristics suitable for harsh urban operations. Brake squeal would be absent under normal conditions of operation. An air compressor/dryer which minimizes oil carry over would be fitted. Braking system would be fitted with air dryer and oil/ water separator system. Buses would also be provided with hand operated pneumatic flick valve type parking brakes at rear wheels. Air pressure line would be treated for corrosion resistance.

8.2. In the event of failure of EPS and or loss of air in system, adequate provision be made for obtaining effectiveness of service brake system and or for deactivating the spring actuated brakes.

8.3. Regenerative Braking system of appropriate design / specification be provided

8.4 Buses shall be fitted with ABS as per CMVR requirements.

5. Wheels and Tyres

The bus would be fitted with steel radial tubeless tyres of optimal size and design conforming to IS 15633-2005with wheel rims of corresponding size conforming to IS: 9438 - 1980 as amended from time to time. The bus would be supplied with 7 sets of tyres (two on front and four on rear wheels) fitted on the bus plus one set as spare Stepney.

9.1. Details of type, specifications, capacity, make, model etc. of tyres/wheel rims would be provided as part of the bid.

9.2. Suitable guards/ Spray suppression system to be provided near wheels to prevent damage/ for obtaining safety from stones hurled from tyres.

9.3. Splash aprons of minimum 6.50mm thickness composed of rubberized fabric would be installed behind the wheels as needed to reduce road splash and protect under floor components or as per OEM designed mechanism that meets the same requirement. Splash aprons would extend downward to within 100mm of road surface at static conditions. Apron

widths would be no less than tyre widths, except for the front apron, which may extend across the width of the bus. Splash aprons would be bolted to the bus under structure. Splash aprons and their attachments would be inherently weaker than the structure to which they are attached. The flexible portions of splash aprons would not be included in road clearance measurements. Other splash aprons would be installed where necessary to protect bus equipment.

10. Axles

10.1. Solid beam front axle & grease type front bearings & seals of reliable & proven design of adequate capacity to take care of maximum Gross Vehicle Weight (GVW) & crush loading expected during life span of the bus of minimum 7 years or 7, 00,000 Kms.whichever is later

10.2. The bus would be driven by a single heavy-duty rear axle of proven design, adequate capacity to take care of maximum GVW & crush loading expected during life span of bus of minimum 7 years or 7, 00,00 Kms. whichever is later. Transfer of gear noise to bus interior would be minimized. Lubricant drain plug would be magnetic type, external hex head. If a planetary gear design is employed, oil level in the planetary gears would be easily checked through plug or sight gauge.

10.3. The drive shaft, if any, would be guarded to prevent it striking floor of the bus or the ground in the event of a tube or universal joint failure.

10.4. Details of type, specifications, capacity, make, model etc. of Front& Rear Axles would be provided at in the bid.

11. Battery Packs

11.1. Electrically propelled vehicles must meet and satisfy all requirements of "code of practice for Electric Propulsion system vehicles", safety and other requirements as per AIS 052 (Bus Code), safety and type approval as per AIS 049, and as per any other applicable standard and procedures; regulatory requirements as per CMVR / MMVR and any other applicable regulations for operation in the State of Madhya Pradesh.

11.2. Battery packs of requisite capacity would be appropriately mounted on to the bus keeping in mind convenience of battery maintenance /charging / replacement etc, safety of system and its maintainability, operation in the corridors of Madhya Pradesh.

11.3. The bus should be capable of running 200+ 20% contingency Km on Single charge condition with Passengers, GVW and AC, 18 hours continuously without refilling.

11.4. Battery packs and other components of electrically propelled vehicles should conform to applicable AIS / BIS standards or International Specs / standards in absence of AIS /BIS specs. Battery packs and other components / units of Electric Propulsion system be tested and certified to conform to said standards not more than six months prior to fitment on buses. Detailed drawing indicating location and mounting details of Battery packs /and other sub-systems of Electric Propulsion system be provided along with the bid.

11.5. Make, model, capacity, etc of each Battery packs and the number of such Battery packs fitted, be submitted along with the bid. Similar details be also submitted for traction controller and other subsystems of the Electric Propulsion system.

11.6. All requirements of AIS / BIS / CMVR/MMVR etc for Battery packs, Electric Propulsion system / sub-systems and components, etc be fully met and test certificate for the same be provided.

12. Under frame & Structure

12.1. The under frame and super structure would be suitably designed to carry dense crush load of over 60 passengers (assuming an average weight of 68 kg per passenger and hand luggage of 7kgs each) consisting of seated and standee passengers, the superstructure of steel tubing, bus tare weight, all other fitments such as AC system, etc and meet performance requirements undervarious loads indicated earlier. The structure would be designed to withstand the transit service conditions of operation throughout its service life.

12.2. Bus would be of integral construction /Monocoque/ fastened to chassis frame depending upon the chassis design, with the super structure fabricated using steel tubing (ERW– Rectangular / Square Sections) conforming to BIS 4923-1985 or latest, of grade Yst – 240 or superior.

12.3. A comprehensive multi-stage anti-rust treatment would be provided to bus flooring, sides, roof, under-structure, axle suspension components etc. for resistance to corrosion or deterioration from atmospheric conditions & road salts so as to enable them & the bus frame to last for at least 7 years or 7, 00,00Kms whichever is later.

12.4. Samples of all materials & connections would withstand a two weeks (336 hours) Salt Spray test in accordance with ASTM procedure B117 with no structural detrimental effect to normally visible surfaces & no weight loss of over 1%. Details of treatment provided with relevant specification details be indicated along with suitable calculations to reflect that the corrosion prevention treatment meets the requirements of minimum 7 years life in Madhya Pradesh operational environment. Details of the system followed for corrosion prevention of internal surfaces of structural tubing would be supplied. A certificate of testing from an authorised test lab be provided.

12.5. Front and rear structure design would be energy absorption type to reduce impact stresses into under frame/side structures/ other areas of the vehicle. Damaged area of the vehicle would be easily repairable and or replaceable in the event of any major damage at normally available workshop facilities and without any need for specialised tools / fixtures and equipments.

12.6. Entire surface of bus under floor and sides exposed to ground would be covered with appropriate corrosion prevention &flame retardant paint coating for protection

against harmful effects of water, mud etc and to retard flames, if any. Wheel housings would be constructed to contain tyre bursts during operation and be flame retardant in case of tyre fire.

12.7. Sufficient clearance & air circulation would be provided around the tyres, wheels & brakes to preclude over-heating when the bus is operating.

12.8. MIG welding would be used for steel structural member's fabrication.

12.9. All structural members would be MIG welded besides suitable gussets/ brackets of adequate size & thickness be provided on floor, side, front, rear & roof structure to ensure structure rigidity & integrity. Material, shape size and specs of such gussets / brackets would be provided by the bus supplier in their supplied drawings.

12.10. After anti corrosive treatment, structural members would be coated with red oxide/ Zinc Chromate primer & superior quality black paint.

12.11. During structural assembly operations, a number of holes are drilled and or weldments made after the corrosion prevention treatment of components/structural items/members causing loss of such treatment and exposing these items to corrosion. Manufacturer would take sufficient care to carry out corrosion prevention of items so exposed to effectively prevent corrosion.

12.12. Under floor to sidewalls would be sealed to prevent dust and water ingress.

13. Panelling

13.1. Bus exterior side panels would be fitted with stretched GP/stainless steel sheet/Aluminium at waist level. The exterior front-end panelling would be of GP/stainless steel sheet/Aluminium while roof, rear, sides & skirt panelling would be of aluminium. All interior panelling would be of Acrylonitrile Butadiene Styrene (ABS)/ Pre coated Aluminium Sheet conforming to relevant National or International Standards.

13.2. Wherever aluminium is joined with steel or with/ any dissimilar metals together, the involved joints would be treated with thick layer of approved quality dielectric paint conforming to relevant Indian/ International Standards, before assembly. Adequate treatment be also provided to avoid any incidence of galvanic corrosion between dissimilar metals.

13.3. Panels would not have any waviness & would be so mounted as to present smart aesthetic exteriors. Details of the above said panelling including specifications / thickness/ sizes of panels, fittings, rivet/ bolt pitch etc would be supplied.

13.4.

13.5. Anti-drumming compound/thermocole/glass wool/PU Foam as per Bus Code (AIS 052) would be provided between interior and exterior panel.

13.6. Roof structure would be thermally insulated with flame retardant Polyurethane or glass wool of minimum 40 kgs/m3 density as per Bus Code (AIS 052). The specifications/ BIS Standards for aforesaid insulating material would be supplied. Insulation would also be provided at other locations for improved performance of air conditioning system.13.7. TIG welding for fabrication of aluminium components would be used.

13.8. Rain gutters would be provided to prevent water flowing from the roof onto the passenger doors, driver's side window, and exterior mirrors. When the bus is decelerated, gutters would not drain onto windshield, or driver's side window, or into the door boarding area. Cross sections of the gutters would be adequate for proper operation.

13.9. Entire front end of the bus would be sealed to prevent debris accumulation behind the dashboard and to prevent driver's feet from kicking or fouling wiring and other equipment as per AIS 047. Front end would be free of protrusions that are hazardous to passengers standing or walking in front of the bus during rapid acceleration.

13.10. Interior panels would be attached so that there are no exposed unfinished or rough edges or rough surfaces. Panels & fasteners would not be easily removable by passengers.

14. Paints

14.1. All structural members of the bus would be treated for corrosion prevention internally as well as externally and painted wherever required. Polyurethane (PU) painting base spray paint of approved Indian standard or equivalent conforming latest/ international Standards as applicable would be used for exteriors painting of bus including interiors wherever required. Colour shade would match to the shades as per BIS: 5-1978 or latest. Details of paints used, surface treatment & preparation, corrosion prevention treatment, base primer coatings, number of paint coats to be applied etc would be supplied.

14.2. All exterior surfaces would be smooth & free of wrinkles & dents. Exterior surface to be painted would be properly prepared as required by paint system supplier, prior to application of paint to ensure a proper bond between the basic surface and succession coat of original paint for stipulated service life of the bus. Paint would be applied smoothly and evenly with the finished surface free of dirt and following other imperfections:

- Blisters or bubbles appearing in the topcoat film.
- Chips, scratches, or gouges of the surface finish.
- Cracks in the paint film.
- Craters where paint failed to cover due to surface contamination.
- Overspray.
- Peeling.
- Runs or sags from excessive flow and failure to adhere uniformly to the surface.
  Chemical stains and water.

15. Colour Schemes

15.1. Exterior, interior colour schemes and logo/ graphics would be painted as directed by Authority. Information, on seats, for reservation for persons with disabilities, ladies, senior citizens would be marked as per the details provided by the AUTHORITY.

16. Service Doors

16.1. one service doors to be provided (passenger entrance / exit) with steps would be provided at near side (LH side) as indicated in summarised specification in Part II. The location of doors front LH service door shall be ahead of front axle.

16.2. Deleted.

16.3. The Selected Bus Operator/ Chassis manufacturers /Bus Body builder will be required to provide options with regards to position of the door(s) on the near side & driver side.

16.4. All doors would be Power operated, jack-knife type or Inswing doors.

16.5. Operation of entrance and exit doors would be electro-pneumatically controlled by driver with internal and external emergency operational controls as per Bus Code. In an event of an emergency, it would be possible to open doors manually from inside the bus by using a force no more than about 10 Kg. after actuating and unlocking device at each door. Unlocking devices would be clearly marked as an emergency device & would require two distinct actions to actuate.

16.6. Doors, operating mechanisms, door hinges and locks would comply with safety requirements as per Indian IS: 14225/International Standards (to be specified and supplied by the bus manufacturer). Overall dimensions and construction of entrance and exit doors would be identical so that doors and door operating mechanisms are interchangeable. Closing and opening time of doors should be in the range of 4 seconds each as per Bus Code. There would be maximum opening area in longitudinal & vertical directions in fully open condition. Door operating mechanisms, brackets etc would be maintenance free and designed with lifetime durability of minimum 7 years or 7,00,000 Kms. whichever is later.

16.7. A pilot lamp on the driver's dashboard would be provided to warn that the door is 'Open' or not fully closed.

16.8. Entrance and Exit doors would be provided with suitable support in form of grab handles for boarding/ alighting passengers on JK door flaps or Inswing door.

Electronic / other suitable sensors would be installed at all entrance and exit doors to retract door automatically if any obstruction to door occurs during door closing. It must be effective until door is fully closed.

16.9. Colour shade would match to the shades as per BIS: 5-1978 or latest.

16.10. A red "Door Closing" sign would be installed above exit doors. The sign will blink when doors are closing.

16.11. A suitable device to prevent doors from opening as long as bus is in motion would be provided.

16.12. Service Doors' operation would be controlled with help of separate push buttons and one switch for each door mounted within 200mm within vicinity of service doors as per Bus Code requirements. One red master button to close all entrance and exit doors at same time would also be provided on driver dashboard.

16.13. All button and switches would be labelled on driver dashboard and shall comply with AIS 047 requirements.

16.14. Heavy-duty prominent nosing of bright yellow colour would be used to protect edge at entrance/exit.

16.15. Access door would be provided with heavy-duty sealing to avoid ingress of dust and water into passenger compartment. Upper & lower section of both front & rear doors would be glassed for not less than 45% of the respective door opening area of each section. Glazing material & glass in doors would be same as in side windows.

16.16. Details of above service doors including electro-pneumatically controlled door closing system with complete circuit diagram would be supplied Photo-cell controlled opening / closing functions of doors and a "sensitive edge" made for safe entry exit be fitted.

16.17. Doors would be fitted with heavy-duty hinges as per bus code.

16.18. Doors would be fitted with heavy-duty locks with & without lock & key depending upon their use. Striker plate would be fitted at the closing end of locks.

16.19. All handles shall be fitted with anti-skid sleeves.

16.20. Doors would open or close completely in about 4 seconds from the time of control actuation and would be subject to closing force requirements and adjustment requirements. Front door would remain in commanded state position even if power is removed or lost. Operation of & power to, passenger door would be completely controlled by driver. A control or valve in driver's compartment

would shut off power to, and/or dump the power from, front door mechanism to permit manual operation of front door with bus shut down.

16.21. Bus should not be capable of moving ahead unless the doors are closed.

17. Step Well Guard

17.1. Step well Guard: Suitable step well guard shall be provided in areas such as service doors entrance/exit area where seated passengers are likely to fall into as a result of panic braking. Guard height would be minimum 800mm from bus floor, and guard would extend inward from the wall at least 100mm more than the centre line of the seating position of the passengers who are prone to this risk.

18. Windows

18.1. Windows would of large size for panoramic view. They would be in single piece window glasses. Toughened glass wherever used in bus body would be 4.8 mm to 5.3 mm thick aesthetically installed. Size and shape of the glasses would enable even the standees to have maximum outside view without kneeling. General requirements of windows would be as per the provisions of bus code (AIS 052).

18.2. Windows would have provision of suitable sealing to avoid ingress of dust and water and would have proper/ efficient drainage system as per Bus Code.

18.3. Details of window design; fitment etc would be supplied by the bidder along with the bid.

19. Window Guardrail

19.1. Window Guard rails: Buses shall be provided with minimum with two guard rails on the outer side. The first guard rail shall be provided at height of 75mm from the lower window sill. The distance between two guard rails shall be 75mm to 100mm.However this requirement is not applicable to AC buses with pasted glass windows.

20. Emergency Exit

20.1. Emergency exits would be provided in bus as per the provisions of Bus Code – AIS 052 / CMVR. Two emergency exits are to be provided. One of the emergency exits shall be in the form of emergency door situated at opposite side of service door as per Bus Code requirement. Details of Emergency exits including their numbers, locations, sizes, markings etc would be supplied by the bidder along with the bid.

21. Roof hatch/Escape hatch

21.1. Two escape hatches/Roof hatches to be provided in additional to emergency exits, as per bus code. However, Roof hatches are mandatory in AC fitted buses for ventilation in case of A.C. failure.

22. Steps

22.1. All steps shall be provided with antiskid surface (Aluminium chequered plate/ grooved vinyl sheet or any non-slip coating). The antiskid surface shall meet the requirements specified in AIS standard as and when notified.

22.2. Dimensional requirements of steps shall be as per Bus Code (AIS052).

23. Floor

23.1. Bus floor design would be without internal steps in front and middle passenger saloon floor area.

23.2. The height of the floor measured in relation to the ground shall be minimum 900 mm with the vehicle unladen condition.

23.3. Internal saloon height would be 1900±200 mm minimum.

23.4. Drain holes to be provided in the floor design for easy cleaning including that of sweeping & drainage of water.

23.5. Floor would be fitted with fire retardant 19mm thickness phenolic resin bonded densified laminated compressed wooden floor board (both side plain surface) having density of 0.95 - 1.25 gms/cc conforming to IS 3513(Part-3): type VI 1989 or latest. The flooring should also be boiling water resistant as for marine board BIS:710-1976/ latest and fire retardant as per BIS:5509-2000(IS15061:2002) or chequered plywood 19mm thick.

23.6. The said floor would be covered with anti-skid type vinyl flooring with silicon grain material of minimum 3mm thickness meeting Indian/ International Standards (to be indicated by the bus manufacturer in the bid), ISO 877/76 for colour, IS15061 for fire retardant. Adequate sealing would be provided in the floor to prevent ingress of dust, gases, water etc.

24. Gangways

24.1. Gangway-from entry/exit gate walls through the entire bus length, would have clear space of minimum 600 mm for passenger movement and would be generally as per the provisions of the Bus Code (AIS 052)/ UBS II and meet statutory requirements.

25. Handrails and Handholds

25.1. Handrails and Handholds would be provided as per provision of bus code (AIS 052) /AIS 046.The surface of handrails & handholds would be colour contrasting and slip resistant sleeves.

25.2. All handrails would be of MS tubing of 32 mm dia and 3 mm thick or SS of 1.6mm thick or As per AIS052. Depending upon the size of the bay (i.e. between two consecutive roof hand rail brackets), minimum 2 to 4 numbers handholds per bay would be provided so that every standee passenger even during crush load, is able to grab a hand hold.

25.3. Hand holds be made of transparent polycarbonates with provision for display of advertisements. Hand holds be appropriately fastened to the hand grab rails so as to prevent their axial sliding and or rotation. Details of the handrails & handholds fitted would be supplied.

26. Stanchions

26.1. Vertical stanchions would be so positioned to facilitate access to seats for those standing. Stanchions would be of 40.0 mm dia and 3.15 mm thick MS tubing with surface of colour contrasting and slip resistant sleeves or SS tubing without sleeves or as per AIS052.

26.2. Stop request switch to be provided on alternate stanchion at 1200 mm height.

27. Passenger Seats

27.1. Passenger seats would be front/reverse facing, comfortable, durable & maintenance free complying to AIS023 with cushion at seat and seatback and other requirements as per the Bus Code (AIS 052).

27.2. Seat pitch would be maintained at 650 mm (minimum) as per AIS 052

27.3. Details of seat design, material, specifications, pitch and other relevant data and the seating layout would be supplied by the manufacturer for approval of AUTHORITY.

27.4. Details of seating lay out, accommodating maximum number of seats in 2x2 layouts meeting requirements of the bus code would be supplied. Seating capacity should be minimum 35+D..Standee capacity of bus worked out as per system given in bus code (AIS 052) / CMVR would be indicated by manufacturer. Seating and standee capacity of bus would be minimum 60(as worked out as per AIS 052)/CMVR.

27.5. Construction/ fitting of the seat would be such as to be easily replaceable and repairable.

28. Seat Belts and its Anchorages

28.1. Seat belts would be provided for the seats and wheelchair as per the provisions of CMVR & Bus Code (AIS 052). Any seats provided at rear end of bus, seats in centre (facing the gangway) would necessarily be provided with seat belts. Seat belts and its anchorages would conform to the requirements of AIS 005 and AIS 015.

29. Driver's work area:

29.1. A driver door of not less than 1250 mm height and 650 mm width and with requisite steps would be provided for entry and exit to driver's work area. Proper hand holds and steps would be provided for easy access to driver's cabin. All other requirements of driver's work area would be as per the provisions of Bus Code -AIS 052. Driver's work area would have lighting arrangement to provide general illumination and it would illuminate half of the steering wheel nearest to the driver. Brake Pedal Angle would be determined from a horizontal plane regardless of slope of cab floor. Driver entrance cum-exit door would be provided as per Bus Code (AIS 052) with a provision of maximum width of sliding window using material like glazing & glass as used in other side window glasses. Driver work area would be equipped with a 24V DC, 200mm diameter fan mounted at proper height on side structure. Colour of fan would match the interior decor of the bus.

29.2. Driver's visibility in front of the bus, seated on driver seat, be as per bus code (AIS 052) /CMVR

29.3. Driver's seat would meet the requirements of AIS 023.

29.4. Driver partition would be provided as per AIS 052.

29.5. A driver partition between driver and front passenger seat would be provided. The driver partition would minimize glare & reflection in windscreen directly in front of partition from interior light during night time operation.

29.6. Dashboard Instrumentation and Control System

29.6.1. Bus would have ergonomically designed moulded type dash board and instrument panels made out of FRP material. Details of materials used their specifications etc of dashboard and instrument panel would be provided by the manufacturer and should meet the requirements of AIS 047.

29.6.2. Bus would have dash board with full instrumentation and control panel. All the dashboard controls and instrumentation system shall be as per the AIS 071.

29.6.3. On board electronic diagnostics system would be provided as per UBS II/CMVR.

30. Rear-view Mirrors- Interior and Exterior

30.1. Rear-view mirrors would be provided on both sides of bus to enable driver to have clear side/rear views. One interior rear-view mirror would also be fitted for viewing saloon area by driver. Installation and performance requirements of rear-view mirrors would

conform to AIS 001 and AIS 002. Exterior rear-view mirrors would also enable the driver to view object near bumper area.

31. Sun Visor

31.1. Adjustable roller type sun visors would be provided for windshield & driver's side window. Visors would be shaped to minimize light leakage between visors & windshield. Adjustment of visors would be made easily by hand with positive locking & releasing devices and would not be subject to damage by over-tightening. Sun visor construction & material would be strong enough to resist breakage during adjustment. Visors may be transparent but would not allow a visible light transmittance in excess of 10%. Visors where deployed would be effective in driver's field of view at angles more than 5o above horizontal.

32. Electric Horn

32.1. An electric horn conforming to IS: 1884-1993 or latest and installation requirements conforming to IS :15796 :2008 would be fitted in bus and further conforming to the provisions of CMVR.

33. ITS Device

The ITMS project is being implemented presently by Authority appointed ITMS Service Provider which includes Automated Vehicle Locating System (AVLS), Passenger Information System (PIS), Vehicle Scheduling and Dispatch System, Incident Management System (IMS), Enterprise Management System (EMS), Business Intelligent System (BI) etc for City Bus Operation.

The Project is intended to enhance commuter satisfaction by improving reliability, safety and punctuality of bus operations. Authority intends Each Contracted Midi AC Electric Bus shall come fitted with ITS Equipment such as PIS Display boards and Tracking Device. The Operator should provide necessary fitments for ITMS on the buses provided under hiring as per AUTHORITY requirements.

The detailed Specification of ITS Devices are specified hereunder;

Specification PIS –On Bus with 4 no.s similar to the 9 M.
PIS System
Usability/Functionality/Capability
All drivers related interfaces for PIS must be provided on Information Control Unit ICU
The route programming file to be uploaded on ICU *via USB up to 8GB minimum*

Route selection function is to be provided on ICU *with easy sorting of Routes*
All driver related route information to be displayed on ICU
Amber coloured, alphanumeric with graphic capability
In-built light sensor with continuously variable brightness control to enable the display intensity to change based on ambient light conditions
Viewing distance
Front, side and rear signs 30 meters minimum, for single line text, in day and night.
Inner 15 meters minimum, for single line text in day and night.
Display Characteristics
Fixed, scrolling and flashing mode (with fixed route number, upto 6 characters, on front, side and rear signs).
Capability to show customized graphics.
Two lines English /one line local language.
Total display height should accommodate two lines in English language and the Individual heights of each line should be adjustable to enable one line to be larger/smaller than the second line. However, during next stop announcement only single line text is required
It should be possible to display, concurrently, different messages on each of the signs (front, rear, side and inner).
It should be able to display special signs like signs for 'PWD enable bus', 'ladies special'.
Capability to show special characters like (, ` " . ! + - * : ?)
Signs should have ability to retain the last message displayed in the memory of the sign even in the event of power failure and without the message being reloaded. from ICU. Test will be performed by disconnecting the ICU from the sign and power to the sign will be switched 'off' and 'on' to see if the Last message is retained and displayed.
Display and voice announcement in English and local languages using Microsoft fonts via window based software package –Window 8.1
The system should have a programming capability as under
Minimum 300 routes UP and DOWN (150 numbers of destinations) on front, side and rear signs.
GPS triggered next stop display on Inner sign with synchronized voice announcement for minimum 100 stops on each route.
The inner sign should be able to display and announce upto three languages, one after the other in sequence. For example make display and announcement in English, then Hindi or gujarati to be followed by local language for benefit of the passengers. Display and announcements should be possible "before arrival" of the bus at the bus stop, "on arrival" of the bus at bus stop and "after departure" of the bus from the bus stop.
In event of GPS failure the above functionality should be possible through manual intervention on ICU.

Display driver and conductor ID once in between the stops on Inner sign
Inner sign should be able to display text and customized graphics and announce upto pre-recorded messages by driver selecting 1~9 on ICU display panel of the controller.
Display customized graphics plus synchronized voice announcement – preferably location based in case of Million plus population cities
Functionality of Display'clock'-GPS based or 'Default Messages' on Inner sign
Emergency 'stop' request function- by pressing an emergency switch placed anywhere in the bus the inner sign should display 'stop' message and buzzer located near the driver makes the sound alerting the driver to stop the bus.
In case one or more signs get disconnected (malfunction), the rest of the Signs should continue to function regardless (including fresh communication from ICU)
Sign should be able to store 'diagnostic trouble codes' (DTC)','parameters identifiers (PID) and data should be retrievable.
To comply with test standards as per Separate List
Dimensions and technical specifications of signs
Display size / Board Size
Front ,1800 x 220 mm Rear and Side minimum 220x900 mm –one no each AIS 052 2.2.15 Destination Board for Public Service Vehicles Inner: minimum100 x 900 mm –one
Pitch
Front- maximum. H 13.4 mm x V14.1 mm
Side and rear maximum. H10.5 mm x V 14.1mm
Inner 8 x 8 mm maximum.
LED and display quality front, side and rear signs
Amber colored LED, dominant wave length 591~595nm
UV resistant, diffused lens 4 mm (minimum)
Wide viewing angle 120º horizontal & 80º Vertical
Ensure enhanced readability with full clarity on scrolls and long life usage by incorporating non multiplexed system (constant current drive circuit) with typical LED Intensity 400~700 mCd at If =20 mA,
LED and display quality inner sign
LED amber dot matrix viewing angle 45º all around, intensity minimum 40 mCd, dominant wave length 591 ~595 nm
Structure
Front ,side and rear signs : light weight structure with toughened glass fixed with UV resistant adhesive in front
Inner sign: light weight structure with poly glass /acrylic/toughened glass.

Conformal coated PCBA and ROHS Compliant
ICU architecture
Usability/Functionality/Capability
The ICU should control complete Public Information System on Bus including Destination Signs, External Amplifier and Speakers.
The Driver has to select a 'Route', from a Pre-loaded Route Data Base and all information will be displayed and or announced automatically based on Bus Location (GPS).
Provide capability to upload firmware on Signs via RS 485.
A 'beep' sound is made when vehicle speed exceeds set speed limit. The limit is configurable through Software and preset at 50 Kmph
Should be possible to check Firmware Version, Route Data base version.
Technical specifications: ICU
Operating Voltage 9~32 Volts
Processor : 32 bit minimum
Operating system: embedded Windows (8.1) /Linux with programming software
Memory : 256 MB minimum
Interface minimum : RS 485, RS 232, USB, GPS Antenna
Conformal coated PCB boards
Route Data upload on Controller from PC via USB port (USB 1.1, USB 2.0, FAT, FAT 32, 8 GB capacity). Devices prone to pilferage e.g. SD Card is not permitted. Buzzer indication when loading is complete
Integrated with External GPS Receiver and Antenna' via RS 232 using Standard NMEA 1083 GPRMC sentence, transmission Protocol to be provided by the Manufacturer under a 'NDA'.
In-built MP3 files storage/playback function and compatibility with external two channel amplifier minimum 10 Watts rms each suitable for 2 ~8 Ohm impedance with input for external microphone
LCD Panel (resolution 64 x 256 minimum), Illuminated with automatic brightness Control and Backlit Keypad with minimum 20 soft keys including alphanumeric.
Mounting in Radio Slot acc ISO 7736
Programming Software (including simulation, Brightness control, scroll speed control, scroll direction, Template configuration, Graphic library, customised graphics)
Amplifier, Speakers and Wire Harness (with water proof connectors)

33.3 GPS based Tracking Device

GPS Units of following specifications shall be provided for Electric midi-buses.
Following specifications of GPS Units shall be applicable the camera and MDVR functionality.(It shall same as of the 9 M midi bus Specs).
The Service Provider shall have to provide any approved Test Agency certificate for this product before initiating the procurement of this product to Authority for approval.

1. System Functions:

   a) GPS Vehicle Tracking
   b) Vehicle Health Status
   c) Driver Assessment
   d) e-mail and SMS communication for configured alarms and events
   e) On –Board Recording and Server Log
   f) Remote Monitoring including Mobile Data Terminal Server/ Client Applications
   g) MIS
   h) Should be able to function independent of Other Systems –However it should be able to provide GPS input to PIS Controller via RS232

2. System Main Elements

   a) Analog AHD Cameras
   b) Emergency Button
   c) Data Logger (Driver Behavior and Vehicle Health)
   d) Driver Display (Live View one or more Camera, Two way voice communication, Text messaging with Voice from back office, Driver Log in/out RFID)
   e) Wifi AP (detachable for depot use)
   f) On-Line UPS (optional)
   g) All 'Applications' will be supplied and licensed for all time use.

3. Wi-Fi AP

   a) Improve working efficiency of system maintenance, saving time and cost.
   b) USB 2.0 interface, plug and play
   c) Support(802.11b/g/n) 2.4GHz LAN -10 Meters
   d) Support 'Easy configuration' via laptop or iOS, Android Mobile Terminal
   e) Image preview for 'adjust angle'
   f) Preview, Playback, Search, Setting
   g) Support external 64 GB SD card file backup
   h) Support Data Export from m DVR

i) Transmission Rate 20 Mb/s
j) Power supply from m DVR :500 m A @5V
k) Operation Temperature: -10deg C ~ +50deg C
l) Relative Humidity: <80% non-condensing
m) Only a few units required per depot

4. Safe Driving System (data logger)

a) Integrated 6-axis G-sensor
b) Data Management , Analysis :Collect data of six-axis sensor and OBD II to manage driving behavior Harsh Acceleration/braking, Sharp Turns, collision and oil consumption, speed, driving time, long idling etc
c) Data type K line, CAN ISO 11898/ ISO15765-4 high speed, intermediate speed and low speed CAN, RS485, OBD II
d) Acceleration ±16g, Angular Rate ±2000°/sec
e) Power supply from m DVR : 500 m A @5V
f) Operation Temperature: -10deg C ~ +60deg C
g) Relative Humidity : 95%
h) Ingress Protection IP 54 minimum
i) Test compliances : As detailed later in this document

5. Driver Display Unit

a) 7" TFT LCD Touch Screen with Arrow Keys and Number Buttons
b) Resolution 800*480 , Live view Video Surveillance
c) Luminance 400cd/m2, Visual Angle 70/70/50/70 (Typ.)(CR dot 10)(Left/Right/Up/Down)
d) Maximum Number of Display Color 262K/16.7M(6bit/6bit+Dithering)
e) Scale 16:9
f) Back-light Type White LED
g) Built –in Speaker Speaker(16Ω, 2W)x2
h) Built-in RFID module to sign in/out, When Driver & Conductor swipe the ID card, then the SERVER will get the information and send a message to driver & conductor (and others) to inform them sign successfully. The same functionality when used in a School Bus will inform parents. Supports standard card of Mifare protocol ISO14443 Type A , working frequency 13.56MHz
i) Two Way Voice Communication with Back Office
j) Text Message from Back Office
k) Live View and Play Back -One or More Camera
l) 'Reverse camera only' when reverse gear is engaged (via digital I/O)
m) 'Door Facing Camera only' when 'Door Open" (via digital I/O)
n) Recording On –Green mark, 'Event' Recording –Red mark

o) GPS Date/Time/Speed, GPS Loss, Vehicle ID, All 'Events', Channel Name, Ignition Status
p) Power supply from m DVR: 200 m A@12V
q) Operation Temperature: -10deg C ~ +60deg C
r) Relative Humidity: 95%
s) Ingress Protection IP 53 minimum
t) Installation Bracket on Dashboard
u) Test Compliances : As detailed later in this document

6. Performance and Durability Testing & Environmental Test

Test Compliances for Data Logger + Driver Console (together):

Verification Report of ARAI/ICAT/CIRT is mandatory.

Sr. No	Test standards Compliance	Specifications
1	Performance parametric test	Nine points, tri temperature/tri voltage- 18V, 27V, 32V,-10°C, room temperature, +70°C test. At each test point the system will be powered on and shut down 5 times as per the supplier's designated procedure and thereafter evaluated for malfunction if any.
2	Cold	IS 9000 (Part II/Sec 4)-1977 (reaffirmed 2004) at -10ºC for 2 hours in 'on' condition
3	Dry heat	IS 9000 (Part III/Sec 5)-1977: at + 70ºC for 16 hours in 'on' condition.
4	Damp heat	IS 9000 (Part V/Sec 2)1981 at +25ºC /+55ºC, Humidity 95%, 24 hours for 6 cycles in off condition. Functional test with power in 'on' condition at start of 2nd, 4th and 6th cycle
5	Vibration standard AIS 012/AIS:062 -10g	• Frequency 5~55Hz and return to 5Hz at a linear sweep period of 1 minute/complete sweep cycle and 10g at maximum frequency • Excursion -1.65 mm peak to peak over the specified frequency range • Test duration 60 minutes Direction of vibration –X, Y, Z axis of device as it is mounted on the vehicle.

Sr. No	Test standards Compliance	Specifications
		• Test to be carried out in 'on' condition as per ARAI
6	Dust and water ingress protection	IS /IEC 60947-1:2004 in conjunction with IS/IEC 60529:2001
7	Fire resistant harness	• Horizontal Burning rate tested as per ISO 3795 , • Flammability Test as per IS:2465:1984
8	Reverse polarity protection without fuse	The component must fulfil the function- and service life requirements after being subjected to reversed polarity up to 27 V for 2 minutes. ISO 17650-2.
9	Over voltage protection	To ensure service life requirements and functionality. The component shall run for 60 minutes at 36V, without effecting the service life or function. ISO 16750-2
10	Insulation resistance	The Insulation résistance measured as per ISO 16750-2 with avoltageof500 V DC shall not be less than 1Mega ohm. Insulation Resistance Test will be carried out after completion of 'Damp Heat Test' and then the Test sample to be kept at room temperature for at least 0.5 hrs.
11	Salt spray test	(IS10250) 96 hours
13	EMC/EMI	AIS 004 (PART 3)
14	Operating parameters	Supply voltage 24 V± 25%
15	Slow Increase and decrease (Ramp up/ Down)	Apply a Voltage of 0V to 27V at increasing rate of 0.5V per second for slow Increase of Power Supply. Apply a Voltage of 27V to 0V at decreasing rate of 0.5V per second for slow Increase of Power Supply.
16	ESD Test	Powered • Direct Contact ± 6 kV, ± 8 kV • Direct Air ± 8 kV, ± 15 kV Unpowered Direct Contact ± 6 kV ± 8 kV Direct Air ± 8 kV ± 15 kV
17	Endurance Test	Ambient Temperature, preferably 27 ± 2°C, 28 V, 100 000 cycles.

Sr. No	Test standards Compliance	Specifications
		Each cycle shall consist of switching ON & OFF the system with
		dwell time as follows: Dwell time: 10 s ± 1 s (ON condition), 4 s ± 1 s (OFF condition).
18	USB port over loading test	USB Port Pin No. 1 (+5 VDC) & Pin No. 4 (GND)to be Short Circuited with external wire in "ON" condition as shown below. The System should continue to work without any problem.
19	Improper Shut down	Battery supply shall be disconnected in the middle of operation. This shall be repeated for 100 times ON time :- 3~4 min, Off time :- 10 sec

33.4. Integration requirement with Existing ITMS System

Operator shall mount ITS Equipment as specified herein above on Buses. Operator shall also ensure to supply equipment compatible with existing ITS System of Authority so as to enable smooth integration. Operator shall be responsible for regular maintenance ITS equipment installed by it during the Contract Period. Operator and Authority are hereby agree to share interfacing protocols and Active Programming Interface with each other for smooth integration of ITS equipment provided by Operator with Authority's ITS System. Authority shall mount CCTV cameras etc on the Bus through a separate vendor appointed by it.

34. Emergency/Panic Buttons

34.1. Panic button to be provided to each row of seat as per AIS 140.

35. Bumpers

35.1. Bus would be provided with front and rear bumpers of Steel or impact resistant polymer or combination of both meeting requirement of an energy absorbing system. The bumper would be easily repairable/ replaceable. Bumpers would conform to the requirements of CMVR/Bus Code/any other international Standards (to be specified by the manufacturer). Details of above bumpers along with drawings including thickness of bumpers, section, profile etc would be supplied by the Successful bidder.

35.2. Bus manufacturer would provide details of materials used, their specifications and process followed for their repair and maintenance along with material required.

36. Towing Device

36.1. Heavy-duty ring type towing devices would be provided at front and rear.

37.2. Rear windscreen would also be in single piece design, flat in centre and curved on corners toughened glass of thickness of 5.0 mm (+ 0.3mm). Windscreen glasses would meet the requirements of IS 2553: Part II-1992 or latest and that of CMVR and Bus code (AIS 052).

37.3. The glazing used for fitment of glasses would be Ethylene Propylene Dien Monomer (EPDM) rubber of black colour or pasted with adhesive material conforming to Indian/ International Standards to be specified by the manufacturer. A grab handle and suitable handles on the outside of windshield centre at waist level would be provided to facilitate manual cleaning of the windscreens.

38. Wind Screen Wipers

38.1. Electrically operated windscreen wiper system having two wiper arms with blades would be provided at the bottom of the front windscreen. Wiper motor would be heavy-duty steel body for minimum of two-speed operations. Wiper arms would rest horizontally when not in use. The sweep angle would be sufficiently wide for clear view during rainy days. Windscreen wiping system would be 24V, having variable speed, with fitment of time delay relay. Windshield washer system would spray washing fluid on windshield & when used with the wipers, would evenly & completely wet the entire wiped area. Windshield washer system would have a minimum of 2.5 litres capacity tank suitably

located for easy refilling from inside the bus and two nozzles at suitable location for proper spray of fluid. Reservoir pumps, lines & fittings would be corrosion resistant & reservoir itself would be translucent for easy determination of fluid level. The windscreen wiping system would be in accordance with CMVR/ IS:15802, latest.

39. Fire Extinguishers

39.1. Multipurpose fire extinguishers would be ISI marked conforming to BIS: 13849-1993 or latest, dry powder type (Stored pressure) duly filled, of capacity and quantity as per the provisions of GSR-853 (E) dated 19.11.2001 notification of Government of India, Bus Code, UBS II. Fire extinguishers should be of 10kg (6+4).One in driver compartment and other in passenger compartment.

39.2. In addition FDSS has to be provided as per AIS135 or as per applicable.

40. First Aid Kit

40.1. First aid kit complete with items, medicines, bandages etc. would be provided as per provisions of CMVR fitted near driver seat at appropriate position and level on side with proper reinforcement.

41. Provisions for Persons with disabilities

41.1. The manufacturer would provide for ease of accessibility, guidance, positioning of aids etc system for Persons with Disabilities (PwDs) that meets the requirements as given in the Bus Code and CMVR.

42. Battery / power supply system for auxiliary systems / aggregates of bus

42.1. Power supply system for operation of bus aggregates other than electric propulsion system would be 24V of minimum 100 - 150 Amps-hour capacity, low maintenance type lead acid batteries or any other source, which shall be brought out by bus manufacturer in his bid. Such supply system would be well secured to a hinged/ pivoted or slide out type carrier for ease of access for repair & maintenance, replacement and suitably ventilated for escape of fumes, if any, but insulated against ingress of dust and moisture. In the event of separate batteries/power supply for these systems, the battery box/power supply system would be appropriately mounted and would be well secured, easily accessible & ventilated. Performance requirements of batteries would conform to IS: 7372-1995 (or latest).

42.2. In the later case at 41.1. battery terminals, if batteries provided, with positive locking system (e.g. angle type terminal with provision for double bolting) duly protected against all possible short circuit risk would be provided.

42.3. Each power supply cable shall meet the requirement of IS: 2465 with flame retardant and shall be properly encased & clamped.

42.4. A relay controlled Heavy-duty type battery/supply cut-off switch (isolator switch) capable of carrying & interrupting total circuit load would be provided 1 each near battery/supply system and near driver for disconnecting all battery positives/supply system except for safety devices such as fire suppression system & other systems as specified. Two points of battery/supply cut off switch would be connected with battery/supply source and two points would be connected with self-starter. The

battery/supply Cut-off switch with power plant operating, would not damage any components of electrical system in off position. The battery / power supply Cut-off switch would be capable of carrying & interrupting the total circuit load.

43. Electrical equipment and wiring for bus aggregate supply system/ source As per details given in UBS II and generally as under:

43.1. The bus would have 24 Volt D.C with multiplex wiring system for all its electrical equipments except in unavoidable circumstances to avoid sparking in buses. A separate system/ mechanism would be provided for discharge of electro static charge induced during the operation of vehicle. Adequate precaution would be taken in case of single pole wiring to avoid spark in any of the items etc.

43.2. An adequate capacity power supply system / source of 24V DC, minimum 100 - 150Ah rating with consistent output to take care of high idling periods of city operation would be provided and so located as to minimise ingress of oil or rain water into it. Bus Manufacturer may, if so required, have to install two separate power supply systems / sources one each for Air Conditioning System and bus Auxiliary systems.

43.3. Details of specifications of Battery / power supply sources for vehicle auxiliary systems / air conditioning etc, the starting mechanism, if any, along with circuit diagrams would be furnished by the manufacture along with their bids.

43.4. Electrical equipment and wiring would conform to Indian/ international Standards, bus code and UBS II. All cabling would be as per provisions of Bus code / UBS II. The wiring would be multiplex system, flame proof, ISI marked conforming to BIS: 2465-1984 or latest. As far as possible electrical system would be 24V double pole multiplex wiring system except in unavoidable condition. However, in case of single pole wiring all power & ground wiring would have double electrical insulation, which would be waterproof conforming to the Indian/ International Standards. Wiring would be grouped, numbered & colour coded. Wiring harnesses would not contain wires of different voltage classes unless all wires within the harness or insulated for highest voltage present in harness. Kinking, grounding at multiple points, stretching & exceeding minimum bend radius would be prevented.

43.5. Wiring looms/ harness for electrical system of bus would be properly routed, encased/ concealed type so mounted to eliminate chances of any spark. Details of above wiring loom including circuit diagram; layout of controls etc would be supplied by the bidder along with the bid Wiring support would be protective & non-conducting at areas of wire contact & would not be damaged by heat, water, solvents or chafing.

43.6. All electrical fittings and lights would be fully wired up, running in flame retardant black colour PVC sleeves as per applicable Indian Standards (to be specified by the manufacturer) installed in a manner to facilitate easy inspection/ rectification/ replacement etc as & when required without disturbing internal finish/ décor of the bus. Whenever any wire or cable or PVC sleeve carrying cable etc passes through holes in sheet metals/ structural member, suitable rubber grommets/ Bakelite

inserts would be provided in these holes to avoid direct contact between cables and sheet metal causing damage to insulation coating.

43.7. Bus manufacturer would furnish details of above wires/cables and battery / auxiliary items supply system cables.

43.8. Design of electrical, electronic & data communication systems would be modular so that each major component, apparatus panel or wiring bundle is easily separable with Standard hand tools or by means of connectors. Each module except main body wiring harness would be removable & replaceable. Power Plant wiring would be an independent wiring module. Replacement of power plant compartment wiring module would not require pulling wires through any bulkhead or removing any terminals from the wires.

43.9. Electrical system & its electronic components would be capable of operating in area of the vehicle in which they will be installed. Electrical & electronic equipments would not be located in an environment that will reduce performance or shorten life of the component or electrical system. No vehicle component would generate or be affected by electro-magnetic interference or radio frequency interference (EMI/RFI) that can disturb performance of electrical / electronic equipments.

43.10. Bus manufacturer would furnish recommendations regarding methods to prevent damage from voltage spikes generated from welding, jumps start shorts etc.

43.11. All electrical & electronics hardware would be accessible & replaceable easily. It would be mounted on an insulating panel to facilitate replacement. Mounting of hardware would not be used to provide sole source ground and all hardware would be isolated from potential EMI/ RFI.

43.12. All electrical/ electronic hardware mounted in interior of bus would be inaccessible to passengers & hidden from view unless intended to be viewed.

43.13. All electrical/ electronic hardware mounted on exterior of bus i.e. not designed to be installed in an exposed environment would be mounted in a sealed enclosure.

43.14. All electrical/ electronic hardware & its mountings would comply with shock & vibration requirements.

43.15. Bus manufacturer would provide a certificate of testing/estimation of electrical load for each system.

43.16. Electric supply systems' over voltage output protection would be provided.

43.17. All branch circuits would be protected by circuit breakers or fuses sized to requirements of the load. Circuit breakers or fuses would be sized to larger than total circuit load current as per UBS II. Current rating for wire used for each circuit must exceed size of circuit protection being used.

43.18. Electronic Circuit protection for power supply for starting mechanism / device if any would be provided to prevent engaging of for long time / to prevent overheating.

43.19. To the extent practicable, wiring would not be located in environmentally exposed locations under the vehicle. Wiring & electrical equipments necessarily located under the vehicle would be insulated from water, heat, corrosion & mechanical damage. Where feasible front to rear electrical harnesses should be installed above the window line of vehicle.

43.20. All electrical motors/subsystems would be easily accessible for servicing.

43.21. Separate additional out-lets, as required in UBS II, are to be provided with appropriate relays & fuses in wiring harness for fitment of electrical auxiliary devices/ systems to be added later on in buses, if required.

43.22. AC (Alternating Current) out-let of 220V, as required in UBS II if any, be provided at suitable location for charging of electrical/electronic equipment, etc.

43.23. If any electronic components have an internal clock, it would be provided with its own power supply back up to monitor time when electric propulsion system power is disconnected.

43.24. All electronic components/equipment would have self-protecting capability in event of shorts in cabling and also in over voltage and reverse polarity conditions. If an electronic component is required to interface with other components it would not require external pull up and/ or pull down resisters.

43.25. RF components such as global positioning system (GPS) etc. whenever provided would use coaxial cable to carry the signal. The RF systems require special design consideration for losses along the cable. Connectors would be minimized, since each connector & crimp has a loss, which will attribute to attenuation of signal. Cabling should allow for removal of antennas or attached electronics without removing the installed cable between them.

44. Lights and Lighting System

44.1. Interior saloon lighting in driver compartment and passenger compartment shall be provided as per the requirements of AIS 052.

44.2. Exterior lighting such as Headlamps, fog lamp, direction indicator, side marker lamp, rear combination lamp, top lights, etc. shall meet CMVR statutory requirements. The installation of the same as per bus code/ AIS 008.

44.3. A well-lighted bus registration number plate would be fitted at rear as per provisions of CMVR duly complying with directives/ regulations regarding high security number plates as notified by Government of India / Government of Madhya Pradesh if any.

44.4. No Electrical fittings would be mounted on front and rear bumpers.

44.5. Switches, circuits and fuses would be fitted as per bus code.

44.6. A reverse buzzer would be installed at the rear of bus to sound intermittently when reverse gear is engaged.

44.7. A suitable light would also be provided in electric propulsion system compartment for ease of maintenance/ emergency repairing.

44.8. Following circuit diagrams would be supplied along with buses:

i) Complete circuit drawings for exit/entrance door control system, door mechanism.

ii) Complete door sensor electrical circuit drawing. iii) Complete circuit drawing for sensitive door edge system.

iv) A layout drawing for all door control switches, gauges, warning lights on driver's dashboard.

v) A layout drawing for all lighting and wiring circuits, control switches fuses and fitment details and diagrams along with item specs and types in each case.

vi) Complete circuit diagram for the electric propulsion system inter-alia highlighting high, medium and low voltage cable, safety / protection systems, etc

45. Performance Statement

45.1. Bus manufacturers would furnish following information for performance evaluation of bus chassis and/ or complete buses supplied to other customers and now in service for at least 2 years. The information should be furnished separately order wise:

Type/Model

Name and address of the bus operating agencies where this model is operating

Number of the buses supplied

Order no. against which buses have been supplied.

Date of supply and date from which in service

Maximum/minimum turning radius.

Maximum climbing ability/ gradeability

Type of bus body

Electric propulsion system details such as max power, battery data, usable power, max min battery charging and discharge data, controllers, safety devices/provisions, SPECS AND STDS against each item,

Electric propulsion system - load speed performance curves and data, range (Kms) between two consecutive charging,

Battery charging system, charging rate, charging time, types of batteries, battery pack mountings, etc

Specific energy consumption – bus kms operation per unit energy(kwh) consumed, specific weight of batteries (weight per kwh rating), annual deterioration factor of batteries with age wrt specific energy consumption,
GVW of buses
Noise emission Norms
Type of suspension system
Dimensions- Length, width, height, floor height, wheel base,
Angle of approach, departure and ramp over
Axle –rear and front
Passenger carrying capacity – seated and standees as worked out by using AIS 052
Any other performance data.

46. Technical Information

Technical information required to be furnished by bus manufacturers along with Bid wrt the following amongst others:

46.1. Bus manufacturer's technical information of the bus i.e. General Drawings comprising of elevations –sides, front & rear ends along-with main dimensions i.e. overall length, overall width, overall height, saloon height, pillar to pillar distance, isometric views, exterior & interior details, seating layouts, no. of seats (excluding seat for driver), environmental friendly colour scheme as per AUTHORITY etc would submit same along-with the Bid.

46.2. General appearance & structural details of roof, floor, sides, front & rear show and driver's cab would be provided by the bidder along with their bids. Details of main structural members, material specifications, shape, size, thickness, etc be indicated on the above drawings.

46.3. Power Point presentation material on a DVD for offered design of bus (indicative) and minimum 1:15 scaled Model (indicative & non-working) duly furnished/ painted in environmental friendly colour scheme as given by AUTHORITY would be submitted along-with the bid. The presentation will cover elevations –sides, front & rear ends along-with main dimensions, isometric views, exterior & interior details, seating layouts, colour scheme etc.

47. Tools, Gauges and Testing Instruments

47.1. Bus manufacturers would furnish a list of special tools, gauges and testing instruments for inspection, repair and maintenance of buses along with a complete list of spare parts recommended for:

Normal wear and tear; and
Emergency requirements for any breakdowns, damages etc.

48.1. One hard bound copies, for each bus, of operation and maintenance manual containing essential technical information required for satisfactory operation, inspection and maintenance would be supplied by bus manufacturers.

One set of Coloured wall charts would also be provided of following units for every ten buses or part thereof showing assembly details:
Chassis lubrication and brake system.
One set of Coloured wall charts of following units amongst others for every 25 buses showing assembly details:
Electric propulsion system, batteries / packs, motor,
Traction Controller system, power input system for auxiliary systems/aggregates of bus
Drive line and Rear axle
Front axle
Steering system, suspension system, etc
Brake system, ABS etc
Regenerative braking system
Safety devices
Bus AC System
Any other necessary for skill development of operator staff

49. Training

49.1. For each lot of up to 15 buses or part thereof, bus manufacturer would arrange orientation training at Madhya Pradesh for two days for 60-70 drivers in batches of 20-25 (up to a total of 150 man days) besides similar orientation training at Madhya Pradesh for 3 days for 50 technicians/ supervisors/ engineers in batches of 25 (Total 75 man-days).

49.2. Bus/ energy/ available facilities will be provided by Bus Operator and course materials will be provided by bus manufacturer on free of cost basis. This training will be provided free of cost, as and when required by AUTHORITY / Bus Operator within one year of purchase of buses.

50. Tool Kit

50.1. Bus manufacturer would provide a suitable tool kit and other mandatory items as per CMVR 138 (4)/ other applicable rules comprising of common tools and other essential items required. Complete list of tools in tool kit to be supplied with every bus would be supplied by the manufacturer. One Hydraulic Jack per bus of a capacity of at least 10 Ton as per design of bus would also be supplied.

51. Inspection and Testing

51.1. Bus will be inspected at various stages of fabrication by AUTHORITY 's representative at manufacturer works. Inspection would comprise of ensuring that all materials, components, items, accessories and assemblies used in fabrication of buses conform to contractual specifications. Wherever required to ensure this, laboratory test would be carried out at bus manufacturer's cost.

51.2. The inspection will be undertaken at any and or all stages such as component fabrication stage, chemical pre-treatment stage, fabrication of assembly, sub assembly stage, structure, panelling and equipping stage and Pre-dispatch inspection as per the discretion of AUTHORITY.

51.3. Final Inspection of buses would be carried out at manufacturer's facilities and or at a place finalised by AUTHORITY. After the bus is finally inspected, it would be subjected to test run and trials as required by AUTHORITY.

51.4. The bus would be taken over by AUTHORITY after satisfactory final inspection, testing and trials in Madhya Pradesh.

52. Maintenance Spares and Materials

52.1. Bus manufacturer would provide details of components/spares required for maintenance of vehicle for twelve months' operation taking daily utilisation of bus of up to 200+30% contingency Kms.

52.2. Manufacturer would also provide complete details of vendors, for every component/ spares for complete bus and the spare parts catalogue in 2 sets for every 25 buses or part thereof.

52.3. Manufacturer would ensure that during service life of 7 years or 7, 00,000 Kms. (whichever is later) of service, adequate spare parts in kit form/ individual components are made available in time to AUTHORITY on demand along with other essential items required.

52.4. All spare parts availability would be more than 98% at any time

53. Maintainability

53.1. Design and fabrication of bus would be such as facilitates easy access for repair & maintenance, removal, replacement of various bus components/ assemblies/ subassemblies/ systems by providing suitable traps/ flaps etc. Also removal and re-fitment of electric propulsion system , traction controller system, differential, battery cooling system, door closing mechanism, PIS etc. would be easy for repair & maintenance purpose. Enough space would be provided between wind screen glasses and PIS boards for facilitating cleaning of glasses.

53.2. Battery cooling system coolant top up/ filling and electric propulsion system charging inlets would be easily accessible with suitable closing devices complete with locking arrangement/-holding arrangement.
53.3. Also an easy access would be provided for attending to other assemblies mounted in the vehicle.

54. Warranty/ Guarantee

54.1. Fully built bus would be covered under Warranty/ Guarantee for up to 2, 50,000 Kms. or 24 months whichever is later from the date of putting bus into operation after registration. All assemblies, sub-assemblies, fitments, components would be covered under Warranty Period as per commitment of bus manufacturer at the time of supply of bus.

55. General Requirements

55.1. AUTHORITY reserves the right to alter, modify, change specifications as per requirement to suit the latest provisions of CMVR/ any other Notifications, safety aspects, regulatory aspects besides any practical/ operational difficulties etc. faced/likely to be faced by AUTHORITY . Vehicle Manufacturer would ensure that all alterations, changes or modifications in specifications, if necessary, as mentioned above would be carried out in buses built by them as per the advice of AUTHORITY without attributing any additional cost to AUTHORITY.

Ministry of Road Transport & Highways, Government of India (MORT&H) vide Notification No.GSR-853 (E) dated 19.11.2001 in the Gazette of India, inter-alia stipulated the following measures which need to be complied with for enhancement of safety by the Vehicle Manufacturers as per the statutory requirement for registration of vehicles While registering every bus, Vehicle Manufacturers & transport authority would jointly examine the bus prior to registration. The registration of such a vehicle be done only after signing the report jointly by all concerned along with the transport authority.

For electrical installations, flameproof cables would be used, especially positive terminals would be locked firmly with all cables & pipes with proper looming to take care of vibrations, fire retardant material would be used for seats, roof & sidewalls. Safety instructions about fire hazards would be displayed.

Details of structural members, their material specifications & dimensions i.e. cab & saloon flooring, cross bearers, various angles, floor longitude, main body pillars, dummy/stump pillars, cant rail, vent rail, waist rail, skirt rail, wheel arch section, sole bar, seat rail, roof

sticks & roof longitudes, diagonal bracing, Rub rail tube, stretch & body panel stiffeners, gussets etc. would be provided by bus manufacturers.

Similarly, details of aluminium sheets/sections & their alloys/specifications, aluminium sheet, rub rail, decorative mouldings, wire cover, wearing strips, footsteps edging, various panel beadings, window frames and its sections, finishers, water gutter channel, roof grab rail brackets would be provided by bus manufacturers.

All edges would be rounded off and would not cause injury to bus occupants.

Complete bus would be rattle-free.
All the rivet and bolt holes would be jig drilled as far as possible. The rivet holes should be drilled before the corrosion treatment. Holes drilled after the corrosion treatment be suitably treated with anti corrosion materials. Rivet heads neatly formed and each bolt/ rivet would be tightened after full mating of the surfaces to be fastened.

All safety aspects should be considered while designing and fabricating the bus.

Continuous length piano type hinges and tower bolts of stainless steel would be used as per relevant Indian Standards.

Similarly Aluminium extruded sections wherever not painted would be anodized.

All flaps wherever provided should have heavy-duty support to keep it open for ease of maintenance.

All miscellaneous M.S pipes would be phosphated with the coating of 2.16 to 2.70 gm/m2 or by any other pre-treatment process conforming to Indian/ international Standards (to be specified by the manufacturer). Samples of all materials & components would withstand a two weeks (336 hours) Salt Spray test in accordance with ASTM procedure B117 with no structural detrimental effect to normally visible surfaces & no weight loss of over 1%.

Anodized decorative aluminium mouldings/ beadings etc would be used.

All M.S pipes used in the bus would be ERW conforming to BIS 3601:1984 or latest, of grade WT –160.

All rubber items used on the bus body would be made of Ethylene Propylene Dien Monomer (EPDM) rubber of black colour conforming to the Indian/ International Standards to be specified by the Manufacturer.

EPDM rub rail of aesthetic profile would be fitted in anodized extruded aluminium channel between stretch panel and skirt rail longitudinally at the widest portion of the bus. The quality of EPDM material would be as per the Indian/ International Standards to be specified by the Bidder.

Every trap/-opening flap would be secured in a manner that the vibrations can't dislodge it. Lifting devices must not protrude above the flap.

Ease of accessibility to electric propulsion system & other aggregates for easy maintenance would be ensured. Assemblies / units would be so mounted that they are easily accessible & can be removed without disturbing other components / assemblies.

All structure, body, and panel-bending mode frequencies, including vertical, lateral, and torsional modes, would be sufficiently removed from all primary excitation frequencies to minimize audible, visible, or sensible resonant vibrations during normal service.

Exterior protrusions if any would conform to the provisions of relevant CMVR/ AIS/ Bus Code. The exterior rear-view mirrors and required lights and reflectors are exempted from the protrusion requirement. Advertising frames would protrude no more than 22mm from the body surface and would have the exposed edges and corners rounded to the extent practicable. Grills, doors, bumpers and other features on the sides and rear of the bus would be designed to minimize the ability of unauthorized riders to secure toeholds or handholds. The exterior body features would be shaped to allow complete & easy cleaning by automatic bus washers without snagging washer brushes or retaining water & dirt.
Hydraulic Grease Nipples would be provided for ease of proper lubrication & maintenance.
Front panels, bumpers and grill should be designed such that there are no pointed or sharp protrusions to minimise injuries to vulnerable road users in case of impact.

56. Quality Assurance

56.1. Bus manufacturer would use materials including fasteners conforming to relevant Indian/ International Standards and would get the same tested before use, meeting requirements of all specified parameters to ensure quality of material specified. However, random sample of materials picked up and duly sealed by representative of AUTHORITY in

presence of bus manufacturer, out of purchased lot at works of the manufacturer or out of the bus under fabrication/ completed bus and be sent for testing quality of components at CIRT/ARAI/BIS approved testing laboratories having testing facilities for testing all parameters of specifications of materials/ items. In the event of failure of samples in lab tests, testing would be conducted in same way again from fresh lot. The bidder would replace failed materials by those duly passed in lab tests.

56.2. In the event of failure of material/ items in laboratory test, failure of material/ items (removed from completed bus) in laboratory test, acceptance decision about bus be taken by AUTHORITY after obtaining compensation/ recoveries of liquidated damages from bus supplier as per system decided by AUTHORITY. Wherever, failure of material on one parameter or more than one parameter, recoveries for complete lot of materials used in bus would be made from manufacturer plus 20% damages thereof.

56.3. Completed bus would be subjected to water leakage test conforming to BIS: 11865-1986.

57. Statutory Requirement

57.1. Bus manufacturer would ensure that all statutory requirements in respect of each and every item of bus are fully met. Manufacturer would also obtain type approval certificates etc. for bus any other items from testing agencies specified in the CMVR namely VRDE/CIRT/ARAI or any other Test agencies as specified by the Central Government as defined under CMV rule 124 and 126. A certificate showing details of make/type/model of various units like electric propulsion system items, Traction Controller system items, rear axle, batteries, tyres, steering, instruments on the panel, air compressor, shock absorbers, suspension system items, etc. would be furnished.

57.2. Bus Manufacture/ Bodybuilder must make sure that the Fully built bus complies with standards and regulations for Electrically propelled vehicle provided in the AIS-052, AIS 049 and any other applicable standard; CMVR 1989 as amended from time to time, and MMVR 1989 and all amendments thereto.

58. Manufacturer's VIN Plate

58.1. Manufacturer's VIN plate shall be fixed as per CMVR.

59. Vehicle Guidance system for properly aligning bus with bus stops / gates:

59.1. The bus manufacturer has to make provision for affixing RFID TAG on the driver side glass on door window. The successful bidder has to match (shall be compatible) with the existing AUTHORITY infrastructure.

60. Bus Air Conditioning System

Air conditioning system capable of maintaining prescribed cabin temperature while operating even in harsh ambient conditions of 45 – 48-degree C ambient temperature, dusty and humid conditions in Madhya Pradesh area.

AC capacity would be a minimum of 37 kW

60.1. Power required for air conditioning system operation should not adversely affect operational performance of bus particularly wrt its acceleration, Gradiability, load pulling capability, etc. even when the bus is loaded to capacity and the air conditioning is on.

60.2. Bus entry exit doors are assessed to operate (Open, dwell, close for a average period of 45 seconds each time) at headways of about 2 minutes, for boarding/ alighting etc of passengers.

60.3. Estimated Peak hour load in bus may be considered as at 1.5 times bus capacity

60.4. Air conditioning system's test reports as provided in UBS II / as given in this doc be submitted. On site testing may be undertaken by AUTHORITY at their discretion and Bus supplier would make all arrangements for the same at their cost.

61. Any other provisions to make the bus fully functional.

61.1. Notes indicated in this doc form part of the specs / bus body building requirements. Should however there be any conflict details contained in notes would over-ride others.

However, AUTHORITY reserves the right to accept/reject over-ride if any.

62. Specifications related to Fire Detection and Suppression System (FDSS) General Requirements

62.1. FDSS provision is to be made in the bus at appropriate location(s) for detection and suppression about any likely fire at all fire prone systems (bus supplier to identify such fire prone systems and make above provisions)

62.2. Vehicles shall be equipped with fire detection & suppression system detecting fires in the fire prone areas based on sensors that senses either abnormally high temperature or rate of temperature rise, or both.

62.3. Upon detection of fire in the fire prone areas, the system referred in clause no 1.1, shall provide the driver with both an audio and a visual signal, and activate the hazard

warning signal. The placement of the visual alarm shall be such that it is visible unobstructed while viewed from the driver seat.

62.4. The detection & suppression system shall be operational irrespective of whether electrical propulsion system of bus has been started and the vehicle's attitude.

62.5. The installation of the fire detection & suppression system shall comply with the following requirements;

62.6. The fire detection & suppression system shall be installed according to the system manufacturer's installation manual.

62.7. An analysis shall be conducted prior to the installation in order to determine the location of fire detectors and suppression system. Potential fire hazards within the fire prone areas shall be identified such that the fire detectors shall be positioned to cover the fire hazard. The system shall also be ensured to work properly regardless of the vehicle's altitude, road conditions etc.,

62.8. Fire hazards to be taken into account in the analysis shall at least consist of the following: Components whose surface may reach temperatures above the auto-ignition temperature for fluids, gases or substances that are present in the fire prone areas and electrical components and cables with a current or voltage high enough for an ignition to occur as well as hoses and containers with flammable liquid or gas (in particular if those are pressurized). The analysis shall be fully documented.

62.9. The Fire Detection and Suppression System (FDSS) installed in the AC Standard Buses shall comply with the requirement of AIS 135, UBS II, CMVR.

62.10. Make, model, specs etc of various components / sub-systems / system of FDSS be clearly indicated for each item as part of the offer. A detailed drawing of the system details / specs be also provided for.

63. Electric Bus Battery Charging Requirements

63.1. The Electric Buses shall be operated with Single/Multiple Charging throughout the day depending on the solution worked out. The Buses shall be available for charging during night after completion of scheduled trips. The Bus Operator is required to install and operate adequate charging stations at the Depot/Parking space provided by the AUTHORITY.

63.2. Under No circumstances should the performance of the buses suffer in case of low battery charge status. If buses showing are such performance, Operator shall have to forthwith remedy the situation, shall attract damages and persistent and repeated failures on this count shall constitute a material breach of the performance conditions.

63.2.1. AUTHORITY will make bulk power available at identified Spaces for parking, charging and maintenance. Operator will arrange for site level distribution of power to its charging points along with related equipment and infrastructure for charging including any civil and other ancillary work required for parking, charging and maintenance. The decision on number of chargers to be provided is left to the Operator according to his solution. Operator /Service Provider will present the best solution in terms of bus, capacity of batteries, charging infrastructure required, charging time etc. looking to the operational requirements of AUTHORITY AC Standard buses.

63.2.2. The Operator will support the procurement, supply, operation and maintenance of the Bus including battery charging, maintenance /replacement in all respects throughout the Agreement Period. It will make its appropriately trained and qualified technical staff available for any solutions, challenges and fine tuning.

63.2.3. Bidder must provide details of his proposed solution in terms of charging time, charging stations requirement, space requirements, scheduling and charging plan etc. Bidder must commit to keep upgrading his technology is and as required based on approval of AUTHORITY.

PART II – Specifications of Fully Built Electric Air conditioned (AC) Standard 12 Meter Type II,12000 mm long, minimum 900mm Floor Height based on UBS II, CMVR, Bus code-AIS 52 and AIS 049.

Sr. No.	Description	Technical Specification
	Bus characteristics	
*	Bus Floor height	900mm (minimum)
1	Propulsion system	Electrically propelled Bus using electric propulsion system
2	Type of Battery	Li-ion or Li-ion Phosphate Battery or Li NMC or superior.

Sr. No.	Description	Technical Specification
3	Battery pack rating and energy / power available for propulsion; Any deterioration in propulsion power with usage and consequently reducing charge; Min & max charging % Maximum Thirty Minutes Power (kW) Motor/s capacity	Battery pack rating and energy / power available for propulsion; Any deterioration in propulsion power with usage and consequently reducing charge; Min & max charging % Maximum Thirty Minutes Power (kW) Motor/s capacity: as per the requirement of the bus operations. 9. No of Motors/ batteries as per the Bus manufacturer's design. 10. Power consumption ≤ 1.4 kWh per km. 11. Electrical Regeneration required. 12. Charging mode: AC or DC charging required. 13. OFF board OR ON board charging required. 14. Charging time: less than 4 hours. 15. Safety: Short circuit /over temperature/lightening protection mandatory 16. CMVR certification mandatory
3.1	Battery cooling system	Efficient and robust battery cooling system calling for minimal maintenance
3.2	Battery life (No. of charging cycles)	Battery life: Batteries to last for 7 years (This can be used as a guideline)
3.3	Batter Charging System	To be decided by the Bus Operator
3.4	Electric drive motor/s	Optimal rating, type, make, model of electric drive motor requiring minimum maintenance
3.5	Electric propulsion system motor rating / power sufficient to provide:	
a	Rated performance at GVW in a stop/start urban operations	Attain bus maximum speed of 75±5 kmph (without speed limiter) at GVW load, air conditioning and other sub-system operational.
b	Acceleration (meter/sec²)	≥ 0.8
c	Attain bus speed of 0-30 kmph in Seconds	≤ 10.5

Sr. No.	Description	Technical Specification
d	Maximum speed	maximum speed 75±5 kmph
e	Minimum Operation Range per bus per day	Should cover minimum of 200+20% contingencyKMsin a day without opportunity charging and with Passengers, GVW and AC, 18 hours. It should be as per the Annexure 4 in the document.
f	Grade ability from stop at GVW	**17%**
g	Rated HP/torque preferably at lower rpm range	Rated HP at low rpm and Maximum torque required at lower range of motor RPM and spread over a wider range of RPM. Sufficient torque to meet the acceleration, gradeabilty, AC and range requirement
h	Power requirements for Air conditioning system, ITS, etc	Required to be provided by electric propulsion system
3.6	Noise norms	**As per CMVR**
3.7	Electric propulsion system	Electric propulsion system / subsystems (batteries) temperature, motor speed in RPM, vehicle speed, Motor % load (torque), diagnostic message (electric propulsion system batteries, cooling system, motor, Traction Controller specific) SOC ith Vehicle Health Monitoring System. (Battery health + regenerative brake charging)
3.8	Electric propulsion system operational requirements	Electric propulsion system should be able to operate efficiently at ambient temperatures / environmental conditions of Madhya Pradesh
3.9	Electric propulsion system / subsystems location	Optional/ preferably Battery location below floor.
3.10	Transmission	Automatic
4	Operational safety	Transmission system to be fitted with a mechanism which makes it possible to engage reverse gear only when vehicle is stationary (applicable for automatic & automatic manual transmission)
5	Clutch (where applicable)	Not applicable for automatic transmission
5.1	Rear axle	Single reduction, hypoid gears, full floating axle shafts with optimal gear ratios suitable for urban operations (To be considered as a guideline) or In

Sr. No.	Description	Technical Specification
		wheel hub driven mechanism as per OEM specification
5.2	Front axle	Heavy duty reverse Elliot type axle suitable for various floor heights (To be considered as a guideline) or As per OEM specificiation
6	Steering system	Hydraulic power steering with height and angle adjustment
7	Suspension system	Air suspension at front and rear.
7.1	Front	Air bellows - 2 numbers
7.2	Rear	Air bellows – 4 numbers
7.3	Kneeling	Not applicable
7.4	Anti-roll bars/stabilizers	Required at front and rear
7.5	Shock absorbers	Hydraulic double acting 2 at front & 4 at rear
7.6	Controls (optional)	Electronically controlled air suspension system
8	Braking system	Braking system: Mandatory ABS with Disc brake at Front and Rear
8.1	Anti-skid anti-brake locking system (ABS)	Mandatory.
8.2	Electronic controls	Required
9	Electrical system for bus ancillaries	24-volt DC
9.1	Batteries (ancillaries equipment and light and light signaling devices) :	Low maintenance type lead acid batteries for 24 V & Min 100Ah-150 Ah system- performances as per BIS: 14257-1995 (latest). 2X12V of commensurate capacity. Maintenance free batteries preferred.
9.4	Electrical wiring & controls -type	Multiplexing type -- As specified separately under ITS specifications and Conforming to IP67.
10	Speed limiting device (optional)	Mandatory as per CMVR.
11	Tyres	Steel Radial Tube-less. Size and performance as per CMVR.
12	Range:	225Km minimum in single charging. On actual condition with Passenger, GVW and AC, 18 hours continuously.
13	Bus characteristics	
13.1	Bus dimensions' mm	
a	Overall length (over body	12000

Sr. No.	Description	Technical Specification
	excluding bumper)	
b	Overall width (sole bar/floor level- extreme points)	2600 (maximum)
c	Overall height (unladen - at extreme point)	3800 (maximum)
d	Wheel-base	6000 ±200mm
i	Front Overhang	To accommodate minimum 800 mm wide door ahead of front axle.
ii	Rear Overhang	As per CMVR
13.2	Maximum turning circle radius (mm)	As per CMVR
13.3	Floor height above ground (mm)	400
13.4	Clearances (mm)	
a	Minimum Axle clearance (mm)	Minimum 175 mm
b	Wheel area clearance (mm)	> 220 mm for parts fixed to bus body &> 170 mm for the parts moving vertically with axle (if applicable for Air suspension vehicles)
c	Minimum ground clearance (un-kneeled) at GVW	Within the wheelbase not less than 240mm.
13.5	Angles (degrees)	
a	Angle of approach (unladen)	Not less than 8.5°
b	Angle of departure (unladen)	Not less than 9.0°
c	Ramp over angle (half of break-over angle)	Not less than 4.8°
14	Bus Gates/Doors	
14.1	Type of doors	LH Side doors – Power operated doors, JK type / Swing in door 800mm width one no. ahead of front axle.
a	Operating mechanism	Electro pneumatically controlled
b	Opening/Closing time in seconds per operation (maximum)	4
c	Positions of door controls	On dashboard and also inside & outside of doors as per AIS 052.

Sr. No.	Description	Technical Specification
d	Passenger safety system - allowing bus motion on doors closing and doors opening only when the bus is stopped	Mandatory
14.2	Front service doors (refer "A" in fig -1 of UBS II - (near side/non- driver side)	
a	Minimum door aperture (without flaps) in mm	800
b	Minimum clear door width (fully opened) in mm	650 ± 50
c	Minimum door height in mm	1900mm
d	Positioning front service gate	Ahead of front axle
e	Number of gates	1
14.3	Rear service doors (Near side/non-driver side)	
14.3.1	Rear service doors (near side/non- driver side)	Not Applicable
14.3.2	Rear service doors -refer "C" in figure 1 of UBS II (near side/non- driver side); steps required for non BRTS operations, steps not required for level boarding-Not Applicable	
a	Minimum door aperture (without flaps) in mm	Not Applicable
b	Minimum clear door width (fully opened) in mm	Not Applicable
c	Minimum Door height in mm	Not Applicable
d	Positioning rear door	Not Applicable
e	Number of gates	Not Applicable
14.6	Maximum first step height (mm) from ground - unladen & un-kneeled position in buses with:	
a	Stepped type entry (maximum)	400 mm
b	Level entry (at station platform height)	Not applicable
14.7	Maximum height (mm) of other steps (where required)	
a	if door ahead of rear axle	250
b	if door behind rear axle	Not Applicable
14.8	Ramp for wheel chair at the gates wherever required	Not Applicable
d	Device to prevent the wheel chair roll off the sides when the	Not Applicable

Sr. No.	Description	Technical Specification
	length exceeds 1200mm	
e	Device to lock wrapped up ramp	Not Applicable
f	Kneel ramp control: (applicable in reference of clause 7.3)	Not Applicable
g	Requirement for passengers with limited mobility	Required
i	Wheel chair anchoring - minimum for one-wheel chair	Not Applicable
ii	Priority seats - minimum 2 seats	Required
iii	Stop request	Required
h	Emergency doors/exits or apertures (Numbers)	As per AIS 052 Refer Cl. 20 and 21 of Part I for detail description.
	Dimensions in mm	As per AIS 052
i	Door closing requirements for bus movement -	Bus could move only after door closing completed
i	Power operated service door - construction & control system of a power operated service door to be such that a Passenger is unlikely to be injured/trapped between the doors while closing.	As per AIS 052
ii	Door components	As per AIS 052
iii	Door locks/locking systems/door retention items	As per AIS 052
iv	Door hinges	As per AIS 052
15	Bus body	
15.1	Design type approval	As per CMVR Type II Intercity.

Sr. No.	Description	Technical Specification
15.2	Bus structure - materials specifications etc.	OEM should ensure GI tubular structure of 60x40x2, 40x40x2, 50x50x2, 40x20x2 etc. To meet the requirements of Annexure 3 of UBS II. Exterior panels: a) Stretch panel: 1.0mm GP sheet b) Skirt and roof panels: Aluminium 1.2mm Interior panels: Roof and side pre-coated Aluminium sheet of 1.2mm (0.7+0.5) as per authority's requirement
15.3	Insulation	FR grade material as per IS 15061
a	Roof structure	FR Grade material glass wool, PU foam or thermocole. As per AIS:052
b	Battery Pack compartment	
15.4	Aluminium extruded sections for:	
a	Rub rail	Aluminium extrusion IS 733/1983 or better
b	Decorative moulding	
c	Wire cover	
d	Wearing strip	
e	Foot step edging	
f	Panel beading	
g	Window frame	
h	Roof grab rail brackets	
15.5	Floor type/Materials etc.	
a	Type of Floor	Uniform floor other than in rear Passenger saloon area and passenger Gangway
b	Steps on floor	No step excluding in Rear Passenger saloon area
e	Floor surface material	19mm thickness phenolic resin bonded densified laminated compressed wooden floor board (both side plain surface) having density of 0.95 - 1.25 gms/cc conforming to IS 3513 (Part-3): type VI 1989 or latest. The flooring should also be boiling water resistant as for marine board BIS:710-1976/ latest and fire retardant as per BIS:5509-2000 (IS15061:2002) or Chequered Plywood 19mm

Sr. No.	Description	Technical Specification
		thick
g	Anti – skid material	3 mm thick anti-skid type silicon grains ISO 877/76 for colour, IS:15061:2002 for FR grade.
15.6	Safety glasses and fittings:	
a	Front windscreen (laminated) glass:	Single piece laminated safety glass, plain, lat/curved with curved corners with PVB film IS 2553 (Part-2)-1992/latest. Standard designs for each variant of buses to be followed (Refer Annexure 1 of UBS II)
	Size:	Standard designs for each variant of buses to be followed. (Refer Annexure 1 of UBS II)
b	Rear windscreen: (wherever provided)	Single piece flat/curved toughened glass-plain/flat/curved at center& curved at corners IS:2553 (Part-2)–1992/latest
	Size:	Standard designs for each variant of buses to be followed. (Refer Annexure 1 of UBS II)
c	Side windows:	Flat, single piece designfixed/pasted toughened glass IS 2553 (Part-2)-1992/latest.
d	Glass specifications	Toughened glass IS2553 (Part-2)-1992/latest
	Glass thickness:	4.8-5.3mm
e	Window & other glasses - material specs, thickness etc.	Toughened as per IS:2553 (Part-2)–1992/latest of 4.8-5.3 mm thickness
f	Safety glass	As per CMVR
g	Rear view mirrors	As per CMVR
15.7	Seating and gangway etc.	
15.7.1	Passenger seating for ordinary type-1 buses	As per AIS 052
a	Seat layout in the low floor area	2x2
b	Seat layout in the higher floor area	2x2
c	Seat area/seat space per Passenger (width*depth) mm	400X350
d	Seat pitch - minimum (mm)	As per AIS 052
e	Minimum backrest height-from floor to top of seat/headrest	As per AIS 052
	Seat base height-distance from floor to horizontal front upper	As per AIS 052

Sr. No.	Description	Technical Specification
	surface of seat cushion mm.	
	Seat back rest height mm	375
f	Torso angle (degrees)	Minimum 12º
g	Seat materials	As per AIS:023,Seats with cushion at seat & back
h	Seat frame structure material where required:	Frame structure of ERW steel tube
i	Free height over seating position (mm)	More than 900
	Seat base height:	As per AIS 052
j	Clearance space for seated Passenger facing partition (mm)	Minimum 350
k	Seat back/Pad material/Thickness:	Polyurethane Foam IS: 15061:2002 (padding is optional)
	Type:	MDI Moulded IS: 5509
	Upholstery:	Pile Fabric/Jekard 0.7-1.0 mm thickness
l	Area for seated passengers (sq. mm.) type 1 NDX/SDX:	400X350
m	Area for standee passengers (sq. mm.):	As per AIS 052
n	Number of seats	Minimum 39+Driver
o	Number of standees	Calculation as per AIS 052
p	Sitting/Standing Ratio	Not required
q	Headrest	Not required
r	Seats side facing location	Not required
s	Seat arm	Seat arm required for aisle seats and seats opposite to service door and above wheel arches.
t	Magazine pouch	Not required
u	Individual seat row fans	Not required
v	Reading lights	Not required
w	Seat back rest	Fixed
x	Seat belts & their anchorage	As per CMVR
y	Performance & strength requirements of:	Required
i	Driver seat	As per AIS 023
ii	Passenger seats	As per AIS 023
15.7.2	Gangway:	

Sr. No.	Description	Technical Specification
a	Minimum interior head room (Centre line of gangway) (mm)	1900mm including that in the rear overhang area.
i	At front axle:	As per AIS 052
ii	At rear axle:	As per AIS 052
iii	Other areas	As per AIS 052
b	Gangway width (mm) from gates to longitudinal space between seats (access to service doors)	(Ref figure-1) minimum 600 mm excluding armrests (armrests are not required) and including stanchions- will be measured from seat edge to seat edge.
c	Gangway width (mm) in longitudinal space between seats	As above
d	Gangway width (mm) in longitudinal space between seats (rear of rear edge of the rear door in rear engine bus)	As above
e	Driver's working space	As per AIS 052
	Driver's seat	As per AIS 052
15.8	Corrosion prevention & painting	As per clause 3.17 of AIS 052
a	Corrosion prevention treatment	
	Internal surfaces of structural members	
	External surfaces of structural members	
	After drilling holes/welding	
	Inter metallic galvanic corrosion prevention	
b	Primer coating	
c	Painting	
16	Electrical system	As per AIS 052.
16.1	Electrical cables	BIS marked, Copper conductors with fire retardant

Sr. No.	Description	Technical Specification
16.2	Conductor cross section	as per IS/ISO:6722:2006 as per appropriate class. Conductor cross-section varying as per circuit requirements, minimum cross-section 0.5 sq mm. Quality marking may also be as per equivalent or better European, Japanese, US standards, Conforming to IP 67 water& air tight for traction battery. For Bus Body Building IS 2465 / Multiplex wiring /ISO 6722
16.3	Safety requirements of electrical	As per AIS 052 Two nos. one Manual Battery cut - off switch (isolator switch) near driver's seat and one electronic on drivers dash board
a	Fuse	
b	Isolation switches for electrical circuits where RMS value of voltage exceeds 100 volts	
c	Location of cables away from heat sources	
d	Type approval of circuit diagram as per standards related to electric equipment's/wiring	
e	Battery cut - off switch (isolator switch):	
16.4	Wind screen wiper:	As per CMVR: IS 15802
a	Wiper motor:	
b	Wiper arm/blade:	
16.5	Driver cabin fan	Required.
16.6	Lighting - internal & external and illumination	As per AIS 052
16.7	Illumination requirements/ performance of:	
a	Dash board tell-tale lighting/control lighting	As per AIS 052
b	Cabin lighting - luminous flux of all lamps for cabin lighting	As per AIS 052
c	Passenger area lighting – luminous flux of all lamps for Passenger area lighting	As per AIS 052
17	ITS enabled bus	Compliance to chapter 10 of UBS-II
18	Safety related items:	

Sr. No.	Description	Technical Specification
18.1	Driver seat belt & anchorage duly type approved.	ELR recoil type, 3 point mounting as per CMVR & AIS 052 conforming to AIS 005 & 015
18.2	Passengers seat belt:	As per AIS 052
	Number/location	
18.3	Driver/Passenger/wheelchair seat belt anchorage	
18.4	Fire extinguisher:	FDSS as per AIS:135 plus 10 kgs fire extinguishers.
18.5	First aid box:	1 number, as per provision of CMVR
18.6	Handrails minimum length*diameter* height above floor in mm	Colour contrasting and slip resistant sleeves with MS tubing of 32 mm dia, 3 mm thick. Rest as per AIS 052
18.7	Handholds:	Colour contrasting and slip resistant. 2 to 4 numbers. Handholds per bay. Rest as per AIS 052
18.8	Stanchions:	MS Tubing with sleeves. 40 mm dia& 3.15 mm
18.9		
18.10	Passenger stop request signal	High visibility bell pushes/pulley chord/touch tape shall be fitted at a height of 1.2 meter on every stanchion mainly for persons with disabilities.
18.12	Entrance/Exit guard/Step well guard:	800 mm minimum height extending ≥ 100mm more than centre line of sitting position of the Passenger.
18.13	Emergency exit doors, warning devices etc.:	R H Side emergency door mandatory Dimensions as per AIS 052/CMVR
18.14	Front/Rear door, step well lights, door open sign	As per AIS 052
18.15	Mirrors right/left side exterior/interior:	As per AIS: 001 & 002. Interior with double curvature
18.16	Towing device front/rear	Towing device required
18.17	Warning triangle	As per CMVR
18.18	Fog lighting	As per CMVR (Optional)
18.19	Bumpers - front and rear	Both made of steel or impact resistant polymer or combination of both meeting requirement of an energy absorbing system. FRP As per CMVR and AIS 052.

Sr. No.	Description	Technical Specification
	Impact strength for bumpers	As per AIS 052
19	Miscellaneous items/requirements	
19.1	Windows	
a	Type of window	Sliding/ pasted glass windows.
b	Minimum height of window aperture (clear vision)3 in mm	≥ 950
	3 Clear vision includes partition between fixed and sliding glass subject to a maximum width of 100 mm	As per AIS 052
c	Minimum height of upper edge of window aperture from bus floor	As per AIS 052
d	Minimum width of windows (clear vision zone)	As per AIS 052
19.2	Cabin luggage carrier	As per AIS 052
19.3	Life cycle requirements of bus (whichever is earlier)	10 years or 10,00,000 Lakh Km OEM to take responsibility of bus bodies as well as of chassis for the period of warranty assured period.
20	Air conditioning system - test procedure for type approval	As per UBS II
20.1	Specifications	a) For up to 42°C of saloon temperature and b) For > 42°C of saloon temperature
20.2	Target results	a) 24± 4°C (up to 42°C) b) Temperature gradient of 15° (> 42°C of saloon temperature) eg. If the saloon temperature is 45o, then the target temperature inside the bus is 45o- 15o= 30o c) Minimum average air velocity at air vent is 4.5 m/s
20.3	Apparatus	Lab condition and heating chamber
20.4	Procedure	1. Soak for 1 hour 2. At 2000 rpm 3.Upto 42°C: pull down time 30 minutes (maximum) (for more than 42°C of saloon

Sr. No.	Description	Technical Specification
		temperature, pull down time within 40 minutes (maximum)) 4. Thermocouple to be placed over place minimum 20 numbers at nose level
21	Additional requirements	
21.1	Air circulations and ventilation in driver's area	An air passage/duct/roof hatch to be provided in driver area at a suitable location for proper inflow of air inside the driver cab
		Drivers work area to be provided with blower or suitable device (200 mm diameter fan) to ensure proper ventilation. These devices may be capable of 3 – speed adjustment
21.2	Maximum noise levels inside the saloon (irrespective of AC, non-AC/fuel type/engine location)-test procedure as per AIS 020	Max 81 dba.
	Additional Requirements	
22	ITS requirement for public transport vehicle operation	Chapter 10 of UBS II and Compliance to AIS:140
23	Destination boards	Four destination boards, internal, front, side and rear to be provided. Front and rear destination boards should be part of the bus body structure and not fitted externally.
24	Surveillance Cameras	Three cameras, two in the passenger's saloon and one for rear view.
25	Roof hatches	Two nos. roof escape hatches
26	AMC	OEM to provide buses with AMC for 10+2 years as per authority's requirement
27	Paint	Color scheme as per authority's requirement
28	Jack	10 Tones