LIVERMORE AMADOR VALLEY TRANSIT AUTHORITY

REQUEST FOR PROPOSALS

#2015-08

FOR

PURCHASE AND DELIVERY OF HEAVY-DUTY BUSES

Date of Issuance:	**December 30, 2015**
Pre-Proposal Meeting:	**February 3, 2016**
Request for Questions and Clarifications Due:	**February 17, 2016**
Proposals Due:	**May 27, 2016**

Beverly Adamo
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Livermore Amador Valley Transit Authority
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procurements@lavta.org

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NOTICE OF REQUEST FOR PROPOSALS

FOR

THE LIVERMORE AMADOR VALLEY TRANSIT AUTHORITY AND OTHER SPECIFIED AGENCIES

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NOTICE IS HEREBY GIVEN THAT sealed proposals will be received by the Livermore Amador Valley Transit Authority (LAVTA) at 1362 Rutan Ct, Suite 100, Livermore, CA 94551, until 2:00 PM, on May 27, 2016 for Purchase and Delivery of 30', 35' & 40' Diesel/Electric Hybrid, Clean Diesel, and CNG buses and 35' & 40' All-Electric Zero-Emission Propulsion System Buses in accordance with requirements of the Contract Documents. Two categories of buses are being procured pursuant to this RFP: Category 1: 30', 35' & 40' Diesel/Electric Hybrid, Clean Diesel, and CNG buses; and Category 2: 35' & 40' All-Electric Zero-Emission Propulsion System buses. Proposers may submit proposals for one or both categories of buses. Contract award, if any, will be made to the highest ranked proposer in each category. Financial support of this project is provided through grants from the Federal Transit Administration (FTA) and the State of California.

Direct questions to Beverly Adamo, Director of Administrative Services at (925) 455-7563.

Proposals shall be submitted on the "Proposal Forms" attached to the specifications and plainly marked with the Proposer's Name and the procurement number following the directions in the *Instructions to Proposers, Section 1*.

A Pre-Proposal Conference will be held at 10:00 a.m. PT on February 3, 2016 in the Diana Lauterbach Board Room at the LAVTA Administration Offices, 1362 Rutan Ct, Suite 100, Livermore, CA 94551.

Proposals will be examined and reported to each Participating Agency within one hundred twenty (120) days after the opening. Each agency reserves the right to reject any and all proposals or to waive any irregularity or informalities in any bid or in the solicitation procedure. No proposer may withdraw its bid for a period of one hundred twenty (120) days after the proposals are opened. Each proposer will be notified of award. This procurement is subject to the availability of funding.

It is the policy of LAVTA to ensure nondiscrimination on the basis of race, color, national origin or sex in the award and administration of contracts. It is the intention of LAVTA to create a level playing field on which Disadvantaged Business Enterprises (DBEs) can compete fairly for LAVTA contracts and subcontracts. For DBE assistance, contact Tamara Edwards, Finance and Grants Manager, at (925) 455-7566.

In connection with the performance of this Contract, full compliance with all applicable Safety and Health Standards, and with all applicable laws and regulations concerning Equal Employment Opportunity and Disadvantaged Business Enterprises will be required. The successful bidder will cooperate with each Agency in meeting its commitments and goals with regard to the maximum utilization of Disadvantaged Business Enterprises and will use its best efforts to ensure that such business enterprises shall have the maximum opportunity to compete for subcontract work, if any, under this Contract.

Attention is directed to the General Conditions, Special Provisions, and Technical Specifications appearing with the Proposal Documents for complete details and bid requirements. These documents,

including proposal forms, bonds, and this Notice shall be considered as part of any Contract made pursuant to this solicitation. Proposal documents may be obtained on-line at www.wheelsbus.com or at the LAVTA Administration Office.

December 30, 2015

Michael Tree, Executive Director

REQUEST FOR PROPOSALS

1. GENERAL INFORMATION

The Livermore Amador Valley Transit Authority (LAVTA) invites qualified firms to submit Proposals in response to this Request for Propofsals (RFP) for the production and delivery of two categories of buses: (1) 30, 35 and 40 foot Diesel/Electric Hybrid, Clean Diesel, CNG; and (2) 35 and 40 foot All-Electric/Zero-Emission Propulsion System Buses. This RFP is issued on behalf of a consortium of transit agencies. The Contract(s) will be for a five-year term. LAVTA intends to award one or more Contracts to the Proposer that submits the highest-ranked proposal for each category of buses. Each participating transit agency will award its own contract separately within the procedures set forth in this RFP.

It is envisioned that this RFP will enable LAVTA and other procuring public agencies as noted below, to standardize the future selection of buses, realize a better price through volume discounts and reduce the requirement of an as-needed or annual procurement process when grant funding is made available.

A. Contact. All communications related to this solicitation are to be directed only to the Contracting Officer. Contact with any other LAVTA staff not authorized by the Contracting Officer may be grounds for disqualification of a bidder's proposal.

Beverly Adamo
Contracting Officer
1362 Rutan Ct, Suite 100
Livermore, CA 94551
(925) 455-7563 phone
(925) 443-1375 fax
badamo@lavta.org]

2. PROCURING AGENCIES

LAVTA's initial purchase will comprise of a minimum of 12 and a maximum of 20 buses for LAVTA (Lead Agency). Participating Consortium Members are identified below. Each Consortium Member will award its own individual contract to the successful Proposer selected by LAVTA. Each contract awarded by a Consortium Member shall be awarded within the proposal validity period. LAVTA shall incur no financial responsibility or other liability in connection with contracts entered into between the Contractor and a Consortium Member. The Consortium Member shall accept sole responsibility for placing orders or making payments to the Contractor. Minimum and maximum bus allotments may be made entirely from Category 1 or Category 2 buses, or a combination of both categories of buses.

Lead Agency: Livermore Amador Valley Transit Authority (LAVTA)
1362 Rutan Ct, Suite 100
Livermore, CA 94551

Consortium Members:
1. City of Los Angeles
Department of Transportation (LADOT)
100 S. Main St., 10th Floor
Los Angeles, CA 90012

2. City of Modesto
   1010 Tenth Street
   Modesto, CA 95354

3. City of Norwalk
   Norwalk Transit System (NTS)
   12700 Norwalk Blvd.
   Norwalk, CA 90651-1030

4. City of Santa Clarita
   23920 W. Valencia Blvd. Suite 302
   Santa Clarita, CA 91355

5. City of Tulare
   411 East Kern Avenue
   Tulare, CA 93274

6. City of Turlock
   156 South Broadway
   Turlock, CA 95830-5454

7. Gold Coast Transit
   301 E. Third Street
   Oxnard, CA 93030-6048

8. Solano County Transit
   311 Sacramento Street
   Vallejo, CA 94590

3. BUS PROCUREMENT REQUIREMENTS

LAVTA, along with the Consortium Members, at their sole discretion, may procure up to the maximum number of buses stated in this RFP, based on each agency's requirements and available funding. The needs of individual participating agencies, in terms of minimum and maximum quantities of buses during the five-year contract term, are set forth in Special Provision 17, Consortium Member Vehicle Quantities. LAVTA and each Consortia Member will purchase their respective bus allotments from either or both bus categories. Prices quoted for buses and optional equipment shall remain firm for 180 days from the effective date of each agency's contract; price adjustment allowances and procedures are set forth in Section 13.T "PPI Index Escalator/De-escalator."

4. PUBLIC AGENCY PARTICIPATION/ASSIGNABILITY

In the event that LAVTA or any Consortium Member does not purchase its maximum bus allotment, due to unforeseen circumstances or lack of funding, each agency may assign the remainder of its bus allotment (up to its maximum requirements set forth herein) to another Consortium Member or other public agency. This right of assignment shall remain in force over the five-year contract term. This right of assignment will not change the quantity or types of

buses that may be ordered pursuant to this solicitation. LAVTA shall incur no financial responsibility or other liability in connection with contracts entered into between the Contractor and another public agency. The public agency shall accept sole responsibility for placing orders or making payments to the Contractor.

5. SCOPE OF WORK

The successful Proposer(s) (Contractor) will furnish LAVTA an initial order of a minimum of 12 and a maximum of 20 Heavy-Duty Low Floor Transit Buses in accordance with the delivery schedule set forth in Section 13.K "Delivery/Time for Performance", with the final quantity of each category and size of bus to be determined at the time of contract award. In the event that all of the participating Consortium Members enters into a contract with the successful Proposer(s), the successful Proposer(s) (Contractor(s)) will also furnish Consortia Members a minimum of 104 and a maximum of 195 buses within the contract term in accordance with specifications as contained in the Technical Specifications. LAVTA and each Consortia Member will purchase their respective bus allotments from either or both bus categories during the five year contract term.

6. PRE-PROPOSAL CONFERENCE:

A Pre-Proposal Conference will be held at 10:00 a.m. PT on February 3, 2016 at LAVTA Administrative Offices, 1362 Rutan Ct, Suite 100, Livermore, California. The Pre-Proposal Conference will take approximately one hour. Members of LAVTA's staff will be available to answer general questions pertaining to the RFP and the specifications herein. Any questions that may require staff research to answer or that will otherwise modify the meaning or intent of this RFP shall be submitted to LAVTA in writing as described in Section 7 hereunder. This Pre-Proposal Conference is not mandatory, but attendance is **highly encouraged**.

7. SUBMISSION OF QUESTIONS AND REQUESTS FOR CLARIFICATION

If any person submitting a Proposal is in doubt as to the true meaning of any part of this RFP, or if additional information is required, they shall submit a written request for information and clarification thereof.

Any questions or requests for clarification regarding this RFP shall be mailed to Beverly Adamo, Director of Administrative Services, at the address listed on the cover page of this RFP, faxed to 925-443-1375, or emailed to procurements@lavta.org .org no later than **February 17, 2016 at 4:00 p.m.** LAVTA's reply to questions and requests for clarification will be posted to its Website (www.wheelsbus.com) by March 4, 2016. Each prospective Proposer receiving these Solicitation Documents will be sent an electronic notification of the posting of clarifications; however, Proposers are responsible for monitoring LAVTA's Website on a regular basis. Any modification to the RFP requirements will be by written Addenda only. Oral interpretations will not be binding on LAVTA.

8. CONFORMITY TO DESIGN SPECIFICATIONS/SUBSTITUTIONS

It is understood that specifying a brand name or specific types of components and/or equipment in these specifications shall not relieve the Proposer from its responsibility to furnish the end product in accordance with the warranty and contractual requirements. The Proposer is responsible for notifying LAVTA of any inappropriate brand names, or types of components and/or equipment that may be called for in these specifications, and to propose a suitable

substitute for consideration. Unless otherwise specifically provided in the specifications, reference to any equipment, material, article or patented process by trade name, make or catalog number shall be regarded as establishing a standard of quality and shall not be construed as limiting competition. A Proposer may, at its option, use any equipment, material, article, or process which, in the judgment of LAVTA, is equal to that designated. To do so a Proposer shall furnish, at its own expense, all test results, technical data and background information required by LAVTA in making the determination as to whether the proposed equipment, material or article or process, in the judgment of LAVTA's designated Project Manager is equal to that designated.

LAVTA shall be the sole judge as to the comparative quality and suitability of alternative equipment, articles, material or process, and its decision shall be final.

9. REQUEST FOR DEVIATIONS PROCEDURES

A. Prospective Proposers may discuss these specifications with LAVTA's Director of Maintenance. This, however, will not relieve Proposers from the procedure of submitting written documentation as required by Paragraph B hereunder.

B. LAVTA has issued a Request for Proposals and will use an evaluation and negotiation process that is further described in this document. All proposers are hereby instructed to supply a detailed listing of all Deviations from these specifications that they are proposing which will be included as a part of the proposal package submission. Any request for Deviations must be fully supported with technical data, test results, or other pertinent information as evidence that the substitute offered is equal to or better than the specification requirement.

All Requests for Deviations must be in writing, separately identified, and delineated for each Technical Specification, or other item, and must be submitted on the *"Request for Approved Deviations"* form included herewith in Appendix N.

FAILURE TO SUBMIT THE REQUEST FOR APPROVED DEVIATIONS FORM WITH EACH REQUEST FOR DEVIATION MAY RESULT IN REJECTION OF THE PROPOSERS PROPOSAL.

Each deviation will be evaluated and scored based on the evaluation criteria set forth that will govern this LAVTA procurement. LAVTA reserves the right to request further clarification of any requested Deviation during negotiations and to exclude unacceptable Deviations in any request for "Best and Final Offers."

Failure to properly submit a Deviation request form in accordance with this Section, or a "denial" response from LAVTA to any requested Deviation during negotiations, will constitute a Proposer's acknowledgement and acceptance of all terms, conditions, specifications, or provisions contained in the Contract Documents. All terms, conditions, specifications, or provisions contained in this Solicitation, or as may be amended by a written Addendum issued by LAVTA, are binding on Proposers.

10. PROPOSAL CONTENT AND SUBMISSION

A. Proposal Length and Format

The intent of this RFP is to encourage responses that clearly communicate the Proposer's understanding of the Scope of Services and its approach to successfully completing the tasks as required under this RFP.

The Proposals shall be prepared on 8½ × 11 in. paper in at least 11-point font. The hard copies shall be contained in three-ring binders, the contents of which are identified on the outside. Use of 11 × 17 in. foldout sheets for large tables, charts or diagrams is permissible but should be limited. Elaborate formatting is not necessary. Proposals should provide this information in a concise, well-organized manner and should follow the format outlined below:

B. Proposal Content

Proposers are required to submit the following information. Failure to respond to each item may render the Proposal non-responsive, causing it to be rejected. Contents of Proposals shall be as follows:

1. **Cover Letter** - The cover letter shall introduce the Proposer's team and summarize the main qualifications of the firm; indicate that the Contractor is prepared to sign the sample Agreement for Services (sample attached as Appendix A), if a contract is awarded; agrees to bind the Contractor to the proposed Scope of Work and associated cost proposal for **180 days from the effective date of the Contract**; and confirm that is able to comply with the insurance and bonding requirements. Proposers shall also state whether they are submitting proposals for Category 1, Category 2 or both categories of buses.

2. **Table of Contents** - The Table of Contents shall list all items provided in the proposal submission.

3. **Proposers Contact Info** - Firm name, business address, telephone number, fax number, email address.

4. **Business Description** - Date of establishment of business and type of organization (individual, partnership, corporation, etc.). A narrative of the Proposers manufacturing facilities, parts distribution locations, and service support offices must also be included.

5. **Understanding of the Scope of Work** - In response to Section 5, Scope of Work, provide a clear and concise description of the services and equipment to be provided by your company. Describe the overall design to be used in carrying out the project and accomplishing its objectives. Each of the major tasks or activities to be undertaken as a means of reaching such objectives must be specifically identified. Explain or display the essential points of activity in a time sequence explaining or showing the amount of time allotted to each activity. Provide sample production timelines and delivery schedule for each of the buses proposed.

6. **Proposer's Qualifications** - Provide a concise statement covering the history of your company under current and any prior names (include number of years in business under each name), your major projects or activities both in general and projects similar to the subject of the Proposal, the populations you have served, the relationship of this project to your corporate purpose, and why you feel that your company is best suited to fulfill the requirements of the Proposal.

   a. A brief description listing experience that your company has had in providing similar equipment to other transit agencies. Provide a list of at least five customer references that are public transit agencies currently operating the proposed vehicles. The customer references shall include the agency's name, the contact name and title, telephone number, and email address of the person most familiar with the contract; the dollar amount of the contract; and the dates that these programs/projects were completed. Provide detailed information of the vehicles delivered to the references submitted to substantiate your previous experience.

   b. A brief description of the experience and qualifications of the proposed key staff members assigned to this project and what percentage of their time will be devoted to the project. Show the function in the project for each person. Additionally, the Proposer must specify where the staff will be located and identify the project manager.

   c. Information displaying past fiscal responsibility such as independent audits or a list of projects completed within the budget. Proposer must submit a copy of their latest audited financial statement completed by a certified public accountant within the past 18 months. Proposer must submit a list of commitments, and potential commitments which may affect assets, lines of credit, guarantor letters, or otherwise affect the Proposer's ability to perform the Contract.

   d. A statement as to any judgments, litigations, licensing violations, or other violations, outstanding or resolved, associated with your company.

7. **Technical Understanding** - Provide all data relevant to the proposed vehicle(s) offered in your proposal including:

   a. Description of the bus(es) offered including completion of the Bus Description provided in the Technical Specifications.

   b. Listing of all Deviations from LAVTA's contract documents and specifications, including the completion of LAVTA Request for Approved Deviations form provided in Appendix N and all supporting data for each deviation.

   c. Engineering drawings and layouts as needed to respond to specific items identified within LAVTA's Technical Specifications. Proposers will also submit any other supporting documentation that it deems appropriate which will aid LAVTA in evaluating the technical merit of the Proposer's proposal in each factor.

d. Copies of the Altoona Bus Test report for the vehicle offered, including all issues reported by the testing agency and any corrective actions taken by the manufacturer as a result of the test, and any subsequent testing completed to confirm the adequacy of any modifications.

e. Proposer shall submit representative samples of all Maintenance, Parts, and related Service Manuals that cover the buses offered in the proposal. Examples of Service and Part update bulletins, electrical diagrams, and Bus Operator's manuals will also be submitted.

f. Proposers shall submit information regarding the structure, locations, and policies of the Parts Service organization that will support the bus offered, including listing the nearest Parts Service facility to LAVTA.

g. Proposers shall submit in their technical proposal, details of their clean diesel, optional hybrid diesel/electric drive system, optional CNG and optional all-electric zero-emission propulsion system, as offered.

h. Proposer shall also provide evidence of its ability to meet the delivery requirements, as well as a list of all deliveries executed within the past three (3) years showing the number of units involved, if the buses were delivered per the contract terms, and a listing of any late deliveries.

8. **Cost Proposal** – For Category 1, the Proposer's proposed cost for this Contract will be evaluated based on the total of the average of the unit prices for each 30, 35, and 40 foot Heavy-Duty Low Floor Diesel Buses, and the option cost for supplying a Hybrid Diesel/Electric drive system, and a Compressed Natural Gas system as entered as "An Additional Cost per Bus" on Appendix B Cost Proposal. Participating agencies will notify the Contractor of any desired options when placing bus orders. The sum for Buses, and manuals and training package, will be determined by adding the entries and entering the sum on Line E "Total Base Offer per Bus." Prices quoted for these options shall remain firm for 180 days; price adjustment allowances and procedures are set forth in Section 13.T "PPI Index Escalator/De-escalator.". In order to assist the agency with analysis, the successful Proposer agrees to provide required documentation in support of its quoted prices.

For Category 2, the Proposer's proposed cost for this Contract will be evaluated based on the total of the average of the unit prices for each 35 and 40 foot Heavy-Duty Low Floor Buses with an, all-electric, zero-emission propulsion system.

For both Category 1 and Category 2, the Proposer shall break down the cost of each bus configuration as follows:

A. Base Offer per Bus
B. California State Sales Tax of 9.5%
C. Non-Taxable ADA Equipment
D. Delivery Cost per Bus to Livermore, CA 94551

The Total Base Offer per Bus shall include all costs required to perform the Scope of Work, including overhead, profit, services, insurance, California State Sales Tax, required manuals, tests, certifications, and any and all other applicable costs of the Cost Proposal.

The costs for spare components will not be used in the evaluation of the Cost Proposal, and LAVTA reserves the right to negotiate a final spare parts package, including final quantities and costs at the time of contract award.

9. **Cost Proposal – Available Optional Equipment** - The Proposer will submit on a separate form, a listing of all available optional equipment with unit prices for the buses offered in the proposal. Participating agencies will notify the Contractor of any desired options when placing bus orders. Prices quoted for optional equipment shall remain firm for 180 days from the effective date of the Contract; price adjustment allowances and procedures are set forth in Section 13.T "PPI Index Escalator/De-escalator." Such optional equipment costs will not be used in the Cost Proposal Evaluation described in Section 11.C. A Cost/Price analysis will be performed as appropriate, by the awarding agency. In order to assist the agency with such analysis, the successful Proposer agrees to provide required documentation in support of its quoted prices. The final contract award and pricing for the buses may be negotiated by each separate agency and/or Consortium Members to include available optional equipment as it deems necessary.

10. **All required Appendices**. Proposer shall execute and include all required Appendices: B, D, E, F, G, H, I, J, K, L, M, N, O, Q and R.

C. Proposal Submission

Proposer shall submit a total of **ONE original and FIVE hard copies plus ONE electronic PDF copy on a CD or USB Drive,** of their Proposal in a sealed package identifying the RFP number (2015-08) to:

Livermore Amador Valley Transit Authority
Attn: Beverly Adamo, Director of Administrative Services
1362 Rutan Ct, Suite 100
Livermore, CA 94551

Proposals must be received in the Administrative Offices front desk **before 2:00 p.m. on May 27, 2016.** Proposals received after this time or at any other location will not be accepted. Proposals will be prepared and presented at no cost to LAVTA.

This RFP does not commit LAVTA or any Consortium Member to award a Contract, to pay any costs incurred in the preparation of Proposals drafted in response to this request, or to procure or contract for any services in connection with this request. LAVTA reserves the right to accept or reject any or all Proposals received in response to this request, to negotiate with any qualified individual or firm, or to modify or cancel in part or in its entirety this RFP if it is in the best interest of LAVTA to do so.

11. EVALUATION OF PROPOSALS AND SELECTION PROCESS

A. Evaluation/Selection Committee

An Evaluation/Selection Committee (Committee), which may include LAVTA staff, Consortium Members, and possibly one or more outside experts, will review and screen the Proposals submitted for each category of buses submitted according to the pre-established criteria as set forth below. A separate evaluation process will be performed for Category 1 and Category 2 buses, with the highest ranked proposer selected in each category. The evaluation and selection process may lead to the recommendation to award one or more contracts.

B. Technical Evaluation Criteria

Proposals will be evaluated using the following principal selection criteria:

1. **Product Design and Performance** **0 - 40 points**

The information provided by the Proposer in its technical submittal relating to the buses to be provided will be utilized to evaluate the proposal in relation to this factor. Failure to complete the required submissions or list all requested deviations on the proper form with adequate supporting data will impact the final point determination of this section. The number and significance of the requested deviations from LAVTA's specifications, which are intended to describe a bus design that provides for fleet commonality and standardization of parts, training and related support costs will impact the final point determination of this section. Vehicle construction and system design, as well as documented reliability may be used in this evaluation, as well as other design and performance elements of the components which comprise those systems. At a minimum, test results, safety and maintenance factors, and cost of normal operation for the bus design and system components proposed may be considered in determining a final value for this factor.

2. **Proposer's Experience and Qualifications** **0 - 40 points**

The Committee will consider the capability and experience of the Proposer as presented in the Proposal or as is determined by review of information available from references or other resources. The evaluation may look at the Proposer's overall organizational and financial capabilities and consider key components such as organizational reporting structure, quality control, quality assurance, research and development, technical, training and parts support, response time, product capabilities, ability to furnish multiple bus configurations, bonding capacity, and financial history, as well as other considerations in reaching a final point determination. The Committee may also look at judgments, liens, fleet defect history, warranty claims, and the steps that the manufacturer took to resolve these concerns in assessing the overall reputation of the manufacturer. The Committee will also review the proposed delivery schedule and its ability to fulfill the delivery requirements in Section 13.K "Delivery/Time for Performance", including past delivery performance, and may award higher points to Proposers that provide evidence that the delivery requirements can be accomplished for the

minimum quantity of 7 and maximum quantity of 71 buses to be awarded by LAVTA.

Maximum Possible Technical Points = 80 points

C. Cost Proposal Evaluation

As described below, the proposed cost as submitted by the Proposer on LAVTA's form provided herewith as Appendix B will be assigned a maximum of 20 points. The Contractor is ***required*** to use Appendix B, without alteration, for submittal of their Cost Proposal. **Please DO NOT use your own forms.**

The cost will be evaluated in the following manner:

1. **Cost Proposal Criteria** **0 - 20 points**

   a. The Cost Proposal criteria will be based on the average of the "Total Base Offer per Bus" for each bus type, as noted in Section 10.B.8 "Cost Proposal."

   b. The lowest average Cost Proposal will receive 20 points. Every other Proposal will be given points proportionately in relation to the lowest price. This point total will be calculated by dividing the lowest price by the total price of the Proposal being evaluated and the result multiplied by the maximum weight for price (20 points) to arrive at a Cost Proposal score.

Example: $\frac{\text{Lowest Proposed Price}}{\text{Proposer's Proposed Price}} \times \text{Total Points for Price} = \text{Cost Proposal Score}$

The application of the above formula will result in a uniform assignment of points relative to the criterion of price.

D. Evaluation Methodology

The maximum number of points achievable in each of the aforementioned areas is as follows:

		Point Range
1.	Product Design and Performance	0 - 40 points
2.	Proposer's Experience and Qualifications	0 - 40 points
3.	Cost Proposal	0 - 20 points
	TOTAL POSSIBLE POINTS	**100**

E. Interviews

Following the initial review and screening of Proposals, one or more Proposers in each category found to be within the competitive range may be invited to participate in the final selection process. The final selection process may include the submission of additional information and/or participation in an oral interview. Interviews, if held, are

tentatively scheduled **June 15, 2016,** and will be at LAVTA's Administrative Offices, 1362 Rutan Court, Suite 100, Livermore, California.

F. Factory and Site Visits

LAVTA reserves the right to conduct factory visits of the Proposer's facilities and/or the facilities of major sub-suppliers included in the Proposal.

G. Revised Proposals, Discussions, Negotiations, Best and Final Offers

LAVTA reserves the right to accept or reject any or all Proposals received as a result of this RFP, to hold interviews with a subset of proposers, negotiate with any individual or qualified firm, to modify or cancel in part or in its entirety the RFP, to request revised Proposals, to request further information, or to request Best and Final Offers if it is in the best interest of LAVTA to do so.

Proposers in the Competitive Range may be afforded the opportunity to amend their Proposals and make their BAFOs. The Request for BAFOs shall include the following:

a. Notice that discussions and negotiations are concluded.

b. A complete listing of the conditions, exceptions, reservations or understandings that have been approved.

c. A common date and time for submission of written BAFOs, allowing a reasonable opportunity for preparation of the written BAFOs.

d. Notice that if any modification to a BAFO is submitted, it must be received by the date and time specified for the receipt of BAFOs.

e. Notice to Proposers that do not submit a notice of withdrawal or a BAFO that their immediately previous Proposal will be construed as their BAFO.

f. Any modification to the initial Proposal made by a Proposer in its BAFO shall be identified in its BAFO. BAFOs will be evaluated by LAVTA according to the same requirements and criteria as the initial Proposals ("Proposal Selection Process"). LAVTA will make appropriate adjustments to the initial scores for any sub-criteria and criteria that have been affected by any Proposal modifications made by the BAFOs. These final scores and rankings within each criterion will again be arrayed by LAVTA and considered according to the relative degrees of importance of the criteria defined in "Proposal Selection Process."

LAVTA however, may award a contract without negotiations, so Proposers are encouraged to submit their best Proposal.

H. Contract Award

The Committee will make a recommendation of award of a contract(s) to LAVTA's appropriate authorized representative. All Proposers will be notified of the recommended award(s) by mail. No contract will be in force until issuance of a written Notice to Proceed issued by the Director of Maintenance, or designee. LAVTA and the individual

Consortium Members will award one or more contract for Category 1 and Category 2 buses.

This RFP does not commit LAVTA or any Consortium Member to award a contract. LAVTA reserves the right to waive informalities and irregularities in the Proposals received, or to reject all bids submitted.

12. PROTEST PROCEDURES

LAVTA maintains written procedures that must be followed for all Proposal protests. Copies of the complete Proposal protest procedures are available at the office of the Director of Maintenance. **Failure to comply with any of the requirements set forth in LAVTA's written Proposal protest procedures may result in rejection of the protest**.

Protests based upon restrictive specifications or alleged improprieties in the contract specifications, which are apparent or reasonably should have been discovered prior to proposal acceptance, shall be filed in writing to the Director of Maintenance not later than five (5) calendar days before proposal acceptance. The protest must clearly specify in writing the grounds and evidence on which the protest is based. If the protestor later raises new grounds or new evidence not previously set forth in written submissions that reasonably could have been raised; LAVTA will not consider such new grounds or evidence in the determination on the protest. Where the determination could affect proposals, an appropriate extension of the proposal acceptance date may be granted.

Protests based upon alleged improprieties that are not apparent or which could not reasonably have been discovered prior to proposal acceptance, such as disputes over the staff recommendation for contract award, shall be submitted in writing to the Director of Administrative Services within forty-eight (48) hours from receipt of the notice from LAVTA advising of the staff's recommendation for award of contract.

The protest must clearly specify in writing the grounds and evidence on which the protest is based. If the protestor later raises new grounds or new evidence not previously set forth in written submissions that reasonably could have been raised, LAVTA will not consider such new grounds or evidence in the determination on the protest. Staff shall analyze the protest and develop a recommendation.

For all contracts, a protestor may appear before the Executive Director or reviewing Board Committee (or Board) to present evidence in support of its protest. After full consideration of the protestor's evidence and any other relevant information, the Executive Director or Committee (or full Board) may make a determination to reject or allow the protest.

Proposer shall have five (5) days from a determination to reject the protest to appeal the decision to FTA, in accordance with the procedures set forth in FTA Circular 4220.1F, as may be periodically updated. FTA's review will be limited to protests alleging that LAVTA failed to have written protest procedures or that LAVTA violated its procedures. FTA review is limited to the alleged failure of LAVTA to have written protest procedures, the alleged failure of LAVTA to follow those procedures, the alleged failure of LAVTA to review a protest or the alleged violation of federal law or regulation. If the proposer does not appeal to FTA within five (5) days of LAVTA's decision, the decision of LAVTA shall become final.

13. OTHER REQUIREMENTS

A. Agreement

The Contractor(s) selected to perform the work outlined in this RFP will be required to execute an Agreement with LAVTA, which describes the Scope of Work to be performed, the schedule for completion of work, compensation, insurance requirements, and other pertinent provisions. This contract shall follow the form of the Sample Agreement attached as Appendix A. Contractors are directed to review in particular the indemnification and insurance requirements set forth in the Agreement.

Submittal of a Proposal shall be deemed acceptance of all the terms set forth in the sample Agreement unless the Proposer includes with their Proposal, in writing, any amendments or exceptions requested by the Proposer to the Agreement.

B. Performance Security

The Contractor shall furnish at its own expense a Performance Bond completed on LAVTA's form, a sample of which is included herewith as Appendix C. The bond shall be in the sum equal to 20% of the total amount for LAVTA's initial order of buses as a guarantee of good faith on behalf of the Contractor that the terms of this contract shall be complied with in every particular. Said bond shall remain in full force and effect until delivery and acceptance of all buses and all project deliverables in the initial order (maintenance manuals, parts manuals, documentation).

LAVTA may require the Contractor to deliver an additional Performance Bond to LAVTA upon order of any additional buses purchased pursuant to Section 3 by LAVTA not later than 30 days after receipt of written notification of an order for each bus(es), as required by LAVTA throughout the term of any Contract resulting from this solicitation.

C. Disadvantaged Business Enterprises (DBE)

LAVTA is a recipient of Federal financial assistance from the Federal Transit Administration (FTA) and the Federal Highway Administration (FHWA), and is committed to and has adopted a Disadvantaged Business Enterprise (DBE) Program for contracts in accordance with Federal regulations 49 CFR Part 26, issued by the U.S. Department of Transportation (DOT).

It is the policy of LAVTA to ensure non-discrimination in the award and administration of all contracts and to create a level playing field on which DBE can compete fairly for contracts and subcontracts relating to LAVTA's construction, procurement and professional services activities. To this end, LAVTA has developed procedures to remove barriers to DBE participation in the bidding and award process and to assist DBEs to develop and compete successfully outside of the DBE Program. In connection with the performance of this contract, the Contractor will cooperate with LAVTA in meeting these commitments and objectives.

Pursuant to 49 CFR Part 26.13, and as a material term of any agreement with LAVTA, the Contractor hereby makes the following assurance and agrees to include this assurance in any agreements it makes with subcontractors in the performance of this contract:

> "The Contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of U.S. DOT-assisted contracts. Failure by the Contractor or subcontractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as LAVTA deems appropriate."

Although no specific DBE goal has been established for this Contract, Proposers shall cooperate with LAVTA in meeting its commitments and objectives with regards to ensuring non-discrimination in the award and administration of LAVTA contracts and shall use its best efforts to ensure that barriers to participation of DBE do not exist. To better help LAVTA record and encourage DBE participation, **all Proposers must complete, sign, and submit with their Proposal the DBE forms included herewith as Appendix E.**

By submitting a Proposal, a Proposer is deemed to have made the foregoing assurance and to be bound by its terms.

D. DBE Requirements for Transit Vehicle Manufacturers

Pursuant to Title 49 C.F.R., part 26.49, a Proposer, as a condition of being authorized to respond to this solicitation, must certify by completing the Transit Vehicle Manufacturer's (TVM) Certification (Appendix O) that it has on file with the FTA an approved or not disapproved DBE subcontracting participation goal.

E. Confidentiality

The California Public Records Act (Cal. Govt. Code Sections 6250 et seq.) mandates public access to government records. Therefore, unless the information is exempt from disclosure by law, the content of any request for explanation, exception, or substitution, response to these specifications, protest, or any other written communication between LAVTA and Proposer shall be available to the public.

If Proposer believes any communication contains trade secrets or other proprietary information that the Proposer believes would cause substantial injury to the Proposer's competitive position if disclosed, the Proposer shall request that LAVTA withhold from disclosure the proprietary information by marking each page containing such proprietary information as confidential. **Proposer may not designate its entire Proposal or Bid as confidential. Additionally, Proposer may not designate its *Cost* Proposal or Bid *forms* as confidential.**

If Proposer requests that LAVTA withhold from disclosure information identified as confidential, and LAVTA complies with the Proposer's request, Proposer shall assume all responsibility for any challenges resulting from the non-disclosure, indemnify and hold harmless LAVTA from and against all damages (including but not limited to attorneys' fees that may be awarded to the party requesting the Proposer information), and pay any and all cost and expenses related to the withholding of Proposer information. Proposer shall not make a claim, sue or maintain any legal action against LAVTA or its

directors, officers, employees or agents in connection with the withholding from disclosure of Proposer information.

If Proposer does not request that LAVTA withhold from disclosure information identified as confidential, LAVTA shall have no obligation to withhold the information from disclosure and may release the information sought without any liability to LAVTA.

F. Pre-Manufacturing Meeting

After award of a contract, the Contractor's and LAVTA's representatives shall schedule a meeting at the bus manufacturing plant prior to the start of manufacture of LAVTA buses to review the Contract provisions and the Technical Specifications. This meeting shall provide clarification of the terms, conditions, and requirements of this Contract. At this meeting, the Contractor will be required to submit a project time-line which reflects the actual schedule regarding design, manufacturing, testing, and delivery of the buses. Reference Appendix R.

G. Material and Workmanship

All materials, parts, and equipment furnished by the Contractor shall be new, high grade, and free from defects. Workmanship shall be in accordance with generally accepted industry standards. The Contractor shall establish and maintain quality assurance policies and procedures to ensure compliance with these specifications, and as further described in Section 13.H hereunder. The Contractor shall extend to LAVTA full access to its surveillance and monitor the Contractor's compliance with its established quality assurance procedures and LAVTA's Technical and other specifications.

Materials, parts and workmanship not conforming to the requirements of these specifications shall be considered defective and will be subject to rejection. If the Contractor fails to replace any defective or damaged work or material after reasonable notice, LAVTA may cause such work or materials to be replaced. The replacement expense shall be deducted from the amount to be paid to the Contractor.

H. Quality Assurance

The Contractor shall establish and maintain an effective in-plant quality assurance team. It shall be a specifically defined unit and should report directly to the Contractor's top management. Reference Appendix R.

1. The quality assurance team shall exercise quality control over all phases of production, from initiation of design through manufacture and preparation for delivery. The team shall also control the quality of supplied articles.

2. The quality assurance team shall have the authority and responsibility for reliability, quality control, inspection planning, establishment of the quality control system, and acceptance/rejection of materials and manufactured articles in the production of the buses.

3. The quality assurance team shall verify inspection operation instructions to ascertain that the manufactured product meets all prescribed requirements and specifications.

4. The quality assurance team shall maintain and use records and data essential to the effective operation of its program. These records and data shall be available for review by LAVTA's Resident Inspectors (Section 13.I, hereunder). Inspection and test records for this procurement shall be available for a minimum of three years after inspections and tests are completed.

5. The quality assurance team shall detect and promptly assure correction of any conditions that may result in the production of defective buses. These conditions may occur in design, purchases, manufacture, tests, or operations that culminate in defective supplies, services, facilities, technical data, or standards.

6. The Contractor shall maintain drawings and other documentation that completely describe a qualified bus that meets all of the options and special requirements of this RFP. The quality assurance team shall verify that each bus is manufactured in accordance with these controlled drawings and documentation.

7. The Contractor shall provide and maintain the necessary gauges and other measuring and testing devices for use by the quality assurance team to verify that the buses conform to all specification requirements. These devices shall be calibrated at established periods against certified measurement standards that have known valid relationships to national standards.

8. When production jigs, fixtures, tooling masters, templates, patterns, and other devices are used as media of inspection, they shall be proved for accuracy at formally established intervals and adjusted, replaced, or repaired as required to maintain quality.

9. The Contractor's gauges and other measuring and testing devices shall be made available for use by LAVTA's Resident Inspectors (Section 13.I, hereunder) to verify that the buses conform to all specification requirements. If necessary, the contractor's personnel shall be made available to operate the devices and to verify their condition and accuracy.

10. The Contractor shall ensure that all basic production operations, as well as all other processing and fabricating, are performed under controlled conditions. Establishment of these controlled conditions shall be based on the documented work instructions, adequate production equipment, and special working environments, if necessary.

11. A system for final inspection and testing of completed buses shall be provided by the quality assurance team. It shall measure the overall quality of each completed bus.

12. The quality assurance team shall monitor the Contractor's system for controlling nonconforming materials. The system shall include procedures for identification, segregation and disposition of such materials.

13. Statistical analyses, tests, and other quality control procedures may be used when appropriate in the quality assurance process.

14. A system shall be maintained by the quality assurance team for identifying the inspection status of components and completed buses. Identification may include cards, tags or other normal quality control devices.

I. LAVTA's Resident Inspectors

LAVTA maintains the right to be represented at the Contractor's plant by Resident Inspectors and/or LAVTA personnel at LAVTA's sole expense. These LAVTA representatives shall conduct, among other things, audits required under the Buy America element of this Contract, as defined in Section 14.K, and they shall inspect the daily progress of vehicles under fabrication at the Contractor's manufacturing facilities to ascertain that fabrication and materials comply with these contract specifications. Resident Inspectors shall monitor, in the Contractor's plant, the manufacture of buses built under this Contract. The Resident Inspectors shall be authorized to approve the pre-delivery acceptance tests and to release the buses for delivery. Upon request to the Contractor's Quality Assurance Manager, the Resident Inspectors shall have access to the Contractor's quality assurance files related to this RFP. These files shall include drawings, material standards, parts lists, inspection processing and reports, and records of defects.

Not less than 30 days prior to the beginning of bus manufacture, the Resident Inspectors shall meet with the Contractor's Quality Assurance Manager. They shall review the inspection procedures and checklists. The Resident Inspectors may begin monitoring bus construction activities three days prior to the start of bus fabrication. Reference Appendix R.

J. Inspection System

The quality assurance team shall establish, maintain, and periodically audit a fully-documented inspection system. The system shall prescribe inspection and test of materials, work in progress, and completed articles. Reference Appendix R. At a minimum, it shall include the following controls:

1. Inspection stations shall be at the best locations to provide for the work content and characteristics to be inspected. Inspection stations shall provide the facilities and equipment to inspect structural, electrical, hydraulic, and other components and assemblies for compliance with the design requirements. Inspection stations shall also be at the best locations to inspect or test characteristics before they are concealed by subsequent fabrication or assembly operations. These locations shall minimally include underbody structure completion, body framing completion, body prior to preparation, engine installation completion, underbody dress-up and completion, bus prior to final paint touch-up, complete bus water test prior to road test, and bus final road test completion.

2. The Contractor shall have sufficiently trained inspectors to ensure that all materials, components, and assemblies are inspected for conformance with the qualified bus design.

3. Acceptance, rework, or rejection identification (tags, forms, or other types of identifications approved by LAVTA) shall be attached to inspected articles.

Articles that have been accepted as a result of approved materials review actions shall be identified. Articles that have been reworked to specified drawing configurations shall not require special identification. Articles rejected as unsuitable or scrap shall be plainly marked and controlled to prevent installation on the bus.

Articles that become obsolete as a result of engineering changes or other actions shall be controlled to prevent unauthorized assembly or installation. Unusable articles shall be isolated and then scrapped.

4. Discrepancies noted by the Contractor or Resident Inspector during assembly shall be entered by the inspection personnel on a record that accompanies the major component, subassembly, or bus from start of assembly through final inspection. Actions shall be taken to correct discrepancies or deficiencies in the manufacturing process, procedures or other conditions that cause articles to be in nonconformity with the requirements of the Contract specifications. The inspection personnel shall verify the corrective actions and mark the discrepancy record. If discrepancies cannot be corrected by replacing the nonconforming materials, LAVTA shall approve the modification, repair, or method of correction to the extent that the Contract specifications are affected.

5. The quality assurance team shall establish and maintain a quality control audit program. Records of this program shall be subject to review by LAVTA upon its request.

K. Delivery/Time for Performance

For each category of buses, the delivery of the initial order of LAVTA's buses shall occur as follows.

1. Production Buses

Delivery of coaches shall be no later than 365 calendar days after the close of the calendar quarter (i.e., March 31, June 30, September 30, December 31) in which the Procuring Agency's purchase order is delivered to the Contractor. Delivery shall be made on Monday through Friday; Federal and State holidays excluded, between the hours of 8:00AM and 4:00PM local time.

All deliveries to LAVTA shall be to F.O.B. to the following location:

Livermore Amador Valley Transit Authority
1362 Rutan Ct, Suite 100
Livermore, CA 94551

The Contractor shall prepay all costs of delivery of each bus, shall deliver all material at its own cost and expense to this designated location, and shall bear all risk of damage to or loss of the bus while in transit. LAVTA shall reimburse Contractor for delivery costs of the buses in accordance with the proposed price set forth in Appendix B, Section 2.D. Delivery charges and delivery locations to other procuring agencies shall be determined at time of contract award with each individual agency.

The Contractor shall prepare all buses for shipment in such a manner as to protect them from damage in transit, and shall be responsible for and repair all damaged parts or replace all losses incurred in the course of delivery of the equipment to LAVTA's Maintenance Facility as specified in Section 13.K.5. When necessary, heavy parts shall be mounted on skids or crated, and all parts or materials that might otherwise be lost shall be boxed or wired in bundles. All parts shall be plainly marked for identification and destination. Reference Appendix R.

2. **Delivery Schedule for Consortium Orders**

For each category of buses, the final delivery schedule for all buses ordered by Consortium Members during the term of this contract will be mutually negotiated directly between the ordering agency and the Contractor at the time of the ordering agency's award of Contract.

3. **Service**

Prior to delivery, each vehicle shall be completely serviced by the Contractor or by an authorized dealer of the Contractor in a service shop within the state of California. Service shall include not less than the following: lubrication, wash, body condition and other checks and adjustments required for proper complete servicing of a new vehicle. Each vehicle shall be ready for placement in service upon delivery and acceptance. Reference Appendix R.

4. **Damage by Contractor**

All risk of damage or loss to the buses up to the time of delivery to LAVTA at the specified location shall be the responsibility of the Contractor. Any materials or equipment found to be damaged or defective at the time of delivery shall be repaired, replaced, or corrected at no additional cost to LAVTA. LAVTA may deduct any costs it incurs for such repairs, replacement, or correction from any payments due if Contractor fails to comply with the requirements of this section.

5. **Summary of items to be provided upon delivery**

The following items must be furnished by the Contractor upon delivery of each vehicle:

a. all warranty verification vouchers, certificates, or coupons.

b. operator's manual for vehicle and all add-on equipment.

c. drawings showing wiring of auxiliary circuits and/or modifications of standard vehicle wiring which would not be included in the standard vehicle maintenance manual.

d. completely filled fuel tank(s) using ultra-low sulfur diesel fuel.

e. vehicles(s) free of dealer signs and manufacturer emblems.

f. assurance of compliance with manufacturer's pre-delivery service.

g. All required documents for securing vehicle title completely executed by the manufacturer/dealer and ready for submission to the Department of Motor Vehicles (i.e., CA Certified Weight Certificate, Vehicle Certificate of Origin). The manufacturer warrants that the title will pass to LAVTA free of any liens, mortgages and encumbrances, financing statements, claims, and demands of any character.

L. Inspection/Acceptance/Payment

LAVTA will acknowledge the receipt of the bus or spare component in writing and will undertake a 15 calendar day period for inspection and testing of the bus. LAVTA will notify the Contractor in writing within 5 calendar days following the inspection and testing period as to whether the buses or spare components have been accepted. Reference Appendix R.

If LAVTA determines that the buses or spare components are not in conformity with the specification requirements, or that there are defects or deficiencies in the equipment, LAVTA shall notify the Contractor of such deficiencies or nonconformity in writing, within the aforementioned 5-day period. The Contractor shall commence to rectify any nonconformity and correct any defects or deficiencies in the bus within 48 hours of receipt of LAVTA's written notification. All defect or deficiency corrections must be completed within five business days from the time of correction commencement. LAVTA shall not accept the bus until all corrections which are addressed in LAVTA's written notice have been made by the Contractor. At such time as the Contractor has made all necessary corrections to the satisfaction of LAVTA, LAVTA shall issue the Contractor a written notice of final acceptance. LAVTA intends to pay the Contractor within thirty (30) calendar days of the final acceptance of each of the coaches or spare components delivered to LAVTA.

At LAVTA's sole option it may elect to conditionally accept buses with outstanding repairs if such repairs are minor in nature and allow LAVTA to continue to complete final preparation of the buses for placement into revenue service. If such conditional acceptance is given, LAVTA will pay the invoice for each coach, less a retention of 5% of the invoice cost for each bus that is conditionally accepted. The retention will be held until all outstanding acceptance issues have been resolved to the satisfaction of LAVTA and LAVTA issues a final acceptance notice for each bus.

M. Liquidated Damages

TIME IS OF THE ESSENCE IN THIS CONTRACT. Pursuant to Government Code Section 53069.85, the Contractor shall pay to LAVTA the sum of $125.00 per day for each and every calendar day that the Contractor fails to provide the required services described in these solicitation documents, within the time periods specified in Sections 13.K.1 and 2 subject to extensions granted thereto in writing by LAVTA. LAVTA may deduct, at its option, the amount of liquidated damages from any money due or to become due to the Contractor under this Contract.

The Contractor will be granted an extension of time and will not be assessed with liquidated damages for any delay beyond the time periods described in these specifications for delays caused by acts of God or of the public enemy, fire, floods, epidemics, quarantine, restrictions, strikes, labor disputes, shortage of materials and freight embargoes, or other causes deemed by LAVTA to be beyond the reasonable control of the Contractor, provided Contractor notifies the Director of Maintenance in writing of the causes of delay within five calendar days from the beginning of any such delay. The Director of Maintenance shall ascertain the nature of the delay and determine whether an extension of time is warranted, which determination shall be final and conclusive. The Contractor has the burden of proof that the delay was beyond its control.

N. Warranty

The Contractor shall warrant to LAVTA, its successors and assigns, that the title to the material, supplies or equipment covered by the Contract, when delivered to LAVTA or to its successor or assigns, is free from all liens and encumbrances. The Contractor guarantees and warrants that all work performed and items supplied under this Contract shall (1) conform to the Technical Specifications and all other requirements of this RFP; (2) fulfill its design functions and be fit for both its ordinary and intended purposes; (3) be free of all patent and latent defects in design, materials and workmanship; and (4) perform satisfactorily.

It is understood and agreed that by acceptance of this warranty and the acceptance of materials or supplies to be manufactured or assembled pursuant to these Specifications, LAVTA does not waive any warranty, either expressed or implied in Sections 2312 to 2317, inclusive, of the Business and Professions Code of the State of California, or any products liability of the Contractor as determined by any applicable decisions of a court of the State of California or of the United States.

1. Complete Bus

A basic bus warranty shall commence on the date the bus is placed into service by LAVTA and shall continue in effect thereafter for a period of one year or 50,000 miles whichever occurs first.

2. Propulsion Systems and Major Sub Systems

Specific subsystems and components of the coaches furnished under this Contract are warranted and guaranteed to be free from defects in design, material and workmanship for the period of time and/or mileage as shown below after each vehicle is placed into revenue operation.

			WHICHEVER OCCURS FIRST	
	ITEM	YEARS	OR	MILEAGE
1	Engine*	5		300,000
2	HyBrid Propulsion System**	5		300,000
3	All-Electric Zero-Emission Propulsion System***	5		300,000
4	Engine Accessories****	2		100,000
5	Transmission	3		200,000
6	Drive Axle	2		100,000
7	Brake System (excluding friction material)	2		50,000
8	Air Conditioning	2		N/A
9	Wheelchair Lift System	2		N/A
10	Electronic Destination Sign	2		N/A
11	Electronic Destination Sign Fade	5		N/A
12	Electric or Air Starter	3		N/A
13	Leaks (water leaks from bus washer or rain)	6		200,000

* Engine warranty shall cover all items provided in the engine manufacturer's standard warranty under the 5 year/300,000 period, with appropriate limitations and prorating for subcomponents such as turbocharger, injectors, etc. Proposers shall provide engine warranty details with their technical proposal.

** If Hybrid Propulsion System option is awarded by any Consortium Members.

*** If Category 2 - All-Electric Zero-Emission Propulsion System buses - are ordered by any Consortium Members

**** Engine accessories include radiator, power steering pump, booster pump, air compressor and alternators.

LAVTA reserves the right to request any and all Proposers to provide manufacturer's standard warranty information. To the extent that a manufacturer's standard warranty on the above items provides longer time periods or mileage limits stated above, the warranty that provides the longer time period or mileage limit shall apply to that particular item.

3. **Body and Chassis Structure**

The structural integrity of any coach furnished under this Contract shall be warranted for a full one hundred percent (100%) on both parts and labor to be free from material, design and workmanship for a period of up to twelve (12) years or up to five hundred thousand (500,000) miles, whichever occurs first, after the vehicle is placed into revenue operation with no proration. A defect in the structural integrity of the basic body is defined as defects in the chassis, body and/or frame, suspension and axles, which results in any premature fatigue.

4. **Progressive Damage**

The Contractor shall be responsible for any and all consequential or progressive damages caused by defective parts or components. The Contractor shall assume all costs and expenses associated with repair or replacement; including component replacement, removal, re-installation, and any and all costs of shipment, including all towing expenses.

5. **Coaches Removed From Service Due To Warranty Failure**

Coaches which have been removed from service due to a warranty failure for periods exceeding seven (7) days shall have the warranty time extended for the time the coach was not in service.

6. **Voiding of Warranty**

The warranty shall not apply to any part or component of the coach that has been subject to misuse, negligence, accident, or that has been repaired or altered in any way so as to affect adversely its performance or reliability, except insofar as such repairs were in accordance with the Contractor's maintenance manuals and the workmanship was in accordance with the recognized standards of the industry. The warranty shall also be void if LAVTA fails to conduct normal inspections and scheduled preventive maintenance procedures. Contractor shall provide a recommendation as to specific inspection and preventive maintenance procedures which could be incorporated into LAVTA's Preventive Maintenance Program thirty (30) calendar days after award for preliminary review and shall provide a final form no later than thirty (30) calendar days prior to delivery of the second bus.

7. **Exceptions to Warranty**

The warranty shall not apply to scheduled maintenance items, items furnished by LAVTA such as radios, fareboxes and other auxiliary equipment, except insofar as such equipment may be damaged by the failure of a part of a component for which the Contractor is responsible.

8. **Detection and Correction of Defects**

Where LAVTA detects a minor defect within the warranty period, LAVTA may elect to repair such defect and submit a form for reimbursement in accordance with paragraph 15 hereunder.

If LAVTA detects a major defect within the warranty periods, LAVTA at its sole option, may elect to repair such defect and submit a form for reimbursement in accordance with paragraph 15 hereunder, or may elect to notify the Contractor. Within three (3) working days after receipt of notification, the Contractor's representative shall agree with LAVTA's determination as to the most appropriate scope and course for the repairs to be performed under the warranty, or reserve judgment until the subsystem or component is inspected by the Contractor's representative or is removed and examined at LAVTA's property. Where the Contractor requests the component be inspected, Contractor's representative shall inspect such component within forty-eight (48) hours. At that time, Contractor may suggest the appropriate course of action for the prompt repair of the subsystem or component shall be mutually resolved between LAVTA and the Contractor. Where Contractor performs repair work necessary to effect the repair all work shall commence within seven (7) working days after the Contractor receives notification. If LAVTA does not agree with the Contractor's suggestion as to the scope and/or course of the repairs, LAVTA reserves the right to

commence with the repairs and submit for reimbursement in accordance with paragraph 15 hereunder.

9. **Fleet Defects**

A fleet defect is defined as the failure of or a deficiency in identical systems or components of the coach caused by defective design, material or workmanship in twenty percent (20%) of the base quantity of coaches delivered under this Contract. In the event of a fleet defect during the warranty period, the Contractor will furnish promptly all necessary labor and material to effect such repairs and modifications for every vehicle delivered under the Contract pursuant to the terms and conditions of this warranty and at Contractor's sole cost and expense.

After correcting the defect, the Contractor shall promptly undertake and complete a work program reasonably designed to prevent the occurrence of the same defect in all other coaches purchased under this Contract. The work program shall include inspections and/or correction of the potential or defective parts in all of the coaches.

Fleet defect repairs and modifications shall also be applied to units that are no longer covered under warranty, but only if they are still within three years or 36,000 miles from the in-service date.

The warranty period on items determined to be fleet defects shall be extended in accordance with Section 13.N.5 "Coaches Removed From Service Due To Warranty Failure."

10. **Modifications**

Modifications or changes made to strengthen or correct a defect or deficiency on a coach shall be made to all coaches purchased under this Contract at Contractor's sole cost and expense.

11. **Single Representative**

The Contractor shall designate a single representative through which warranties shall be handled. The representatives shall meet as needed with LAVTA's representative or project manager for review of repairs and claims. The representative shall handle all facets of warranty processing and warranty material handling. Failure of the Contractor to meet with LAVTA will not relieve their obligation to comply with all warranty requirements set forth in the contract, or to reimburse LAVTA for repairs made during the warranty period.

12. **Repair Performance**

LAVTA may require the Contractor or its designated representative to perform warranty-covered repairs. The work may be done by LAVTA's personnel with reimbursement by the Contractor in accordance with paragraph 15 hereunder. LAVTA shall determine who performs repairs at its sole option.

13. **Repair by Contractor**

If LAVTA requires or mutually agrees for the Contractor to perform warranty-covered repairs, the Contractor's representative must begin work necessary to effect repairs within seven (7) calendar days after receiving notification of a defect from LAVTA. LAVTA shall make the coach available to the Contractor's representative to complete timely repairs.

Any warranty work performed under this Contract shall be completed within seven (7) calendar days after the Contractor has begun repairs on the coach that has been removed from revenue service due to a warranty defect. If repairs are not completed within the specified time periods, LAVTA may assess liquidated damages pursuant to Section 13.M "Liquidated Damages."

In the event the Contractor fails to promptly make the necessary repairs and replacements, LAVTA may undertake such necessary repairs and replacements and the Contractor shall reimburse LAVTA for all such related costs and expenses, including any charges for overhead.

The Contractor shall bear total responsibility for costs and expenses for furnishings all labor, parts, tools, materials and space as required to complete the repairs and/or replacements. At LAVTA's sole discretion, the Contractor may be required to perform the work off LAVTA property. The Contractor shall be responsible for any costs associated with transporting the coach to and from LAVTA property. Where a coach is towed, Contractor shall pay for towing charges. Location of repair shall not be further than 50 miles from the coach delivery location unless mutually agreed upon on a case-by-case basis.

14. **Repair by LAVTA**

Parts Used – If LAVTA performs the warranty-covered repairs, it shall correct or repair the defect and any related defects using Contractor-specified spare parts available from its own stock or those supplied by the Contractor specifically for these repairs. LAVTA shall determine whether or not a component should be repaired or replaced. Every sixty (60) days, or at a period to be mutually agreed upon, reports of repairs covered by this warranty shall be submitted by LAVTA to the Contractor for reimbursement or replacement of parts in accordance with paragraph 15 hereunder.

Contractor Supplied Parts – LAVTA may request that the Contractor supply new parts for warranty-covered repairs being performed by LAVTA. These parts shall be prepared by Contractor and shipped to LAVTA from any source selected by the Contractor within fourteen (14) calendar days of receipt of the request for said parts.

Defective Components Return – The Contractor may request that parts covered by the warranty be returned to the manufacturing plant. Request for return of defective parts/components must be made within thirty (30) calendar days after submittal of Warranty Claim. LAVTA may request Contractor to verify that part/component is defective prior to shipment. The total cost of verification and

shipment shall be paid by the Contractor. Materials will be returned freight collect.

Should the Contractor find that the part/component was not defective after it has been returned to the Contractor, Contractor shall notify LAVTA and obtain disposition instructions for the part/component. Should LAVTA request that part/component be returned to LAVTA, LAVTA shall pay for shipping cost.

15. **Reimbursements**

Labor – LAVTA shall be reimbursed by the Contractor for labor. The reimbursement amount shall be determined by multiplying the number of work hours actually required to diagnose and correct the defect by the current labor rate (inclusive of benefits) in effect at the time of repair, plus forty percent (40%) overhead and administrative charges.

Parts – LAVTA shall be reimbursed by the Contractor for defective parts and for parts that must be replaced to correct the defect. The reimbursement amount shall be the actual LAVTA cost of the part(s) at the time of repair calculated from LAVTA's purchase order or inventory charge-out ledger and shall include taxes where applicable plus fifteen percent (15%) handling costs.

Other – The cost of towing the coach, if such action is necessary, shall also be reimbursable, whether done by LAVTA employees or by an outside contractor. Towing reimbursement shall remain in effect throughout the time periods set forth in paragraphs 1 and 2 above.

Method – Warranty reimbursement shall be made through a warranty claim form. LAVTA will provide the following information on such form:

LAVTA coach number affected
Date defect detected
Mileage
Labor hours and labor costs
Description of parts used and price
LAVTA part number
LAVTA repair code
Total claim value
LAVTA work order number
Defect
Repair

All other information requested by Contractor shall be Contractor's responsibility.

Contractor shall reimburse LAVTA by negotiable check within sixty (60) calendar days of receiving a valid Warranty Claim. Meetings between LAVTA and the Contractor's representative shall be held on at least a quarterly basis if there are outstanding warranty claims and payments.

16. **Warranty After Replacement/Repair**

If any component or subsystem is repaired, rebuilt, or replaced by the Contractor or by LAVTA's personnel, the subsystem shall have the unexpired warranty period of the original subsystem.

17. **Effect of Delay**

In the event that, during the warranty period, repairs and/or modifications on all or any coach made necessary by defective design, material or workmanship are not completed due to lack of material or inability to provide the proper repair, or by the Contractor's neglect, delay time shall not be considered as part of the warranty period and the warranty period shall be extended by the period of the delay.

18. **Disclaimer**

Nothing in these requirements, conditions, or specifications, including LAVTA's right to a complete inspection prior to acceptance of the vehicles, shall constitute a disclaimer to or limit, negate, exclude, or modify in any way any warranty created hereunder.

It is understood and agreed that by establishing this warranty provision, by outlining the Technical Specifications and the Contract Documents, and by inspecting and accepting each bus, LAVTA does not waive (a) any warranty, either expressed or implied, which is created pursuant to this Agreement or by law, or (b) any other liability of the Contractor that may arise under applicable law.

O. Technical Assistance

The Contractor shall maintain and make available to LAVTA upon request, the technical services of competent engineers and necessary laboratory services at the Contractor's sole cost and expense for the purpose of assisting LAVTA in resolving any problems that may arise in connection with the use of any of the items called for under the Contract.

The Contractor shall keep all maintenance manuals, parts manuals, and related technical documentation up-to-date and available to LAVTA at no charge for a minimum period of twelve (12) years after the date of acceptance of the coaches furnished under this contract. All updated information shall be sent with a cover letter explaining the changes. All copies will be forwarded to LAVTA's Director of Administrative Services.

P. Coach Database Information

The Contractor shall provide a Microsoft Excel file or hardcopy listing for each coach at the time of delivery that shall include:

Manufacturer name
Vehicle model name
LAVTA Coach number
Manufacturer vehicle identification number (VIN#)
Engine make, model and serial number
Engine ECM model and serial number
Transmission make, model and serial number
Transmission ECU model and serial number
Differential model and serial number
Alternator model and serial number

Regulator model and serial number
Starter model and serial number
Air compressor model and serial number
Air conditioning compressor model and serial number
Steering box model and serial number
Front axle model and serial number
Rear axle model and serial number
Catalyst/muffler and/or exhaust after-treatment model and serial number
Wheelchair ramp model and serial number
DVR model and serial number

Q. Manuals

For coaches furnished under this contract the Contractor shall provide the following manuals to LAVTA and for each make and model in the quantities specified within sixty (60) calendar days of the date of acceptance of the first vehicle on production line:

1. Ten (10) current coach maintenance manuals including all air system, complete electrical, multiplex and hydraulic schematics and diagrams. Four (4) manuals shall have all pages laminated in clear plastic;

2. Ten (10) current coach air conditioning system maintenance manuals (if not included in coach manual), including all electrical and hydraulic schematics and diagrams. Four (4) manuals shall have all pages laminated in clear plastic;

3. Ten (10) current coach wheel chair ramp maintenance manuals (if not included in coach manual) including all electrical and hydraulic schematics and diagrams. Four (4) manuals shall have all pages laminated in clear plastic;

4. Ten (10) current coach engine maintenance manuals (if not included in coach manual) including all electrical and hydraulic schematics and diagrams. Four (4) manuals shall have all pages laminated in clear plastic;

5. Ten (10) current coach transmission manuals (if not included in coach manual) including all electrical and hydraulic schematics and diagrams. Four (4) manuals shall have all pages laminated in clear plastic;

6. Ten (10) current coach part manuals applicable to the coaches provided under this contract, including all subsystems and components, whether manufactured by the Contractor or purchased ready made from an outside source. This manual shall include detailed dimensional drawings for all glazing used in the coach (windows, windshield and doors) to allow future replacement. An index shall be provided at the front of the manual that contains a numerical listing to section reference and alpha part description to section of reference. Four (4) manuals shall have all pages laminated in clear plastic;

7. Five (5) current part price catalogs applicable to the coaches furnished under this contract, including all subsystems and components whether made by the Contractor or purchased already made from an outside source.

8. One thousand (1,000) Operator's manuals for LAVTA for each model of coach furnished under this contract. The operator manuals shall have all options installed under the contract described and illustrated that may be used by the operator.

9. All Service and Parts Manuals furnished for the buses shall also be supplied in a PDF format on CD-ROM disks to allow the information to be loaded into LAVTA's Maintenance and Materials Management Information System.

All manuals and electrical schematics will be provided indicating the "as-built" condition of the buses supplied to LAVTA including all optional accessories provided.

Within 60 days of delivery and acceptance of the first vehicle on production line , the Contractor will provide LAVTA an aftermarket part listing with a recommended spare parts inventory to support the quantity of coaches provided in the base order.

Failure to provide the required documentation within the timeframes specified may result in LAVTA conditionally accepting buses and withholding the 5% retention as described in Section 13.L "Inspection/Acceptance/Payment" until all documentation is provided and accepted by LAVTA.

10. Parts availability guarantee – the contractor hereby guarantees to provide, within reasonable periods of time, the spare parts, software and all equipment necessary to maintain and repair the buses supplied under this Contract for a period of at least 15 (fifteen) years after the date of acceptance. Parts shall be interchangeable with the original equipment and be manufactured in accordance with the quality assurance provisions of this Contract. Prices shall not exceed the Contractor's then current published catalog prices.

    Where the parts ordered by the Procuring Agency are not received within two working days of the agreed upon time/date and a bus procured under this Contract is out-of-service due to the lack of said ordered parts, then the Contractor shall provide the Procuring Agency, within eight hours of the Procuring Agency's verbal or written request, the original suppliers' and/or manufacturers' parts numbers, company names, addresses, telephone numbers and contact person's names for all of the specific parts not received by the Procuring Agency.

    Where the contractor fails to honor this parts guarantee or parts ordered by the Procuring Agency are not received within 30 (thirty) days of the agreed upon date, then the Contractor shall provide the Procuring Agency, within 7 (seven) days of the Procuring Agency's verbal or written request, the design and manufacturing documents for those parts by the Contractor and the original suppliers' and/or manufacturers' parts numbers, company name, addresses, telephone numbers and contact persons' names for all of the specific parts not received by the Procuring Agency. Contractors' design and manufacturing documentation provided to the Procuring Agency shall be for the sole use in regard to the buses procured under this Contract and for no other purpose.

R. Training

A comprehensive hands-on training program for LAVTA's operations and maintenance staff shall be provided by the Contractor and Original Equipment Manufacturers (OEM) for major components provided on the buses. The Training Program schedule will be discussed with Contractor after contract award to establish a training schedule that is properly coordinated with the delivery and acceptance of the buses. The minimum training program requirements are described below.

- Vehicle Operations Training - The vehicle operation training will be provided to a team of Operator Trainers and will cover a minimum of two classes at four (4) hours per class.

- Basic Vehicle Orientation - A basic vehicle orientation class for mechanics, service workers, and supervisors will be conducted which provides an overview of the vehicle, service access locations to all major components, locations of all daily service items on the bus, location of all diagnostic ports, and other general operations and of vehicle maintenance. A minimum of six classes at four (4) hours per class will be provided.

- Bus Maintenance - A detailed twenty-four (24) hour class covering the bus air system, doors, suspension, body and other minor systems will be provided for LAVTA's mechanics, supervisors, maintenance trainers and support staff. A minimum of six classes will be provided.

- Bus Electrical - A detailed twenty-four (24) hour class covering the bus electrical system including the charging/starting circuit, 12/24 volt power distribution, multiplex system, and all electrical schematics will be provided for LAVTA's mechanics, supervisors, maintenance trainers and support staff. A minimum of six classes will be provided.

- AC/Heat System - A detailed twenty-four (24) hour class covering the bus heating and air conditioning system operations, maintenance, diagnostics and troubleshooting will be provided for LAVTA's mechanics, supervisors, maintenance trainers and support staff. A minimum of six classes will be provided.

- Engine - A detailed forty (40) hour class covering the engine and exhaust after treatment system provided that includes engine familiarization, electronic controls, mechanical and electronic diagnostics, exhaust system operation, maintenance and diagnostics, component replacement of exhaust key components will be provided for LAVTA's mechanics, supervisors, maintenance trainers and support staff. A minimum of six classes will be provided.

- Transmission - A detailed thirty-two (32) hour class covering the transmission provided that includes transmission familiarization, operation, electronic controls, mechanical and electronic diagnostics will be provided for LAVTA's mechanics, supervisors, maintenance trainers and support staff. A minimum of six classes will be provided.

- Transmission Overhaul - A detailed forty (40) hour class covering the transmission provided that includes all aspects of transmission overhaul for LAVTA's two maintenance trainers (train the trainers). A minimum of one class will be provided.

- Destination Sign System - A detailed four (4) eight (8) in APTA hour class covering the destination sign system including operations, maintenance, diagnostics and troubleshooting, and component replacement will be provided for LAVTA's mechanics, supervisors, maintenance trainers and support staff. A minimum of six classes will be provided.

- Destination Sign System Programming - A detailed eight (8) hour class covering the destination sign system including use of the programming software, loading LAVTA's destination sign listing into the system, sign list updates, programming features, and transfer of program to individual buses will be provided for LAVTA's designated sign programmers. A minimum of two classes will be provided.

- Wheelchair Ramp - A detailed four (4) hour class covering the wheelchair ramp including operation, maintenance, hydraulics and controls, diagnostics and repair will be provided for LAVTA's mechanics, supervisors, maintenance trainers and support staff. A minimum of six classes will be provided.

- Parts and Support Familiarization - A four (4) hour class covering the Contractor's parts manuals, parts ordering procedures, and recommended spare parts inventory levels will be provided for LAVTA's Stores, Procurement, and Technical Services staff. A minimum of two classes will be provided.

Vehicle operations training described in R.1 will begin upon final acceptance of the first vehicle on production line Bus by LAVTA, or at a later date, if agreed mutually by LAVTA and Contractor. Basic vehicle orientation, bus maintenance training, destination sign programming, and parts and support familiarization training will begin immediately after delivery of the second bus by the Contractor. The remaining training will be scheduled over a period of one (1) year from date of final acceptance of the second bus delivered by the Contractor, subject to approval of dates and times by LAVTA. All training will be conducted at LAVTA's operations and maintenance bases.

S. Federal Motor Vehicle Safety Standards

Each bus must comply with the Federal Motor Vehicle Safety Standards (FMVSS) as established by the Department of Transportation and must meet all Federal and California Laws and Regulations and Safety Standards in effect on the date of original manufacture.

T. PPI Index Escalator/De-escalator

LAVTA and Consortia Members reserve the right to order buses and equipment over the five-year contract term. The prices of such buses and equipment shall be at the prices quoted on Appendix B, Cost Proposal. These prices shall remain firm fixed for any orders issued by LAVTA and Consortium Members within a period of 180 days of the effective date of each contract. The price(s) of any buses or equipment ordered by

LAVTA and Consortium Members after the initial 180 day firm/fixed price period shall be that quoted (Base Order Prices) plus/minus any change which will be calculated based on the following formula which utilizes the U.S. Department of Labor/Bureau Of Labor Statistics Producer Price Index (PPI) Category 1413, "Trucks and Bus Bodies."

The change in this index will be used to adjust the Base Order Prices. However, in no event will LAVTA allow a PPI-based adjustment that result in a price increase of greater than five percent per year above the Base Order Price.

Formula:

Index Point Change

	Example
PPI Index: Future Award Month	141.1
Less PPI Index: Base Award Month	137.6
Equals Index Point Change	3.5

Index Percent Change

Index Point Change	3.5
Divided by PPI Index: Base Award Month	137.6
Equals Percentage Change	.0254

Base Order Price	1,000.00
Plus Percent Change (.0254 x $1,000)	25.40
Revised Price for Future Order	$1,025.40

Example:

LAVTA awarded its contract in May 2016 (Base Award Month) with the published data for PPI-category 1413 showing an index value of 137.6. LAVTA has ordered and received its Base Order of buses. In May of 2014, LAVTA elects to purchase more buses for delivery in 2017. The published data for PPI-category 1413 shows an index value of 141.1 in May 2016. The percentage change in the PPI index from May 2016 to May 2017 would be .0254. The buses ordered in May 2017 would be .0254 higher than those ordered in May 2016. This example assumes that the two purchases are for identically-equipped buses.

If any significant equipment modifications are made, in compliance with the terms of the contract, LAVTA and the Contractor will enter into negotiations to determine the price of the equipment modification(s) and the impact of the modification(s) on the Base Order Price(s). The following calculations will be used to convert the then-current price of the modification(s) to the value of the modification(s) on the date of the Base Order Price:

Formula:

Index Point Change

	Example
PPI Index: Future Equipment Modification Month	141.1
Less PPI Index: Base Award Month	137.6

Equals Index Point Change	3.5

Index Percent Change

Index Point Change	3.5
Divided by PPI Index: Base Award Month	137.6
Equals	.0254
Results Multiplied by 100	.0254 X 100
Equals Percent Change	2.54%

Future Equipment Modification Price	$200.00
Less Percentage Change (2.54% x $200.00)	5.08
Value of Equipment Modification(s) in Base Award Month	194.92
Base Order Price	1,000.00
Plus Equipment Modification(s) Cost	194.92
Equals Revised Base Order Price	$1,194.92

All future releases, including the equipment modification(s), will be priced based upon the new revised Base Award Price.

U. Intellectual Property Warranty

LAVTA shall advise the Contractor of any impending patent suit related to this Contract against LAVTA and provide all information available. The Contractor shall indemnify and defend any suit or proceeding brought against LAVTA based on a claim that any equipment, or any part thereof, furnished by Contractor under this Contract constitutes an infringement of any patent, and the Contractor shall pay all damages and costs awarded therein. In case said equipment, or any part thereof, is in such suit held to constitute infringement and use of said equipment or parts is enjoined, Contractor shall at its own expense and at its option, either procure for LAVTA the right to continue using said equipment or part, or replace same with non-infringing equipment, or modify it so it becomes non-infringing.

V. Data Rights

Proprietary Rights/Rights in Data

The term “subject data” used in this clause means recorded information, whether or not copyrighted, that is delivered or specified to be delivered under the Contract

It included the proprietary rights of:

- Shop Drawings and Working Drawings;
- Technical data including manuals or instruction materials, computer or microprocessor software;
- Patented materials, equipment, devise or processes; and
- License requirements

LAVTA shall protect proprietary information provided by the Contractor to the fullest extent of the law. The contractor shall grant a royalty-free, perpetual, non-exclusive license to allow LAVTA to utilize such information in order to maintain the vehicles.

LAVTA reserves a royalty-free, non-exclusive and irrevocable license to reproduce, publish, or otherwise use, and to authorize others to use, the following subject data for its purposes:

1. Any subject data required to be developed and first produced in the performance of the Contract and specifically paid for as such under the Contract whether or not a copyright has been obtained;

2. Any rights of copyrights to which the Contractor, subcontractor or supplier purchases ownership for the purpose of performance of the Contract and specifically paid for as such under the Contract; and

3. The Contractor agrees to include the requirements of this clause, modified as necessary to identify the affected parties, in each subcontract and supply order placed under the Contract.

14. FEDERAL CONTRACT CLAUSES

This project will be financed in part by funds from the Federal Transit Administration (FTA). Accordingly, Federal requirements apply to this contract and if those requirements change then the most recent requirements shall apply to the project as required.

A. Energy Conservation

The Contractor agrees to comply with mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Federal Energy Policy and Conservation Act, 49 U.S.C. §§ 6321 et seq.

B. Clean Water and Air Requirements

The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq., and the Clean Air Act, as amended, 42 U.S.C. 7401 et seq. The Contractor agrees to report each violation to LAVTA and understands and agrees that LAVTA will, in turn, report each violation as required to assure notification to the FTA and the appropriate EPA regional office.

The Contractor also agrees to include these requirements in each subcontract exceeding $100,000 financed in part or in whole with federal assistance provided by the FTA.

C. Lobbying

Contractor shall submit with its Proposal the certification (Appendix I, Disclosure of Lobbying Activities) required by 49 CFR part 20. Contractor shall certify that it will not

and has not used Federally appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Contractor shall also disclose the name of any registrant under the Lobbying Disclosure Act of 1995 who has made lobbying contacts on its behalf with non-Federal funds with respect to that Federal contract, grant or award covered by 31 U.S.C. 1352. Such disclosures shall be forwarded to LAVTA.

D. Access to Records and Reports

Contractor shall provide all authorized representatives of LAVTA, the FTA Administrator, and the Comptroller General of the United States access to any books, documents, papers and records of the Contractor which are directly pertinent to this Contract for the purposes of making audits, copies, examinations, excerpts and transcriptions. Contractor also agrees to maintain all books, records, accounts and reports required under this Contract for a period of not less than three years after the date of termination or expiration of this Contract, except in the event of litigation or settlement of claims arising from the performance of this Contract, in which case Contractor agrees to maintain the same until LAVTA, the FTA Administrator, the Comptroller General, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims, or exceptions related thereto.

E. Federal Changes

Contractor shall at all times comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Agreement (Form FTA MA (18) dated October 1, 2011) between LAVTA and the FTA, as they may be amended or promulgated from time to time during the term of this Contract. Contractor's failure to so comply shall constitute a material breach of this Contract.

F. No Government Obligation to Third Parties

LAVTA and Contractor acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this Contract and shall not be subject to any obligations or liabilities to LAVTA, Contractor, or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying contract. The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

G. Program Fraud and False or Fraudulent Statements and Related Acts

The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 et seq. and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. Part 31, apply to its actions pertaining to this Project. Upon execution of the underlying contract, the Contractor certifies or affirms the

truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the FTA assisted project for which this Contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.

The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under LAVTA of 49 U.S.C. § 5307, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5307(n)(1) on the Contractor, to the extent the Federal Government deems appropriate.

The Contractor agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

H. Government-Wide Debarment and Suspension

This contract is a covered transaction for purposes of 49 CFR Part 29. As such, the Contractor is required to verify that none of the Contractor, its principals, as defined at 49 CFR 29.995, or affiliates, as defined at 49 CFR 29.905, are excluded or disqualified as defined at 49 CFR 29.940 and 29.945.

The Contractor is required to comply with 49 CFR 29, Subpart C and must include the requirement to comply with 49 CFR 29, Subpart C in any lower tier covered transaction it enters into.

By signing and submitting its Proposal, Proposer certifies as follows: The certification in this clause is a material representation of fact relied upon by LAVTA. If it is later determined that the Proposer knowingly rendered an erroneous certification, in addition to remedies available to LAVTA, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The Proposer agrees to comply with the requirements of 49 CFR 29, Subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The Bidder or Proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

I. Privacy Act

The following requirements apply to the Contractor and any of its employees that may administer any system of records on behalf of the Federal Government under any contract:

The Contractor agrees to comply with, and assures the compliance of its employees with, the information restrictions and other applicable requirements of the Privacy Act of

1974, U.S.C. §552(a). Among other things, the Contractor agrees to obtain the express consent of the Federal Government before the Contractor or its employees operate a system of records on behalf of the Federal Government. The Contractor understands that the requirements of the Privacy Act, including the civil and criminal penalties for violation of that Act, apply to those individuals involved, and that failure to comply with the terms of the Privacy Act may result in termination of the underlying contract.

The Contractor also agrees to include these requirements in each subcontract to administer any system of records on behalf of the Federal Government financed in whole or in part with Federal assistance provided by FTA.

J. Civil Rights Requirements

1. Nondiscrimination - In accordance with Title VI of the Civil Rights Act, as amended, 42 U.S.C. § 2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6102, section 202 of the Americans with Disabilities Act of 1990, 42 U.S.C. § 12132, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, or disability. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.

2. Equal Employment Opportunity - The following equal employment opportunity requirements apply to the underlying contract:

   a. Race, Color, Creed, National Origin, Sex - In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e, and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. Parts 60 et seq., (which implement Executive Order No. 11246, "Equal Employment Opportunity," as amended by Executive Order No. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," 42 U.S.C. § 2000e note), and with any applicable Federal statutes, executive orders, regulations, and Federal policies that may in the future affect construction activities undertaken in the course of the Project. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, creed, national origin, sex, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

   b. Age - In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. § § 623 and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from

discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

c. Disabilities - In accordance with section 102 of the Americans with Disabilities Act, as amended, 42 U.S.C. § 12112, the Contractor agrees that it will comply with the requirements of U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 C.F.R. Part 1630, pertaining to employment of persons with disabilities. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

3. The Contractor also agrees to include these requirements in each subcontract financed in whole or in part with Federal assistance provided by FTA, modified only if necessary to identify the affected parties.

J. Incorporation of Federal Transit Administration (FTA) Terms

The preceding provisions include, in part, certain Standard Terms and Conditions required by U.S. DOT, whether or not expressly set forth in the preceding contract provisions. All contractual provisions required by the U.S. DOT, as set forth in FTA Circular 4220. 1F, as may be amended, are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Contract. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any LAVTA requests which would cause LAVTA to be in violation of the FTA terms and conditions.

K. Buy America Pre-Award and Post-Delivery Audit Requirement

The Contractor agrees to comply with 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11, which provide that Federal funds may not be obligated unless rolling stock is assembled in the United States and has 60 percent domestic content.

The Contractor agrees to comply with 49 U.S.C. § 5323(l) and FTA's implementing regulation at 49 C.F.R. Part 663 and to submit the following certifications:

1. Buy America Requirements: The Contractor shall complete and submit a declaration (Appendix E) certifying either compliance or noncompliance with Buy America. If the Proposer/Offeror certifies compliance with Buy America, it shall submit documentation which lists 1) component and subcomponent parts of the rolling stock to be purchased identified by manufacturer of the parts, their country of origin and costs; and 2) the location of the final assembly point for the rolling stock, including a description of the activities that will take place at the final assembly point and the cost of final assembly.

2. Solicitation Specification Requirements: The Contractor shall submit evidence that it will be capable of meeting the Proposal specifications.

3. Federal Motor Vehicle Safety Standards (FMVSS): The Contractor shall submit 1) manufacturer's FMVSS self-certification sticker information that the vehicle complies with relevant FMVSS or 2) manufacturer's certified statement that the contracted buses will not be subject to FMVSS regulations.

4. Contractor will cooperate with LAVTA in conducting all post-delivery review necessary to insure compliance with the Buy America requirements.

L. Contract Work Hours and Safety Standards Act

A. Overtime Requirements – Neither the Contractor nor its subcontractors may permit any laborer or mechanic in any workweek in which he or she is employed on such work under this Contract to work in excess of forty (40) hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

B. Violation, Liability for Unpaid Wages, Liquidated Damages – In the event of any violation of the clause set forth in paragraph A of this Section, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, Contractor and subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph A of this Section in the sum of $10.00 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty (40) hours without payment of the overtime wages required by the clause set forth in paragraph A of this Section.

C. Withholding for Unpaid Wages and Liquidated Damages – LAVTA shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from any moneys payable on account of work performed by Contractor under any such contract or any other Federal contract with Contractor or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by Contractor, such sums as may be determined to be necessary to satisfy any liabilities of Contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph B of this Section.

D. Subcontracts – The Contractor shall insert in any subcontract the clauses set forth in this Section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in this Section.

E. Payrolls and Basic Records – Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three (3) years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such

records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records that show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and shall also maintain records that show the costs anticipated or the actual cost incurred in providing such benefits. Should the Contractor employ apprentices or trainees under approved programs, it shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

F. Occupational Safety and Health Act – The Contractor agrees to comply with Section 107 of the Contract Work Hours and Safety Standards Act, 40 U.S.C. Section 333, and applicable DOL regulations, "Safety and Health Regulations for Construction", 29 CFR Part 1926. Among other things, the Contractor agrees that it will not require any laborer or mechanic to work in unsanitary, hazardous, or dangerous surroundings or working conditions.

G. The Contractor also agrees to include the requirements of this Subsection F in each subcontract. The term "subcontract" under this Subsection is considered to refer to a person who agrees to perform any part of the labor or material requirements of a contract for construction, alteration or repair. A person who undertakes to perform a portion of a contract involving the furnishing of supplies or materials will be considered a "subcontractor" under this Section if the work in question involves the performance of construction work and is to be performed: (1) directly on or near the construction site, or (2) by the employer for the specific project on a customized basis. Thus, a supplier of materials that will become an integral part of the construction is a "subcontractor" if the supplier fabricates or assembles the goods or materials in question specifically for the construction project and the work involved may be said to be construction activity. If the goods or materials in question are ordinarily sold to other customers from regular inventory, the supplier is not a "subcontractor." The requirements of this Section do not apply to contracts or subcontracts for the purchase of supplies or materials or articles normally available on the open market.

M. Bus Testing

The Contractor shall complete and submit a certificate (Appendix K) agrees to comply with 49 U.S.C. § 5323(c) and FTA's implementing regulation at 49 CFR Part 665 and shall perform the following:

1. A manufacturer of a new bus model or a bus produced with a major change in components or configuration shall provide a copy of the final test report to the recipient at a point in the procurement process specified by the recipient which will be prior to the recipient's final acceptance of the first vehicle.

2. A manufacturer who releases a report under paragraph 1 above shall provide notice to the operator of the testing facility that the report is available to the public.

3. If the manufacturer represents that the vehicle was previously tested, the vehicle being sold should have the identical configuration and major components as the vehicle in the test report, which must be provided to the recipient prior to recipient's final acceptance of the first vehicle. If the configuration or components are not identical, the manufacturer shall provide a description of the change and the manufacturer's basis for concluding that it is not a major change requiring additional testing.

4. If the manufacturer represents that the vehicle is "grandfathered" (has been used in mass transit service in the United States before October 1, 1988, and is currently being produced without a major change in configuration or components), the manufacturer shall provide the name and address of the recipient of such a vehicle and the details of that vehicle's configuration and major components.

N. Cargo Preference

The Contractor agrees to the following:

1. To use privately owned U.S.-flag commercial vessels to ship at least fifty (50) percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners and tankers) involved, whenever shipping any equipment, material or commodities pursuant to the underlying Contract to the extent such vessels are available at fair and reasonable rates for U.S.-flag commercial vessels;

2. To furnish within twenty (20) working days following the date of loading for shipments originating within the United States or within thirty (30) working days following the date of leading for shipments originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill of lading in English for each shipment of cargo described in the preceding paragraph to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590 and to the FTA recipient (through the Contractor in the case of a Subcontractor's bill-of-lading.)

3. To include these requirements in all subcontracts issued pursuant to this Contract when the subcontract may involve the transport of equipment, material or commodities by ocean vessel.

O. Fly America

The Contractor agrees to comply with 49 USC 40118 (the "Fly America Act") in accordance with the General Services Administration's regulations at 41 CFR Part 301-

10, which provides that recipients and subrecipients of Federal funds and their Contractors are required to use U.S. Flag air carriers for U.S. Government-financed international air travel and transportation of their personal effects or property, to the extent such service is available, unless travel by foreign air carrier is a matter of necessity, as defined by the Fly America Act. If a foreign air carrier was used, the Contractor shall submit an appropriate certification or memorandum adequately explaining why service by a U.S. flag carrier was not available or why it was necessary to use a foreign air carrier and shall, in any event, provide a certificate of compliance with the Fly America requirements. The Contractor Agrees to include the requirements of this section in all subcontracts that may involve international air transportation.

P. Transit Vehicle Manufacturer's (TVM) Certificate

TVM Certification **MUST** be submitted with Proposal; Proposal is considered non-responsive if certification is not submitted and contract cannot be awarded (Appendix O).

15. RFP SUBMITTAL CHECKLIST OF REQUIRED ITEMS

In addition to the submittal requirements outlined in Section 10 "Proposal Content and Submission", Proposers shall use the following checklist as a guide to ensure all required documentation is included in its Proposal:

1. Cover Letter of Introduction and:

2. Table of Contents

- Proposers Capability, Experience, and Qualifications
    - _____ (a) Most recent audited financial statement
    - _____ (b) List of five references
    - _____ (c) Indicate that the Proposer's team is prepared to sign the sample Agreement for Services and indicate the Proposer's agreement to be bound to the proposed scope of Work and associated Cost Proposal for 180 days from the effective date of the Contract
- Description of Proposer's Organization
    - A letter from the Proposer's insurance carrier indicating that the insurance company has read the insurance requirements stated Section 15 of Appendix A "Insurance", and that it will be able to provide the certificate and endorsement for the coverage required. A copy of Proposer's insurance policy will not satisfy this requirement to meet the insurance requirements
    - Cost Proposal using LAVTA's form (Appendix B)
    - Performance Bond (Appendix C)
    - Buy America Certificate of Compliance (Appendix D)
    - Subcontractor/Disadvantaged Business Enterprise Questionnaire (Appendix E)
    - Federal Motor Vehicle Safety Standards and Pollution Certificate (Appendix F)

- Location of Parts and Technical Service Data (Appendix G)
- FTA Bus Testing Certification (Appendix H)
- Lobbying Certificate (Appendix I)
- Federal Motor Vehicle Safety Standards (FMVSS) (Appendix J)
- Certificate of Compliance with Coach Testing Requirement (Appendix K)
- Acknowledgement of Addenda (if any) (Appendix L)
- Buy America Audit Worksheet (Appendix M)
- Request for Approved Deviations (Appendix N)
- Transit Vehicle Manufacturer's (TVM) Certification (Appendix O)
- Certificate of Liability Insurance and Letter (Appendix P)
- Vehicle technical information worksheets (Appendix Q)

Proposers are reminded to include one original and five hard copies, plus one electronic .pdf copy on a CD or USB drive of complete Proposal and to identify any proprietary, trade secret or other confidential information in the Proposal.

16. PROJECT TIMELINE

The following project timeline is provided for your scheduling information, but it may be subject to change at the discretion of LAVTA:

EVENT	DATE
RFP Issued	December 30, 2015
Pre-Proposal Meeting	February 3, 2016 at 10:00 a.m.
Requests for Questions and Clarifications Due	February 17, 2016 at 4:00 p.m.
LAVTA's Response to Questions and Clarifications	March 4, 2016
Proposals Due	**May 27, 2016 at 2:00 p.m.**
Interviews (tentative)	June 15, 2016
Board Award	July 11, 2016
Notice to Proceed (tentatively scheduled)	August 15, 2016

17. CONSORTIUM MEMBER VEHICLE QUANTITIES

The following Transit Authorities have expressed interest in procuring buses under the terms and conditions of these specifications. The award of a contract directly by the following Transit Authorities with the selected vendor(2) for the purchase of buses in either or both categories will be solely up to the Transit Authority based on a number of factors, such as funding, price, vehicle delivery dates, specifications, and the adherence to FTA vehicle procurement regulations. LAVTA will not be a party to any contract issued or award made by any other Agency.

CONSORTIUM MEMBER	MIN/MAX QUANTITY
City of Los Angeles (LADOT)	45 - 90
City of Modesto	6 - 6
City of Norwalk	6 - 6

CONSORTIUM MEMBER	MIN/MAX QUANTITY
City of Santa Clarita	16 - 16
City of Tulare	3 - 7
City of Turlock	4 - 10
Gold Coast Transit	5 - 30
Solano County Transit	10 -10

18. LIST OF APPENDICES

A. Sample Agreement for Services
B. Cost Proposal
C. Performance Bond and Sample Irrevocable Standby Letter of Credit
D. Buy America Certificate of Compliance
E. Subcontractor/DBE Questionnaire
F. Federal Motor Vehicle Safety Standards and Pollution Certificate
G. Location of Parts and Technical Service Data
H. FTA Bus Testing Certification
I. Lobbying Certificate
J. Federal Motor Vehicle Safety Standards (FMVSS)
K. Certificate of Compliance with Coach Testing Requirement
L. Acknowledgement of Addenda
M. Buy America Audit Worksheet
N. Request for Approved Deviations
O. Transit Vehicle Manufacturer's (TVM) Certification
P. Sample Certificate of Liability Insurance and Letter
Q. Vehicle Technical Information Forms
R. Inspection Guidelines

TECHNICAL SPECIFICATIONS

1. GENERAL

These Technical Specifications cover requirements for Heavy-Duty Low Floor Diesel Transit coaches which may be used for rural, suburban, and urban transit service operations on urban streets and rural roadways in the general environmental and climatic conditions prevailing throughout LAVTA operating area. It is intended for the widest possible spectrum of youth and adult passengers, elderly, and the handicapped.

The coach shall be fully compliant with the applicable requirements of the Americans with Disabilities Act (ADA) and any revisions published by the Architectural and Transportation Barriers Compliance Board or The Federal Transit Administration for fixed route operations. Where these specifications exceed the requirements of ADA, the specification requirement shall apply.

Respect for the Environment. In the design and manufacture of the bus, the Contractor shall make every effort to reduce the amount of potentially hazardous waste. In accordance with Section 6002 of the Resource Conservation and Recovery Act, the Contractor shall use, whenever possible and allowed by the specifications, recycled materials in the manufacture of the bus.

2. CONFORMITY

(a) All Proposers must conform to these specifications and the product they furnish shall be of first class quality and the workmanship shall be the best obtainable in various trades.

(b) The design of the body, chassis, and equipment the Contractor proposes to furnish shall be of the latest design and model so as to produce a vehicle of substantial and durable construction in all respects.

(c) No advantage shall be taken by the Contractor in the omission of any part or detail which is required to make the buses fully serviceable and durable operational vehicles in all respects even though such parts or detail are not mentioned in these specifications.

(d) All units or parts not specified shall be manufacturer's standard units. In all cases, material and dimensions must be furnished as specified, but if the term, "approved deviation" is used, LAVTA's Director of Administrative Services must approve any materials, equipment, or dimensions substituted for those specified.

(e) The vehicle and all related equipment provided under this Contract shall meet all applicable State and Federal laws, vehicle codes, regulations, and standards.

3. RESPONSIBILITY

(a) The Contractor shall assume responsibility for all design and satisfactory operation of the vehicle; furnishing and delivering all vehicles, material, and accessories whether or not the same are manufactured by the Contractor or purchased ready-made from an outside source.

(b) The Contractor shall assume responsibility and all costs to deliver LAVTA's designated location and related items specified to LAVTA in accordance with these Solicitation Documents.

4. VEHICLE DESCRIPTION

4.1. General Description

a. It is the intent of this specification to describe the design requirements for a Heavy-Duty Diesel Low Floor Transit coach rugged enough to withstand rigorous intensive daily transit service operations and provide maximum reliability and availability, with a minimum of maintenance and repair time. The coach shall exhibit maximum passenger appeal in appearance, comfort and safety, combined with excellence in reliability, operating characteristics, efficiency, and economy of operation.

b. Coaches shall incorporate features essential for safe, fast, efficient and comfortable operation by the operator, features that ensure excellent road and traffic visibility under all driving conditions and adequate means for safe passenger movement. The coach shall be made capable of easy maneuvering in normal and heavy traffic.

c. The coach shall achieve normal operation in the environmental conditions normally occurring in the area in which LAVTA is located in temperature ranges of -10^{o} F to 120^{o} F, at relative humidities between 5 percent and 100 percent, and at altitudes up to 5,000 feet above sea level.

d. Coaches are to be used in urban areas, but at the same time must be able to maintain speeds up to 65 MPH for relatively long distances between stops. Coaches shall be able to maintain a minimum of 10 MPH on a fifteen percent (15%) grade when loaded to GVWR. The bus shall be capable of achieving a top speed of 65 mph on a straight, level road at GVWR with all accessories operating. The bus shall be capable of safely maintaining the vehicle speed according to the recommendations by the tire manufacturer.

e. Scheduled maintenance tasks shall be related and shall be grouped in maximum mileage intervals. Routine scheduled maintenance actions, such as filter replacement and adjustments, shall not be required at intervals of less than 6,000 miles, except for routine daily service performed during the fueling operations. Higher levels of scheduled maintenance tasks shall occur at even multiples of mileages for lower level tasks.

f. The bus, at GVWR and under static conditions, shall not exhibit deformation or deflection that impairs operation of doors, windows or other mechanical elements. Static conditions include the vehicle at rest with any wheel or dual set of wheels in a six-inch deep hole or with any one tire or any dual set completely deflated.

g. All failures involving basic body, structure, axles and suspension are considered structurally related failures for purposes of this specification.

h. The bus shall be new and unused, of current production model, with the latest design features. The unit shall be delivered fully operational and ready for revenue service with all necessary equipment and accessories.

i. The low floor vehicle platforms are included in this specification and are generally described as 102" wide, low floor 30, 35, and 40 foot heavy-duty transit coaches. Approximate dimensions desired are as follows:

	30' Bus	35' Bus	40' Bus
Length - Over Body	**30'**	**35'**	**40'**
Width - Over Body	**102"**	**102"**	**102"**
Height (Tailpipe)	**122"**	**122"**	**122"**
Wheelbase	**162.5"**	**230"**	**279"**
Floor Height (Maximum)	**16"**	**16"**	**16"**
Rear Overhang (not to exceed)	**8'**	**8'**	**8'**
Floor Height	**35"**	**35"**	**35"**
Front Step Height (Maximum)	**15.5"**	**15.5"**	**15.5"**
Wheel Base	**170"**	**219"**	**279"**
Interior Headroom (Maximum)	**95"**	**95"**	**95"**
Aisle Width (Minimum)	**26"**	**26"**	**26"**
Door Width – Front (Clear)	**34"**	**34"**	**34"**
Curb Weight Max. GVW	**21,800 lbs.**	**27,000 lbs.**	**27,600 lbs.**
Vehicle GVWR	**31,000 lbs.**	**39,600 lbs.**	**39,600 lbs.**
Turning Radius (Front Body Corner - Maximum)	**29.9'**	**36.8'**	**43.3'**
Approach angle – Minimum	**8.5º**	**8.5º**	**8.5º**
Break-over angle	**19º**	**12.8º**	**10.7º**
Departure angle – Minimum	**8.8º**	**8.8º**	**8.8º**

4.2. Testing

a. The vehicle provided shall be fully tested to assure compliance with the performance and safety requirements of the specifications. At the option of LAVTA, Bidder and/or CONTRACTOR may be required to provide test results and/or certifications insuring compliance with the requirements of the specifications. Certifications or written documentation outlining test procedures and results shall be prepared by a Professional Engineer and/or test laboratory certifying compliance with the requirements of the appropriate section of the technical specification and shall be provided by the Bidder and/or CONTRACTOR for approval by LAVTA.

b. Contractor may be required to demonstrate compliance with any of the performance requirements of the technical specifications. Minimum testing that shall be required includes;

1. Cooling System Performance
2. AC Performance
3. Acceleration
4. Gradability
5. Internal Noise
6. External Noise
7. Passenger Door(s) Opening and Closing Speed
8. Lighting Levels
9. Turning Radius
10. Water Test

4.3. Internal Noise

a. Maximum internal noise shall not exceed eighty (80) DBA in areas “1”, “2”, and “3”, and no more than eighty-three (83) DBA in area “4” as described below. Sound levels within the coach shall be measured with all doors and windows closed and all vehicle equipment operating. If some equipment operates on a cyclic basis, the sound level shall be measured with all equipment functioning simultaneously to determine the worst case noise level.

b. Measurements shall be made with the vehicle empty, except for test personnel and equipment. Not more than three (3) persons shall occupy the vehicle during the measurements.

c. Measurements shall be made at a height of four feet (4’) above the floor and directly above the center line of the seats at the following locations:

1. The operator’s seat;
2. The foremost passenger seat at the centerline of the coach;
3. The seat nearest the center of the coach, and at the coach centerline; and
4. The rear-most seat at the centerline of the coach.

d. Accelerate the coach at full throttle from standstill to automatic transmission shift speed. Gear or range must be selected so that terminating test speed is sixty-five (65) miles per hour. Observe and record maximum sound level during this operating mode. The sound level recorded shall be the average of at least four (4) readings.

e. Measurements shall be taken where there are no reflecting or absorbing surfaces to change the sounds emitting from the vehicle.

4.4. External Noise

Airborne noise generated by the coach and measured from either side shall not exceed 80 DBA under full power acceleration when operated at or below 35 mph at curb weight and just prior to transmission upshift. The maximum noise level generated by the coach

pulling away from a stop at full power shall not exceed 83 DBA. The coach generated noise at curb idle shall not exceed 65 DBA. If the noise contains an audible discrete frequency, a penalty of 5 DBA shall be added to the sound level measured. All noise readings shall be taken 50 feet from the perpendicular to the centerline of the coach with all accessories operating. Instrumentation, test sites, and other general requirements shall be in accordance with SAE Standard J366. The pull-away test shall begin with the front bumper even with the microphone. The curb idle test shall be conducted with the rear bumper even with the microphone.

5. CRASHWORTHINESS

(a) The coach body and roof structure shall withstand a static load equal to 150 percent of the curb weight evenly distributed on the roof with no more than a 6 inch reduction in any interior dimension. Windows shall remain in place and shall not open under such a load.

(b) The coach shall withstand a 25 mph impact by a 4,000 pound post-1973 American automobile at any point, excluding doorways, along either side of the coach with no more than 3 inches of permanent structural deformation at seated passenger hip height. This impact shall not result in sharp edges or protrusions in the coach interior.

(c) Exterior panels and their supporting members shall withstand a static load of 2,000 pounds applied perpendicular to the coach anywhere by a pad no larger than 5 inches square. This load shall not result in deformation that prevents installation of new exterior panels to restore the original appearance of the coach.

(d) The coach, at GVWR and under static conditions, shall not exhibit deformation or deflection that impairs operation of doors, windows, or other mechanical elements. Static conditions include the vehicle at rest with any one wheel or dual set of wheels on a 6 inch curb or in a 6 inch deep hole.

(e) All structure, body, and panel-bending mode frequencies, including vertical, lateral, and torsional modes, shall be sufficiently removed from all primary excitation frequencies to minimize audible, visible, or sensible resonant vibrations during normal service.

(f) To protect passengers seated in low floor area, the basic low floor coach structure shall incorporate a substantial side impact barrier. The barrier shall include steel plate, continuous between the front wheel arches and the rear suspension (except in the width of the exit door opening). The impact barrier shall be an integral welded part of the undercarriage portion of the coach structure, and shall be angled such that vehicles impacting the coach side will tend to subvert. To further increase both passenger safety and repairability, robust welded structures are required between the angled barrier and the coach side skins. These shall be designed to dissipate collision energy.

6. MATERIALS

(a) All materials used in construction of the coach and all its parts shall conform in all respects to American Society of Testing Materials, Society of Automotive Engineers, or similar association standards. Materials used shall be exactly duplicate in manufacture, design and construction on each coach model.

(b) Reinforced fiberglass and plastic materials shall be excluded from the basic body construction, except for replaceable panels, doors, and front and rear caps.

(c) All lumber shall be thoroughly kiln dried free from knots and checks and shall be of clear straight grain, dressed on all sides.

(d) All painted aluminum sheets shall be thoroughly cleaned and coated on the outside with PPG DPU low VOC protective paint prior to assembly in coach.

(e) All joints shall be protected by application of zinc-chromated metallic compound, Butyl Tape Sealer at assembly.

(f) Plywood shall be of a marine grade with sealed waterproof edges.

(g) All bolts, nuts, washers and exposed linkage shall be zinc, cadmium plated or phosphate coated to prevent corrosion.

(h) All bolts, nuts, and washers shall be Domestic manufacture and be SAE Grade 5 or better.

7. CORROSION/UNDERCOATING

(a) The vehicle shall resist corrosion from atmospheric conditions and road salts. It shall maintain structural integrity and nearly maintain original appearance throughout its service life, provided it is maintained in accordance with the procedures specified in the manufacturer's service manual by LAVTA. Materials exposed to the elements and all joints and connections of dissimilar metals (and remote from each other in the galvanic series), shall be corrosion-resistant and shall be protected from galvanic corrosion.

(b) The entire body frame assembly, access doors, fenders, cab, underbody, wheelhousings, lower skirt panels, including closed-off body panel sections, and all welds shall be treated and rust-proofed with a commercial grade heavy-duty rust-proofing material. All metal body parts shall be given a thorough multiple-stage anti-corrosion treatment. The product used shall be listed as a qualified product under Mil Spec C-62218, Mil Spec C-0083933A (MR). Zinc chromate or zinc phosphate prime paint shall be applied to both aluminum and steel. Body panels that are aluminum or tin coated, etc., or treated in any other method or procedure currently accepted by the commercial vehicle industry, are acknowledged as meeting this requirement and need no further treatment, except for finish prime/paint or undercoating where applicable. Representative samples shall withstand a 2-week salt spray test in accordance with ASTM Procedure B-117 with no visual or structural detrimental effects to normally visible surfaces, and no significant structural degradation or weight loss of over 1 percent (1%) for other members or components.

(c) Except as noted below, the entire body lower frame assembly, cab, underbody, understructure/frame, chassis, fenders, wheelhousings, and lower skirt panels shall be completely undercoated with a silver or light grey colored undercoating.

(d) Undercoating shall be composed of a non-volatile/non-flammable resin-type base, grit and abrasive free material, dispersed in a petroleum solvent, providing a homogenous formulation, MIL-TD specification grade undercoating material. Undercoating shall be

applied to a uniform thickness throughout with no bare spots. Bidder shall indicate methods to be used in meeting this requirement.

(e) Items and components that shall not be undercoated include non-metallic fender and stepwells, engine, transmission, driveshaft(s), differential/axle housing, brakes, lube fittings, exhaust system, and power steering heat shields.

8. UNDERCARRIAGE

Both front and rear axles shall have the load rating for the gross loads equal to or greater than the coach builder requires them to carry. The gross load shall include curb weight plus seated and standee passengers with the average weight of each passenger to be 150 pounds. Front and rear axles for the coaches shall have the highest GVWR capacity available. Front and rear hubs shall be of steel construction.

8.1. Front Axle

a. Front axle shall be a Rockwell – Meritor heavy-duty standard axle designed with proper wheel and axle geometry so that imperfect front axle operation will not be encountered in service.

b. Front axle shall be 14,600 lbs., minimum rating or be rated for the loads the bus builder's design requires.

c. Wheel bearings shall utilize oil seal type lubrication.

8.2. Rear Axle

a. Rear axle shall be a Rockwell – Meritor standard single reduction axle with a minimum rated capacity of 26,000 lbs (21,000 lbs for 30 foot coach).

b. The rear axle shall be a heavy-duty, full floating type, Meritor Standard, incorporating a spiral bevel drive. The axle housing shall be a steel stamping and located to the roadside of the axle center. The load tubes shall be fixed and the wheel bearings oil lubricated. The housing drain plug shall be magnetic.

c. The differential carrier shall incorporate the differential assembly, drive pinion and pinion cage. Carrier shall be removable as a complete unit from the axle housing.

d. The four (4) pinion differential gears shall be carried in a two-piece case mounted on tapered roller bearings. Torque nuts and bolts are used to mount the dowel gear drive to the flanged half of the differential case.

e. Axle shafts shall be the floating type with all wheel bearing loads carried on the axle housing end sleeves.

f. The drive flanges at the outer end shall be attached to wheel hubs by studs, nuts and tapered dowels. Axle hubs shall be stud wheel pilot mounting.

g. Wheel bearings shall utilize "wet" lubrication.

8.3. Rear Axle Gear Ratio

The differential gear ratio is subject to approval by LAVTA prior to production after reviewing computer generated performance scans for the buses offered.

8.4. Hubodometer

An Engler (Stemco) Hubodometer “million mile” (no tenths) shall be installed with the correct bracket on curbside rear axle flange studs.

8.5. Wheels and Tires

a. The coach shall be equipped with single front and dual rear wheels. Front wheels and tires shall be balanced and counter weighted where necessary. Alcoa Aluminum wheels (p/n 883110DB) with “Dura-Brite” surface treatment, 8.25 x 22.5, satin machine finished stud (budd) piloted wheels, shall be provided. Two spare wheels per bus shall be provided.

b. Tires shall be furnished by LAVTA, via its leased tire contractor at the time of vehicle delivery. All low floor coaches shall be capable of using standard size 12R22.5 or equivalent mileage tires, except the 30 foot low floor which shall be able to use 275/70R x 22.5.

8.6. Air Suspension

a. Coach shall be equipped with an air-suspension system. Air suspension system shall consist of four (4) rear and four (4) front Rolling Lobe Firestone air bellows and three (3) leveling valves as manufactured by Delco, by which the air pressure is automatically regulated in proportion to the coach loading. Leveling valve shall be installed in such a manner that will prevent leveling valve roll-over.

b. Air bellows shall act as a flexible connection between body and axle to absorb and cushion road shocks.

c. Leveling valves manufactured by Barksdale shall also act to keep the coach body in relatively level position and contain a dampening or compensating feature to prevent excessive consumption of air resulting from high-frequency axle movements over rough streets.

d. Metal air chambers, if used, shall be guaranteed by the manufacturer for the life of the coach. Methods of construction and the materials used shall be of such manufacture as to permit easy and convenient replacement of bellows. Bellows shall be mounted to provide easy replacement under coach.

e. The three (3) Barksdale height control valves, one (1) at the front axle and two (2) at the rear axle, will retain the height of the body in relation to the axles under all loading conditions.

f. Each axle shall have front radius rods manufactured by Clevite and rear radius rods manufactured by O&S.

g. Two (2) lower, one (1) upper, and one (1) lateral to locate the axle position and to transmit the driving, braking and cornering forces from the road to the coach understructure.

h. The front upper radius arm assembly shall have a turn buckle to allow adjustment of the front axle caster without arm removal.

i. Shock absorbers, Koni adjustable, shall be provided.

j. Rubber axle stops shall be provided between the axle and frame on each side of the axles to prevent axle and/or frame damage in severe bounce condition and to allow operation of the coach if one or more air bellows are deflated.

8.7. Steering System

a. Power steering shall be TRW Model TAS6505. Steering column shall be TRW Electric assist without column turn signal and hazard switch. Steering wheel: 20” Non-Padded 3 Spoke Wheel With Gillig Logo Horn Button

b. Steering effort and number of turns “lock-to-lock” shall be designed and coordinated to minimize driver fatigue. Steering forces and characteristics in the event of failure of the power boost shall enable the coach to be safely driven in this condition.

c. Steering mechanism shall be mounted so that all adjustments can be made without dismounting parts. Mounting of gear assembly shall be engineered to reduce road shock and vibration.

d. Steering units shall have hex head filler and drain plugs.

e. The drag link assembly shall have a horizontal socket for attachment at the Pitman arm, and a vertical stud for attachment at the steering knuckle arm. Both ends shall have internal springs and lubrication fittings. The assembly shall have plus or minus .50-inch length adjustment.

f. Front axle tie rod ends shall be threaded into the tube for adjustment without removal. Lubrication fittings shall be provided on the non-serviceable end assemblies.

g. The steering wheel shall be twenty inches (20”) minimum in diameter and shall be black color plastic or synthetic resin construction with a metal core. It shall be provided with puller holes in the hub.

h. Shall be tilt with telescoping steering shaft.

9. BRAKES

9.1. General

a. The vehicle’s air brake system will be equipped with both service and emergency brakes that conform with FMVSS 121 as applicable. An Anti-lock Brake System

operating in conjunction with the air brake system shall be standard with each coach. Prior to delivery of the first coach, the Contractor shall supply documentation certifying the air brake system conforms to FMVSS 121/ California Title 13. If the contractor has no documentation certifying that the vehicles furnished under this contract conforms with FMVSS 121, LAVTA shall require the manufacturer to perform stopping tests on one (1) coach at full G.V.W.R. and measure stopping distances, in accordance with FMVSS 121/California Title 13. The test shall be completed prior to delivery of any coaches to LAVTA. If the test vehicle fails any portion of the testing, the vehicle will be re-tested after modifications until all tests are successfully completed.

b. A dual brake system shall be provided in the coach which provides two totally independent brake systems. This system features a dual brake valve in which the top portion provides the primary service brake system. In the event of a loss of air of one system, the other system will provide adequate braking to stop the coach. A Bendix-Westinghouse “SR-1” spring brake control valve shall be provided to modulate rear spring brakes in the case of a primary system failure. The service brakes shall consist of four (4) wheel air operated, internal expanding S-Cam type.

9.2. Brake Chambers

a. Brake chambers shall be MGM type with protective boot over the push rod.

b. Brake chambers shall be equipped with manufacturer’s standard diaphragm and spring. Brake system shall be balanced to provide safe stop operation.

9.3. Service Brakes

a. Coaches shall be equipped with brake systems which conform to the requirements of all Federal regulations, designed so such conformance can be maintained throughout the normal adjustment cycle. A supplemental brake (transmission retarder) shall also be provided. The supplemental braking shall not be used in meeting regulatory criteria. The braking system shall include service brakes, a parking and emergency brake.

b. The driver’s brake pedal shall control the service brake and the supplemental brake in a coordinated manner to give a total braking effort depending on the position of the pedal up to the maximum capability of the braking system. Brake valve shall be a Bendix-Westinghouse “E-6.” The control shall make maximum practical use of the supplemental brake to minimize brake fade and to achieve maximum brake lining lifetimes. Braking forces shall be proportioned among the axles to assure balanced braking and equalize lining life between axles.

c. Brake lights shall be activated as soon as the brake pedal is depressed and when any auxiliary braking (transmission retarder) is applied.

d. The parking brake shall be a spring brake MGM #E3636T with quick release yoke or manual “wind-off”, capable of bringing the coach to a stop from a speed of twenty (20) miles per hour at a deceleration rate equivalent to a stop within sixty feet (60’) with a seated passenger load. The parking brake shall be actuated

and exhausted by a manual “push-pull” valve. The valve shall apply the brakes by pushing “in” and release the brakes by pulling “out.” In the event of total loss of air system pressure, the spring brakes shall be applied automatically. The control valve shall be located to the left and adjacent to the driver for safe, convenient access.

9.4. Brake Interlock

The primary service brake system shall incorporates a double check valve, pressure regulator and a solenoid valve to provide a rear brake and throttle interlock while the rear door of the coach is open. Release occurs when the rear door is closed and the Operator’s control is deactivated. Also, the actuation must occur when kneeling and/or wheelchair lift is used in conjunction with the front door. The front door operation shall not be interlocked with the brake system. The interlock system shall comply with California Title 13, Section 1267, e, 3, c regarding interlock warnings.

9.5. Brake Drums, Shoes and Linings

a. Rear brake drums shall be a minimum of 14.5 by 10 inches. Front brake drums shall be a minimum of 14.5 by 6 inches. Brake shoes shall be of two shoe type, heavy duty, fabricated steel, heavily ribbed to insure uniform pressure. Linings shall be non-asbestos heavy-duty transit brake block manufactured by Meritor. A method of visually indicating wear of the brake lining shall be provided. ‘S’-cam brakes shall be supplied. Drums shall be labeled with the maximum safe diameter for drum refinishing.

b. Brakes shall be provided with “Haldex” automatic slack adjusters. All slack adjusters shall be removable without disassembly or removal of other components and equipped with grease fittings for lubrication. Slack adjuster travel and geometry shall be designed not to exceed 90 degrees in relation to the pushrod, when properly adjusted, throughout the lining life.

9.6. Brake Hoses

All brake hoses shall be installed in locations where the possibility of damage is minimized. Hoses shall be clamped and supported by the coach structure to minimize long unsupported hose lengths and to eliminate rubbing and/or chafing.

9.7. Brake Retarder

a. Transmission shall have an integral brake retarder.

b. Retarder ON-OFF Toggle switch shall be mounted in the driver’s console area, location to be approved by LAVTA. Switch to be labeled “RETARDER” and with ON, OFF lettering for appropriate switch position.

10. AIR SYSTEM

10.1. Air Compressor

a. Air compressor shall be a Wabco sized by the bus manufacturer for the air system requirements and duty cycle of the bus.

b. Compressor shall be gear driven by the engine. The compressor shall be equipped with an inlet check valve to minimize the blow by of oil through the compressor.

c. Air Governor shall be Bendix-Westinghouse “D-2” type.

d. Discharge line from the compressor to the air dryer and first tank shall be not less than seven-eighths inches (7/8”) inside diameter of stainless steel braided construction with teflon inner liner. The discharge line will be properly supported to prevent chafing or damage and routed to insure the line will drain to the first tank/dryer.

10.2. Air Tanks

a. Air reservoirs shall be of adequate capacity for supplying the air volume needs of the coach. All air tanks shall be equipped with four (4) drain valves mounted on the road side, and have pull cords at lower skirt curbside.

b. There shall be low-air pressure switches located on the air tanks. They shall monitor the primary and secondary reservoir air pressure.

c. In combination with the visual and audible signals, there shall be a single “VDO” dual needle air pressure gauges reading the pressures of the primary (rear brake) and secondary (front brake) reservoirs.

d. All air lines shall be synflex nylon tubing, color coded, meeting the requirements of SAE type J844, except for the supply lines, which shall be 2807 stainless steel braid.

10.3. Air Dyer

The air system shall be equipped with a SKF, HCT-2000 Duraguard air dryer mounted in a location approved by the manufacturer and reviewed with LAVTA during the pre-production meeting.

10.4. Brake Lines Body Mounted

a. All air lines shall be synflex nylon tubing, color coded meeting the requirements of SAE type J844. The supply lines shall be 2807 stainless steel braid, Teflon inner core for heat resistant. Lines shall be securely mounted to frame to prevent chafing or wear. Clamps shall be of proper size. Lines shall be protected at clamps with heat resistant material.

b. Rubber grommets shall be used at all points where air lines pass through bulkheads or any supports.

c. All clamps, fittings, etc., must be easily accessible and installed in such a manner that they are easily removed and replaced.

10.5. Brake Lines at Wheels

Flexible brake lines shall be Parker Hannifin Model 293 with nut and sleeve type fittings. They shall be of adequate length to prevent any strain, regardless of relative motion between brake valve and brake chamber, without allowing chafing or rubbing.

10.6. Brake Relay Valve

A brake relay valve shall be provided. It shall be Bendix-Westinghouse R-12.

10.7. Check Valve

A check valve shall be provided between #1 and #2 tanks, adjacent to the second tank, and accessible for service.

10.8. Interlock Valves, Door, Accelerator and Brake

Door, accelerator and rear brake interlock valves shall be mounted to minimize length of air lines. Location to be approved by LAVTA.

10.9. Towing-Air Line Connector

An air line connector (Shrader) shall be installed on the front and rear end of the coach. Final installation locations shall be approved by LAVTA.

10.10. Switch, Low Air Pressure

The switches shall be connected in parallel and shall trigger a red indicator “LOW AIR” light and an audible alarm when the air pressure of any reservoir is below 90 p.s.i.

11. PROPULSION SYSTEM

The powerplant shall be arranged so that accessibility for all routine maintenance is assured. No special tools, other than dollies and hoists, shall be required to remove the powerplant. Two mechanics shall be able to remove, replace, and prepare the engine and transmission assembly for service in less than 20 total combined man hours. The muffler, exhaust system, air cleaner, air compressor, starter, alternator, radiator, all accessories, and any other component requiring service or replacement shall also be easily removable independent of the engine and transmission removal.

11.1. Engine – Category 1

a. Coach shall be powered by a CARB Approved Cummins heavy-duty diesel engine appropriate to the configuration proposed, Diesel, Diesel-Electric Hybrid or CNG.

b. Power plant shall be a complete unit, mountable and demountable unit installed in the "T" or in-line configuration. The engine installation shall include motor mounts and related accessories that provide proper vibration isolation and control of engine movement in all axis to prevent premature wear and failure of engine accessories, drive belts, piping, hoses and related hardware

c. Engine shall meet all applicable Federal and State clean air standards as they pertain to diesel engines. Engine shall be capable of operating on California Air Resources Board (CARB) Ultra Low Sulfur Diesel fuel.

d. The rear mounts for the engine shall be attached to engine bell housing.

e. All accessories, other than the air conditioning compressor and one (1) other component, shall be driven from engine without use of drive belts or chains. A maximum of two (2) belt driven accessories shall be accepted.

f. The engine installation shall contain the latest available specific provision for emission and sound control per State/Federal regulations for the year the coach is delivered. The installation must meet the requirements as established under Section 4.3 "Internal Noise" and Section 4.4 "External Noise" of these technical specifications.

g. Fleetguard spin-on oil filter shall be mounted to the engine.

h. A Spinner II, model 576 transit by-pass filter with a disposable rotor for easier cleaning shall be provided and mounted in an easily accessible area. Use of this system and the installation design shall be authorized by the engine manufacturer.

i. The oil filler tube and oil dipstick shall be accessible through the engine compartment door. Both shall be readily accessible without the removal of belt guards for engine servicing.

11.2. Engine Protection

a. The engine shall be protected from failures by the electronic module and sensors consisting of no less than "Low Coolant", Low Oil Pressure, and "Oil Over-Temperature", "Coolant Over-Temperature" will provide information to the control module regarding the engine's condition.

b. Once a signal is received from a sensor, the engine control module will provide the Operator with "Check Engine" and "Stop Engine" lights and alarm at the dash board area. In addition, a code associated with the detected problem is stored in the Engine Control Module memory.

c. When the two (2) lights are illuminated, the Engine Control Module cuts power back. Thirty (30) seconds after fault detection, the engine is cut off completely.

d. A momentary type stop engine override button will be provided, which enables the Operator to receive another thirty (30) seconds of operation before shut-down.

e. The Engine Control Module shall be equipped with a self diagnostic system as well as engine system protection and engine performance diagnostics. A failure shall be retained by the control module for evaluation by garage personnel using a diagnostic reader.

f. The Engine Control Module shall be remote mounted to allow easy access to service and diagnose the ECM.

g. There shall be a total of two (2) plug-ins for the diagnostic reader, one (1) to be located at the Operator's dash area and the second (2nd) to be located at the rear engine run control box. Both plugs shall be permanently affixed to the coach for ease of plug-in. The rear connectors shall be mounted at the rear run control box within a sealed, weatherproof enclosure.

11.3. Engine Throttle Systems

a. Accelerator shall be Williams with a 45^{o} angle compatible with transmission, and electronic engine. The throttle pedal shall be mounted so that it is equal to or higher than brake pedal. Adjustable throttle and brake pedal are to be included.

b. The engine shall be equipped with a fast idle device to be automatically engaged with the transmission in neutral and the air conditioning system and/or wheelchair lift in operation. Such a device may also be manually activated any time the bus is in "Neutral" by the Operator.

c. The engine compartment shall be equipped with a **Rheostat Variable Speed Control With Toggle Switch & Guard**. Such a throttle shall enable the service personnel to manually "throttle up", "throttle down", or maintain infinite levels of engine RPM's by use of a twist and lock control. The Throttle control shall be mounted at the rear run control box. The system shall be controlled by a "Front/Rear" sealed selector switch located on the rear run box. When the switch is in the "Front" mode, the manual throttle shall not operate. The switch shall be guarded with a non-rotational cover.

11.4. Air Cleaner

a. The air cleaner shall be a Donaldson Model RBX00-2277 click-stop air restriction indicator calibrated for the inches of water/vacuum recommended by the engine manufacturer.

b. The engine air intake duct shall be so shaped as to minimize water entrance into the air induction system, and the element shall be easily replaceable. A passage shall be provided so that any water which does find entry into the system can be drained prior to entry into the air cleaner element.

11.5. Engine Compartment Lines

Flexible lines (air, fuel and oil) in the engine compartment, shall be FC300 Aero Quip with reusable fittings. Water lines in the engine compartment are silicone. The supply line on the hydraulic reservoir shall be a #20 Aero Quip heavy duty braided hose. The

hydraulic pump output hose shall be Aero Quip #444 high pressure hose. All lines shall be sufficiently secured so that there will be no abrasive movement.

11.6. Clamps

All support clamps in the engine compartment and/or on the power module that have direct contact with the wire, cable, harness hose or line shall be stainless steel Breeze clamps.

11.7. Insulation

Engine side of rear seat shall be sealed so as to prevent smoke and fumes from entering passenger area and shall be insulated against both heat and sound. Thermal insulation shall assure there will be a minimum eighty degree (80^{o}) temperature differential between engine compartment and passenger area

11.8. Fuel System

a. The fuel tank shall be a single transverse mounted stainless steel fuel tank 120 gallon capacity with a usable capacity of 115 gallons. The tank shall be mounted under floor aft of the rear door and caged within the coach structure for safety and corrosion resistance.

b. Tank shall be equipped with an audible signal to indicate when tank is almost full. Shall be equipped with Emco Wheaton Posi/Lock 105 with dry break, and shall be provided with hinged spring loaded “Posisnap” P/N 5797511 cap and hinged access door. Fill rate shall be a minimum of 40 gallons per minute. Filler neck shall be located on the curb side of the coach.

c. The fuel tank shall be a bottom draw design, and the fuel tank sending unit is accessible from underneath the coach.

d. The fuel tank shall be designed so as to not permit the spillage of any fuel, with the filler cap properly closed, when the floor of the coach is at any angle from horizontal through 22 degrees from horizontal in any direction for any period of time. This shall be accomplished with the fuel tank filled to capacity as defined by published capacity and whistle cut off point.

e. Fittings on fuel and oil lines shall be SAE flared or inverted flare type. Fuel filter and lines shall be installed in such a manner as to avoid excessive heat and fire hazard. Restriction fittings, if applicable, shall be in fuel return line and of proper size so as to maintain fuel pressure under all conditions. A swing type check valve in the fuel supply line shall keep the supply line full of fuel when servicing filters or when fuel lines are disconnected in engine compartment.

f. One (1) DAVCO 384 heated remote mount fuel filter shall be provide in a location to be approved by LAVTA.

g. Fuel lines in engine compartment shall be Aero Quip FC350 hose, black, for the supply and return fuel lines from the engine compartment bulkhead to the fuel tank.

h. Underbody fuel lines shall be stainless steel braided Teflon. Lines shall be sized to meet the requirements of the engine manufacturer.

11.9. Exhaust System

a. The exhaust muffler shall be a stainless steel heavy plate type muffler designed with proper acoustical qualities and tailored to the engine requirements and installation.

b. Exhaust pipes shall be constructed of stainless steel metal tubing direct from the muffler to a location in the upper left rear of the vehicle.

c. The exhaust system will meet all clean air standards, USEPA and CARB in effect for the model year bus offered.

d. Exhaust system shall be constructed so that it will not cause back pressure in the engine or damage to the paint on the coach, and shall be anchored as near the end of the exhaust line as possible. It shall be mounted so as to maintain the integrity of its design throughout the life of the coach.

e. Exhaust manifolds, muffler and single tail pipe assemblies shall be tight and allow no emission of fumes or smoke other than from open end of tail pipe.

f. Access to test port on muffler shall be provided.

g. Exhaust tail pipes shall be constructed of stainless steel tubing. The use of the vertical exhaust outlet shall not increase the overall length of the vehicle, nor shall it be located in such a way as to present a burn hazard to the pedestrian traffic. The termination of the tail pipe shall be such that it complies with FMVSS 108 pertaining to side marker and clearance lights, and exhaust shall be deflected to the left rear of the coach.

11.10. Transmission

a. Automatic transmission shall be an Allison B400R compatible with the engine offered.

b. The transmissions shall be equipped with a hydraulic converter start, a hydraulic type retarder, and the latest electronic controls. A low profile cast aluminum pan shall be provided for maximum clearance. The retarder calibration shall be confirmed during the pre-manufacturing meeting.

c. Transmission shall have a built-in oil pump, governor, and an external heat exchanger that utilizes water from the engine cooling system. The heat exchanger shall be located in an accident-free area.

d. The installation design shall allow for separate removal of the transmission without removal of the engine. Engine supports and mounts shall not be located on the transmission to allow for easy transmission removal.

e. A drain plug of magnetic type, and a flat magnet attached to bottom of oil pan near drain opening, shall be furnished.

f. Transmission shall have a spin-on type external oil filter on both the main pressure valve body input line and the oil cooler output or return line.

g. The retarder to have an On-Off switch mounted in overhead electrical compartment.

11.11. Transmission Controls

a. The transmission shall be governed by electronic controls, which contain a programmable read-only memory (PROM) that will provide basic transmission control function. The transmission electronic module shall be capable of communicating with the engine electronic module to maintain maximum efficiency.

b. The gear selector shall be totally electronic with touch-sensitive pads compatible with transmission, located on left side console, and Allison approved.

c. Transmission engine interlock switch will be provided so coach cannot be shut off while in gear. A starter lockout switch shall be provided that shall sense transmission gear changes. Starter motor shall be energized only with the transmission in the neutral position

d. A waterproof back-up light switch shall be provided on the transmission to energize the back-up lights and de-energize the interior lights with transmission in reverse and master switch in the “RUN” or “NIGHT” position.

e. The transmission retarder shall be controlled by brake activated air pressure switches. The final retarder control design will be discussed and approved at the pre-manufacturing meeting.

f. The system will incorporate various sensors which feed information regarding the shift selection, oil temperature, pressure, etc.

g. The Operator will be provided with a “Check Transmission” and/or a “Do Not Shift” light and alarm located at the Operator’s dash board.

h. The electronic controls shall be equipped with a self-diagnostic system as well as transmission protection. A failure shall be retained by the control unit for evaluation by garage personnel by using a diagnostic reader.

i. Plug-ins for the reader shall be through the same two (2) plug outlets as listed under Section 11.2.g “Engine Protection.” If separate plugs are required, they shall be mounted in the same two locations as specified for the engine controls, unless an alternate location is approved by LAVTA.

11.12. Propeller Shaft and Driveline

a. Propeller shaft shall have a minimum diameter of four inches (4") and shall be constructed of steel. The universal joints shall be heavy duty. Shaft shall have a protector guard.

b. A slip joint shall be placed at the transmission to compensate for vertical movement at the rear axle. Lubrication fittings shall be provided for the universal bearings and slip joint splines.

12. COOLING SYSTEM

12.1. Engine Cooling

The engine shall be cooled by a water-based, pressure type, cooling system that does not permit boiling or coolant loss during the operations described above. Engine thermostats shall be easily accessible for replacement. Shutoff valves shall allow filter replacement without coolant loss. Valves shall permit complete shutoff of lines for the heating and defroster units, and water booster pumps. The water boost pump shall be a long life brushless design. All low points in the water-based cooling system shall be equipped with drain cocks. Air vent valves shall be fitted at high points in the cooling system unless it can be demonstrated that the system is self-purging.

EMP electric fan cooling system is required. Electric fans shall be brushless, variable speed, reversible and have a corrosion resistant metal shroud with finger guards. The fans should provide electronic feedback control and have diagnostics capability through the standard SAE J1939 diagnostics port. The cooling system shall consist of multiple electric DC brushless pusher type variable speed fans with electronic feedback controls. Electric fan motor speeds shall have a minimum operating range of 0-5500 rpm with capability of manual or automatic reverse operation in order to assist in debris removal. The cooling system shall be equipped with a master controller with the following capabilities; automatically reduce fan speed when the vehicle stops to minimize noise at the curbside, communicate on the J1939 CAN data link with system diagnostic retorting via DM1 messaging, review and download data via a laptop with service tool software, capable of software and calibration up-dates, receive commands from the engine or transmission ECM, report fault codes by lighting an engine compartment LED flashing light, sense engine compartment temperature and activate fans if maximum temperature is exceeded, collect and store cooling system and vehicle performance histogram data. If fans lose communication with the engine or sensors they shall go into a default speed mode to avoid vehicle shutdown. This communication shall use the industry standard RP1210 compliant datalink adapters connected via the standard 9-pin diagnostic connector found in the engine compartment and interior of the bus. Independent diagnostic detection shall be capable of identifying specifically which fan, measured input parameter, or datalink input parameter is experiencing a fault condition. Report both active and previously active fault codes with the number of detections/occurrences, time of the first and most recent fault detection, and cumulative time the fault was active. Where electric fans are used for cooling there shall be ample field experience. As a minimum, 50 electric fan based cooling systems shall be in transit revenue generating operation for at least 2 years.

A sight glass to determine satisfactory engine coolant level shall be provided and shall be accessible by opening one of the engine compartment's access doors. A spring-loaded, push button type valve to safely release pressure or vacuum in the cooling system shall be provided with both it and the water filler no more than 60 inches above the ground and both shall be accessible through the same access door.

12.2. Radiator

The radiator, and charge air cooler if integrated, shall be of durable corrosion-resistant construction. Radiators with copper/brass construction shall be fitted with bolted-on removable tanks. Brazed aluminum radiators shall have welded cast tanks. Automotive crimped-on tanks are more susceptible to leaks and early failure, and shall not be used. The radiator shall be designed so a mechanic can gain access to a substantial portion of the side facing the engine for the purpose of cleaning the radiator in five minutes or less.

Radiators shall have a fin density 10 fins per inch or less and shall not have louvered/slit designs. These are more susceptible to clogging and deteriorating cooling performance over time and shall not be used. Radiators shall utilize a bar and plate design so they are robust and can be cleaned with high pressure spray wash.

For certain severe environments, a secondary cooler may be used to increase the ambient temperature capacity for a cooling system. The secondary cooler shall be remote mounted, but below the coolant surge tank. Air flow should be provided with brushless electric fans. If an application requires a boost pump to maintain coolant flow to the secondary cooler, a brushless electric water pump shall be used.

No heat producing components or climate control system components shall be mounted between the engine cooling air intake aperture and the radiator.

The radiator and charge air cooler shall be designed to withstand thermal fatigue and vibration associated with the installed configuration.

12.2.1 Baseline: Standard Requirement for Coolant Filtration

The engine cooling system shall be equipped with a properly sized water filter with a spin-on element and an automatic system for releasing supplemental coolant additives as needed to replenish and maintain protection properties.

12.2.2 Baseline: Standard Requirement for Cooling Fan Operation

The cooling fans shall be temperature controlled, allowing the engine to reach operating temperature quickly. The temperature-controlled fans shall not be driven when the coolant temperature falls below the minimum level recommended by the engine manufacturer. Electric fans should provide independent control of the engine coolant and charge-air temperatures.

12.3. Charge Air Cooling

The charge air cooling system, also referred to as after-coolers or inter-coolers, shall provide maximum air intake temperature reduction with minimal pressure loss. The charge air radiator shall be sized and positioned to meet engine manufacturer's

requirements. The charge air radiator shall not be stacked ahead or behind the engine radiator and shall be positioned as close to the engine as possible unless integrated with the radiator. Air ducting and fittings shall be protected against heat sources, and shall be configured to minimize restrictions and maintain sealing integrity.

12.3.1 Engine and Charge Air Cooler Cooling System - Electric

The cooling systems shall be of sufficient size to maintain all engine and transmission fluids and engine intake air at safe, continuous operating temperatures during the most severe operations possible and in accordance with engine and transmission manufactures cooling system requirements. The cooling system fan controls should independently sense the temperatures of the operating fluids and intake air and if either is above safe operating conditions the cooling fans should be engaged. The fan control system shall be designed with a fail-safe mode of “fan on.” The cooling system in new condition shall have an ambient capacity with vehicle at max. GVW of at least 115ºF at Peak Power and 120ºF at Peak Torque using a 50-50 mix of ethylene glycol/water at sea level operation. Vehicle might require the following recirculation control features; vented curbside door, vented rear door and/or radiator skirt.

12.4. Surge Tank Filler Neck and Cap

a. The sealed cooling system shall be provided with self-unloading valve to prevent extreme pressure from injuring cooling system.

b. Heavy-duty copper, brass (stress relieved), or stainless steel radiator surge tank shall be provided and mounted above the radiator and easily accessible for service. Sight glass shall be provided to allow check of fluid level without opening system. A low coolant sensor will be provided on the surge tank. Filler cap shall be hinged type.

c. A spring-loaded, push-button type valve to safely release pressure or vacuum in the cooling system shall be provided. A “T” fitting shall be installed prior to the valve to allow pressure testing of the system. The valve and water filler shall be located no more than sixty inches (60”) above the ground and be accessible through the same access door as the sight glass.

12.5. Water Pump

Water pump shall have sufficient capacity to prevent any hot spots under all operating conditions.

12.6. Hose/Clamps

Engine water and heater hoses shall be premium quality Armet or Flex-Fab silicon hose. All hoses shall be protected from engine heat which may cause premature failure. All hose clamps shall have constant tension. Hose clamps shall be 1/2 inch wide minimum, stainless steel worm type, socket tightened with collar (Breeze or Oetiker).

12.7. Water Filter

"Fleet Guard" spin-on water filter (no pre-charge type) with brass shut-off valves both inlet and outlet, shall be installed in an easily accessible area.

13. FIRE DETECTION/SUPPRESSION SYSTEM

A dry chemical, pre-engineered fire suppression system, AMEREX model #V-25, shall be furnished and installed for the protection of the coach. The system supplied shall be approved and listed for use at -65 F (-54 C) to +150 F (66 C) by Factory Mutual Research Corporation (FMRC). The automatic detection and actuation system shall provide twenty-four (24) hour fire detection of the engine compartment. The system shall be designed to operate at 12 to 24 VDC and shall not exceed a standby current draw of more than 0.1 amp. The system manufacturer shall provide a $5 million insurance policy (per vehicle, per incident) to LAVTA. The inherent safety aspects provided by the suppression system requires the manufacturer of the related equipment to be an ISO 9000 registered company.

13.1. Agent Cylinders

a. Agent Cylinder shall be of the stored pressure type minimum 25 pound capacity. The cylinders shall be constructed of welded steel and must conform to Department of Transportation (DOT) specification 4BW, and must be marked as such. The hydrostatic retest interval for these cylinders shall be 12 years minimum. Cylinders shall be modular, with each having its own discharge piping and nozzles. Operating pressure for the cylinders shall be 350 psig.

b. A gauge, protected by a rust-resistant chrome plated brass gauge guard, shall be provided to indicate proper pressurization of agent cylinders. The agent cylinder shall be equipped with a forged brass valve assembly. This valve shall retain and release extinguishing agent and repellent pressure by means of a spring loaded sealing stem. The valve shall be configurable for actuation by a pneumatic control head. See "System Actuation." No replacement parts, such as burst discs, shall be required to recharge the agent cylinder following discharge.

13.2. Nozzles

a. Nozzles shall be brass, and be of the design approved by FMRC for use with the vehicle suppression system specified herein. Nozzles shall be located to protect specific hazards as identified by the system installer and the equipment owner. All nozzles are to be fitted with dust caps that, upon system actuation, are displaced to allow full chemical flow. The caps are to be constructed so that upon displacement they do not drop into a fire hazard where they can contribute as fuel to an in-progress fire.

b. Nozzles shall be of the type to provide both total flooding and local application coverage. Nozzle coverage shall be modular to provide a minimum single nozzle total flooding coverage of 244 cu. ft. or local application coverage of 900 sq. in. Nozzles shall be combined with appropriate agent cylinders to yield 4, 6, or 8 nozzle combinations. A minimum of four (4) nozzles shall be provided in the engine compartment.

13.3. Extinguishing Agent

The system shall use as its extinguishing agent an agency approved multipurpose class ABC dry chemical. This agent shall be approved for use with the system specified herein by Factory Mutual Research Corporation. Extinguishing agents that are of known ozone depleting nature or are suspected carcinogens are not acceptable.

13.4. Hoses and Fittings

Fittings shall be galvanized malleable or ductile iron, black or galvanized steel, stainless steel, copper or brass. Cast iron fittings shall not be used. Hose shall be, at minimum, single wire braid, rubber hose conforming to and marked as SAE 100 R5 or SAE 100 R1.

13.5. System Actuation-Remote

Actuation of the agent cylinder valve(s) for distribution of the extinguishing chemical shall be accomplished by a pneumatic control head. Actuation pressure of the pneumatic control head shall be supplied by remote nitrogen cylinders independent of the agent expellant pressure. Release of nitrogen gas from the remote cylinders shall be accomplished by the manual striking of a palm button and, optionally, by the automatic firing of an electrically initiated gas generating cartridge (squib).

13.6. Fire Detection

Detection of fires shall be accomplished by devices approved for use by Factory Mutual Research Corporation as Heat Actuated Fire Detectors. The detectors shall be normally open and shall be capable of carrying sufficient amperage for the purposes of firing the gas generating cartridge (squib).

13.7. Suppression System Circuit Supervision

a. An electrical circuit monitor (circuit monitor plus) shall be provided for the automatic suppression system. This circuit monitor shall provide electrical supervision of the automatic fire suppression system POWER, HEAT DETECTION, and SYSTEM ACTUATION electrical wiring circuits and shall facilitate the connections of these circuits. The enclosure for the control shall be watertight and shall be electrically non-conductive. The circuit monitor shall be capable of either 12 or 24 VDC operation.

b. The control shall provide indication of a NORMAL, FIRE or FAULT condition via red and green LED’s mounted behind the control enclosure front panel. Once initiated, the circuit monitor shall remain in the FIRE or FAULT mode until the fire suppression system is returned to a ready condition. The red LED shall be clearly labeled “FIRE.”

c. The circuit monitor shall also be equipped with a continuous tone audible alarm. This alarm shall sound in both FIRE and FAULT conditions. Once the audible alarm begins to sound it shall be capable of being silenced by depressing a labeled ALARM SILENCE button, provided on the circuit monitor front panel.

Indication of a silenced alarm shall be provided via a labeled SILENCED ENGAGED LED.

14. ELECTRICAL

The bus will be equipped with a dual voltage 24/12 V power distribution system, adequately sized for all electrical loads on the buses as specified, including air conditioning and wheelchair ramp. Design details of the electrical system will be reviewed with LAVTA during the pre-production meeting.

14.1. Alternator and Regulator

a. The alternator shall be sized to supply the entire nighttime operating electrical load of the coach while providing at least 20 percent (20%) of its current output for battery charging when the battery is fully discharged. The alternator shall be an EMP P450 rated at 450 amps with an external electronic voltage regulator.

b. The Contractor shall provide an analysis, approved by LAVTA, demonstrating that the alternator supplied is adequate for coach operation in the service area of LAVTA. Alternator cooling methods shall be approved by LAVTA.

14.2. Battery

a. The term battery means two or more heavy duty top quality lead acid battery units mounted side by side in a battery compartment. The battery compartment shall not be located in the engine compartment. Pull-out stainless steel battery trays shall be provided. Batteries shall be by “DEKA.” The configuration for the battery is two battery units size 8D, 12 volt, 6 cell and 31 plates per cell. Batteries shall be stamped with the date of manufacture. Batteries shall not be abused or quick charged before delivery. Batteries shall be new when the coach is delivered to LAVTA.

b. Despite the battery configuration stated above, the Contractor shall be responsible for analysis of the loads and selecting a battery of adequate capacity to supply them. Other battery configurations may be used with the prior approval of LAVTA. Battery installation to be approved by LAVTA.

14.3. Battery Terminals/Wiring/Protection

a. The battery wiring shall be terminated with properly sized ring terminals. The batteries shall include 7/16” positive and 3/8” negative terminals. The cable shall be permanently marked with a “+” and “-“ at the battery end. Cables shall be extra flexible and routed in the battery box so as not to chafe or rub on the battery tray and other components. Cables shall allow full slide-out of the tray. Cable ends shall be sealed to eliminate corrosion from battery acid and/or fumes. Cable ends shall be attached to the battery studs with non-corroding flat washers, spring washers and brass nuts. Cable ends will be coated with a corrosion inhibitor after being attached to the batteries.

b. A circuit breaker capable of interrupting a major short circuit shall be supplied on the positive side of the batteries. The breaker shall be located near the batteries in an easily accessible location, sealed from water and battery fumes.

c. There shall be a set of battery jumper terminals located at both the front and the rear of the coaches in easily accessible locations. Location and mounting of the terminals are as follows: , 1 **Mounted @ Battery Compartment** 1. **Mounted @ Curb Side Post Accessed From Main Engine Door**

d. An electrical main switch shall be provided to positively disconnect the battery from electrical loads when the coach is not in use or in emergency situations. The switch shall be located in an outside compartment which requires no tool(s) for access. The switch shall be totally sealed in its own sub-compartment. It is preferred that the switch handle be non-removable. If the switch handle is removable, it shall be attached to the switch housing using a small corrosion proof metal cable. Emergency flasher and Equipment shelter power circuitry shall be independent of the main switch. Exact location and details of the switch shall be approved by LAVTA at the design review meeting.

14.4. Voltage Drop

a. There shall be no more than a 3% volt cumulative drop on any circuit, measured from the initiating source to the appliance load positive and from the appliance load negative to the reference ground with the load fully operational.

b. The initiating source for any 24 volt circuit is defined as the 24 volt output positive post of the series connected batteries.

c. The initiating source for any 12 volt circuit is defined as the 12 volt output positive post of the battery equalizer/splitter.

d. The reference ground is defined as the most negative post of the series connected batteries.

e. Measurement equipment and procedure to check voltage drops shall be approved by LAVTA.

14.5. Starter

a. The engine starter shall operate from normal coach voltage and be sized to provide sufficient torque to turn the engine reliably under all hot or cold engine or ambient temperature conditions. The starter shall be a heavy duty “Delco Products Division” Model 42MT or approved equal as recommended by the engine manufacturer and approved by LAVTA.

b. The starter solenoid switch shall be interlocked so that the engine can be started in neutral gear only with the transmission selector in neutral only. Starter will not operate when engine is running. The interlock shall be activated by fuel pressure or by other approved means. Other major electrical loads shall be disconnected while cranking.

14.6. Electrical Panel

a. Circuit breakers shall be provided to sectionalize and protect all branch circuits of the electrical system of each coach. Any circuit without protection must be approved by LAVTA.

b. To the maximum practical extent, electrical distribution and control devices shall be grouped on an electrical panel arranged for ease of access, test, and replacement of components. The panel shall be large enough to avoid crowding of the components and leads. Component heat build-up shall not affect the components or mounting locations. There shall be a test plug receptacle for electronically diagnosing the engine using portable instruments.

c. A durable diagram shall be mounted, in the electrical panel that identifies the components and their function. Relays and circuit breakers shall be permanently labeled to correspond to this diagram. Switch controlled lights shall be provided to illuminate the main electrical panel.

d. The location, design, and arrangement of the panel and diagrams/labels shall be approved by LAVTA during the pre-production meeting.

14.7. Multi-Plex System Electrical

a. The bus shall be equipped with an I/O Controls Dinex multiplex control system to minimize individual circuits and ease in troubleshooting electrical and component failures.

b. The location of main coach controller (MBC/HCNC) shall be approved by LAVTA at the design review meeting The indicator lamp strip module shall be integrated into the multiplexing system to receive commands from the master module to turn appropriate indicator lights on and off according to programming commands. The system shall be connected by a “ring loop” hookup.

14.8. Wiring

a. All wiring including cables shall be stranded copper, adequate in size to carry the electrical load. Each harness shall contain identified spare wires (10 percent, minimum one) and shall be installed with consideration of possible future need to remove and replace it. All low voltage lighting shall run sufficiently cool so as to eliminate any damage to lamps, lenses, sockets, wiring or surrounding areas. Electrical junction boxes shall have sealed covers and openings.

b. Wiring shall be insulated with two-layer cross-link polyethylene. Insulation must be moisture proof and heat resistant. It shall be a design objective to route wiring and harnesses in areas with no temperature build-up. If wiring must be run in areas of heat build-up, it must withstand, without deterioration for the life of the coach, the highest temperature in the area served. Engine compartment wiring shall be heat, oil and flame resistant. Alternative insulation materials for special installations may be used with the prior approval of LAVTA.

c. Wiring shall be protected from weather and mechanical injury. Cables should be supported along their length and strain-relieved near terminations so that connectors and terminals are not under stress. Wire and cable passing through holes in sheet metal, structural members, etc. shall be protected with a grommet or other approved device. Wire and cable subject to flexing shall be extra flexible and shall be installed to allow for continual flexing without damage to the conductors or insulation. Wiring routed next to or bent over other materials shall be chafe protected by approved means.

d. All under coach looms, cable runs, connectors, terminations and harnesses should be totally sealed to dirt, water and road hazards. Under coach wiring shall be run in sealed flexible plastic conduit. All under coach wiring protection methods shall be approved by LAVTA.

e. All electrical connectors shall be replaceable. Engine and transmission harnesses shall have sealed, quick disconnect connectors to facilitate engine and transmission removal. All high current connection points shall be coated with approved conductive coating.

f. All wire termination loops shall have a minimum of 2 inches excess wire for additional end terminal installation which will allow at least one replacement of the termination without disrupting the wiring harness. Wires shall not be spliced between terminations.

g. Cable terminations shall be pressure-type terminals applied with a full cycle correct tool of the same manufacturer as the terminal. All terminals shall be full-ring, interlocking or tongue-type sized for the terminal screw or stud.

h. All under coach connectors shall be of a locking type. A minimal number of spade terminals inside the bus is acceptable. Connector terminals shall be coated with approved dielectric grease. Drip loops shall be supplied on all under coach termination points.

i. A description of all multiple pin connectors and the conductor identification scheme shall be submitted in advance of the pre-production meeting to LAVTA for review.

j. All electronics components and boxes shall have quick disconnect plugs attached. Hard wiring to these boxes is prohibited.

k. The conductor identification shall be developed by the Contractor to give an individual identifying designation to each wire for circuit tracing and renewal of equipment and shall be shown on all electrical diagrams. All junction panel terminals shall be numbered.

l. All wiring shall be identified with hot stamped, machine printed wiring numbers printed on the insulation itself with no more than 6 inches of space between the identifying printed numbers along the continuous run of wire. Numbers shall not be removable by and be impervious to normal abrasion, oils, diesel, grease, Anti-Freeze, and water.

m. Wire markers and/or any type of heat shrink shall not cover any termination point or crimped lug without LAVTA approval.

14.9. Towing Connector

a. An electrical receptacle shall be provided behind the front bumper of each coach, adjacent to the air connector described elsewhere in this section, to receive power for illuminating the tail lights, stop light, brake lamps, and directional signals from a towing vehicle.

b. The receptacle shall be a 7-wire receptacle assembly "Cole-Hersee" No. 12063. The pins shall be coated with corrosion resistant paste. The termination end of the receptacle shall be strain relieved and sealed against water entry. Location, installation and pin wiring arrangement to be approved by LAVTA at the Pre-Production Meeting.

14.10. Farebox Wiring and Mounting

a. Provisions shall be made for a 12-volt circuit for farebox operation and alarm. The supply shall be located in a weather proof junction box immediately under the farebox mounting area. A Genfare farebox wiring harness shall be supplied and installed from the under floor junction box the farebox mounting plate inside the bus. This harness shall be equipped with a Genfare quick disconnect male plug to allow connection of the harness to the farebox.

b. The manufacturer shall provide three (3) 16 gauge wires, (white, brown, yellow), loom covered, routed from a terminal strip in the equipment shelter to the farebox junction box and to the farebox mounting plate inside the bus. A 2 inch (2") conduit will be installed between the farebox junction box under the floor and the equipment shelter to allow data cables to be pulled to interface the farebox and AVL system.

c. A Genfare mounting kit consisting of a mounting bolt and under floor ground strap shall be provided and installed on each bus. The ground strap shall be connected to the bus frame.

14.11. AVL, Camera and Communications Power Supply and Cabling

a. A lockable equipment shelter shall be provided to accommodate the communication system. It shall be located within 8 feet of the driver's seat contain no less than (2) Sliding Plywood Shelves and shall be connected to the driver's area by a waterproof, 2-1/4 inch inside diameter, metallic conduit. The compartment shall be large enough to include all communication, security, and data equipment. The compartment will have (2) Street Side Front Wheelwell Storage Box Cooling Fans dedicated to vent to inside cabin air.

It shall be accessible from the inside the coach and shall be splash-proof when the service door is secured. A location convenient to the driver shall be provided for the MDT, drivers' speaker, and handset. All antennas shall be attached to the roof and routed to the radio compartment through a 0.75 inch inside diameter

conduit. The antenna mounting and lead termination shall be accessible from the coach interior.

b. A separate electrical circuit, initiated at the batteries and terminating at the equipment shelter shall be supplied. This circuit shall be independent of the electrical main switch, be capable of delivering 50 continuous amperes at 12 volts and be protected at the source with an adequate circuit breaker. No other electrical equipment shall be attached to this circuit. It shall be connected and placed to minimize electrical noise, hash and transients. If a 24 volt coach electrical system is used for the coach, an "Electric Transit Laboratories Inc. (ETL)" converter shall be provided in the equipment shelter to supply 12 volt power to the equipment shelter.

c. Contractor is to install appropriate loom conduit and necessary accessories for later installation of AVL, Surveillance and Clipper equipment.

d. There shall be three (3) coded Number 12 wires from behind the dash to this compartment wired to a terminal strip. One wire shall be 12 volt at all times, one wire shall be 12 volt switched to the master run switch, and one wire shall supply a constant ground. The final details of this wiring shall be discussed by the Contractor and LAVTA confirmed during the design review meeting.

e. Contractor is to supply and install standard coaxial antenna cable, RG A 58/U housed in appropriate loom, connecting antenna with equipment shelter. Loom installation shall permit future replacement of cable by "pull-through" method.

f. Contractor is to supply and install radio antenna, Excalibur-450. Antenna is to be located on the center line of the coach roof on a level section three foot (3') to four foot (4') from the front. An interior access panel shall be supplied to allow access to the underside of the antenna.

g. A Covert Emergency Alarm button will be installed for the operator's use in dangerous situations. The alarm will be integrated with the AVL, audio listen-in microphone, the AVL and the CCTV. The proposer shall offer placement proposals and LAVTA will approve the location of the Covert Emergency Alarm button prior to the production build of the vehicles. Actual wiring from the covert button to LAVTA's AVL System.

h. Contractor is to supply and install wiring and antenna kit for Clipper fare collection systems. LAVTA will approve the location of the Clipper equipment prior to the production build of the vehicles

14.12. Console Assembly and Instrument Panel

a. For ease of training and fleet commonality, LAVTA desires the instrument layout to be as similar as possible in the buses provided, with previous models in LAVTA's fleet. The bidders shall provide a front instrument and side console panel layout with their technical proposal, and indicate if optional layouts for components are available

b. Side Console Assembly shall contain the following switches, all of which shall have lighted legends:

1. Master Switch: 4-position rotary switch identified with lighted legend "Engine Stop," "Run," "Night" and "Park" marked on the panel, in accordance with FMVSS requirements.

2. Engine Start: Push-button switch, marked "Start."

3. Hazard Warning: 2-position On-Off toggle switch with lighted hazard symbol. Legend to be "Hazard" or symbol.

4. Defroster: 3-position toggle switch having "Low-Off-High" positions. Legend to be "Defroster."

5. Chime Switch: 2-position toggle switch having "On-Off" positions with legend "Chime."

6. Farebox Light Switch: 2-position toggle switch having "On-Off" positions with legend "Farebox Light."

7. Interior Light Switch: 3-position toggle switch having "All-Off-Rear" positions with legend "Interior Lights."

8. Brake retarder: 2-position "On-Off" switch with the legend "Retarder" and "On-Off."

9. Radio "Emergency Call" switch. No legend allowed. Locate in sidewall panel near driver's left knee position.

10. Door control handle.

11. Switch for fan for defrosting the windshield.

12. Fire Suppression System Controls - The detection and fire suppression control console shall be mounted at the rear of the side console.

c. Instrument Panel shall be manufacturer's standard for heavy-duty service, with clear lettering for identification. The instrument panel shall house the following controls:

1. Panel light dimmer: A rotary rheostat, labeled "Panel Lights", which controls the intensity of the panel and legend lights.

   a. Wiper control: A control for each side, with lighted legend "Wiper", which controls the windshield wipers.

   b. The instrument panel shall contain, at a minimum, the following indicator lights:

Left Turn Signal	Exit Door Open

Right Turn Signal	Charging Failure*
Hot Engine	Brakes On
Low Engine Oil Pressure	High Beam Headlights
Low Air Pressure	Door Unlock Function
Fire Warning	Retarder

*Charging Failure indicator light shall be on dash, also.

2. Indicator lights shall be arranged across the top of the instrument panel. Location to be approved by LAVTA.

d. Turn signal switches shall be located on the floor near the driver's left foot and shall be constructed with polarized multi-connector plugs.

e. The instrument panel shall house the following monitor devices:

1. A dual-needle gauge that monitors air pressure in the front and rear brake reservoirs.

2. Speedometer: A speedometer with MPH as major markings, 0-80 MPH.

3. Diesel Emissions Fluid level gauge.

14.13. Door Electrical

a. Rear door shall be passenger actuated via touch bar door controls.

b. Locking and unlocking of doors shall be controlled by a door-control handle located on the driver's console. Door control handle, when in the "rear" position, shall energize a solenoid that unlocks the door.

c. A LED green lamp, which indicates that door is openable, shall be located above rear door. A red "EXIT DOOR OPEN" indicator lamp on driver's panel shall illuminate simultaneously with green lamp while door is open. Door control handle height and shape to be approved by LAVTA.

d. A lamp mounted on the exterior, or door header above the front and the rear doors, shall be illuminated when the door is openable. Front and rear stepwell illumination lamps shall operate the same way. Lamps to be controlled by the master switch in the "Run" or "Night" position.

14.14. Engine Compartment and Rear Control Box

a. The engine compartment shall have a rear control box with engine oil pressure and water temperature gauges. Control box will also contain an hour meter, for the bus engine.

b. The control box shall be located in the upper right corner of the engine compartment.

c. Four (4) 21 c.p. incandescent lamps shall be installed in the engine compartment in locations which will provide maximum illumination for the mechanics.

d. The engine and coach control switches on the face of the panel shall be as follows:

1. Starter Switch - Three position toggle switch, marked “Front-Off-Rear” for selection of engine start position. Must be weatherproof.

2. Light Switch - Two position toggle switch marked “Engine Compartment Lights.” Must be weatherproof.

3. Engine Start - Push button switch marked “Start”, with waterproof rubber cover, shall operate the starter motor only when the starter switch is in the “Rear” position and transmission is in neutral. The engine transmission down link port shall be provided. Throttle control must be variable speed.

4. Morse Throttle control - guarded selector switch for front-rear throttle control, plus Morse manual throttle unit shall be mounted in the box.

14.15. Horn

Fiamm Technologies Inc. 12 volt horns dual electric horns shall be provided and mounted so as to be protected from road splash. Control shall be push button, located in center of steering wheel.

14.16. Backup Alarm

An electrical backup alarm producing an intermittent sound or a buzzer connected with backup lights shall be furnished. It shall be loud enough to be heard when the engine is running.

14.17. Exterior Lighting

a. Exterior lighting shall conform to FMVSS and State requirements.

b. Headlamps shall be dual, 12 volt LED Headlights shall be switched on with ignition switch. A dimmer switch shall be mounted on the floor between and above the turn signal switches. The instrument panel shall have a high beam indicator lamp.

c. All clearance and I.D. lights shall be Dialight surface or flush mount LED type. The units shall protrude not more than 1.5 inches when mounted on the vehicle. If a surface mount marker design is used, a custom guard to prevent damage to the light during contact shall protect the marker. All electrical connections to the LED light shall be by wire coming from the light housing and terminated with a Packard Weather Pak connector. No interim connector shall be allowed on the body of the light. All lenses shall be smooth to prevent dirt entrapment and ease the washing process.

d. Front directional signals shall have amber lenses and shall be located on the right and left front corner areas of the coach.

e. Rear, tail, stop, backup and turn signal lamps shall be mounted on the right and left rear corner areas of the coach.

f. A LED high mount brake light will be included which shall consist of two (2) Dialight 4 inch red sealed lamps.

g. Top lamps (turn) shall be amber Dialight LED 4 inch diameter. The turn lights shall be fabricated with the use of a current regulator circuit to the LED's that allow for the operation of the device from 7 volts to 16 volts with constant intensity. All electrical connections to the LED light shall be by wire coming from the light housing and terminated with a Packard Weather Pak connector. No interim connector shall be allowed on the body of the light. All lenses shall be smooth to prevent dirt entrapment and ease the washing process. The entire LED assembly shall be specially coated to protect the light from chemical and abrasion degradation.

h. Two (2) middle lamps (stop and tail) shall be red Dialight LED 4 inch diameter. The stop/tail lights shall be fabricated with the use of a current regulator circuit to the LED's that allow for the operation of the device from 7 volts to 16 volts with constant intensity. All electrical connections to the LED light shall be by wire coming from the light housing and terminated with a Packard Weather Pak connector. No interim connector shall be allowed on the body of the light. All lenses shall be smooth to prevent dirt entrapment and ease the washing process. The entire LED assembly shall be specially coated to protect the light from chemical and abrasion degradation.

i. Bottom lamp (back-up lamp) shall be LED Dialight with removable acrylic clear lens, replaceable 32 c.p. bulb number 1156.

j. Side turn signal lamps shall be located on each side of the coach at the forward edge of the front wheel housing. The side signal lights shall be Dialight amber 18 Series lights. These lights shall be guarded for protection. The light shall be visible from the rear and front of the coach as well as outward. All electrical connections to the LED light shall be by wire coming from the light housing and terminated with a Packard Weather Pak connector. No interim connector shall be allowed on the body of the light. The same type side signal lamp shall be located slightly above and slightly forward of the rear wheel housing.

k. Intermediate side marker lights shall be Dialight LED Series 84, one on each side of coach.

l. Wheelchair ramp/kneeling light shall be Dialight LED 2 inch diameter located adjacent to the front entrance door.

m. License plate lamp shall be Dialight LED recessed in right lower quadrant of the engine compartment door.

n. Curb Dialight LED lights shall be positioned in manufacturer's standard location above the front and rear doors in such a manner as to illuminate the ground area in the immediate vicinity of the stepwell. Dialight LED lights shall be actuated when entrance door, exit door, or both, are opened.

o. Directional lamps shall be equipped for simultaneous flashing for emergency use. They shall be controlled by a switch located on the Driver's side console, or from a momentary foot operated push button switch located on the floor on the left side of the steering column with the side turn buttons. LAVTA will approve the final configuration of the floor switch layout at the pre-production meeting.

14.18. Interior Lighting

a. Front and rear stepwells shall be lighted by Dialight LED suitably mounted so that entire stepwell and a portion of the ground area immediately outside the coach is illuminated.

b. A Dinex, overhead interior LED lighting system, shall provide general illumination in the passenger compartment and shall be controlled independent of the run switch. The system shall provide a minimum of 15 foot-candles of illuminance on a one square foot plane at an angle of 45 degrees, centered 33 inches above the floor and 24 inches in front of the seat back at each seating position. The floor surface in the vestibule shall be illuminated at a minimum of 4 foot-candles with the front door open and a minimum of 2 foot-candles with the front door closed. Lighting intensity for all cross seats, forward of the rear longitudinal seats, shall have a minimum average of 15 foot candles, with a minimum of 12 foot candles at the seated passenger reading plane. An effective level of lighting shall also be provided for all other seated passengers. The manufacturer shall supply a copy of its test results that indicate compliance with the specified lighting levels at the pre-production meeting.

c. LED light fixtures shall be located above the side windows at or near the juncture of the coach ceiling and the side wall and may be provided over the rear door. The fixture lenses shall be clear polycarbonate and will effective mask individual LED's to make them invisible with no "hot spots." Lenses shall be sealed to inhibit incursion of dust and insects and still be easily removable for service. All fasteners used must be held captive in the lens assembly. Access panels shall be provided to allow servicing of components located behind the light panels. Interchangeability of lamps, lenses fixtures, and power supplies shall be maximized.

d. The light source shall be located to minimize windshield glare. High power LED strips shall be in one-foot sections, manufactured by Nichia or Philips with expected life of the LED's to maintain 60 to 70 percent of original brightness after 60,000 hours of operation. The brightness of each individual light fixture shall be programmable to minimize glare. Photo sensors shall detect and adjust lighting levels relative to ambient light for passenger comfort.

e. Driver module shall have built-in self-protection of thermal shut-down and restart, and PMW (pulse width modulation) output to regulate light level.

f. Failure of any light fixture or driver module shall be indicated via a telltale light panel or dashboard display.

g. The lighting assembly will be compatible with the bus manufacturer's overhead AC/Climate Control air distribution system, which will also include provisions for advertising media located adjacent to the lighting, although the interior lighting requirements shall be attained without advertising media installed. The lighting system materials shall comply with the Federal Transit Administration Docket 90-A Specification.

h. Interior advertisement racks shall be discussed and approved by LAVTA at the design review meeting.

i. Driver's light shall be Xantech Model 107276. Light to be recess-mounted in the top of the window frame above driver's head. The use of the sun visor shall not impair the drivers lamp in any way. Location to be approved by LAVTA. Switch to be located on the bezel of the lamp.

15. BODY

15.1. Construction: Body and Understructure

a. The basic body structure shall be an integral design. The structure shall be designed for maximum strength, reliability and durability. The exact material and construction of the structural sections shall be discussed and approved by LAVTA at the design review meeting. These structural sections are secured together with specially designed bolt-in-place gussets. The bolts are precision torqued and coated with a thread-locking compound.

b. Body and understructure shall be adequately reinforced at all joints and points where stress concentration may occur so that the vehicle will carry the required loads and properly withstand road shocks.

c. The entire coach understructure, including the wheelhouses, shall be spray coated with PPG Corashield 7972 taupe undercoating.

d. All interior and exterior metal surfaces shall be cleaned and treated to prevent rust and/or corrosion. After welding in areas where primer was previously applied, all joints shall be brushed to eliminate foreign matter and then the joint shall be cleaned with a phosphorus solution to provide a good base for good paint adhesion. Finally, the joint shall be painted with red oxide primer.

e. All Body panels shall be properly prepared and primed before final paint. All bolts, nuts, washers, clamps, clips, and similar parts, shall be zinc or cadmium plated or phosphate coated to prevent corrosion.

f. All exterior body seams, joints and overlapping panels shall be sealed against entry of water or dust. Where dissimilar metals meet, proper care shall be taken to prevent electrolytic corrosion.

g. All material used in the body and chassis, including cross members, posts and panels, shall be of the required strength for the purpose intended and shall be properly treated to resist corrosion. All joints exposed to weather shall be made tight against leakage.

15.2. Construction: Chassis

a. Understructure shall consist of structural stainless steel for maximum durability, reduced maintenance, and weight and improved corrosion resistance. It shall be welded and Huck bolted throughout.

b. Conventional bolt construction shall be with Grade 8 (traceable) hardware, and shall be used only where necessary to allow for routine disassembly (e.g., the closing crossmember shall be bolted to allow for engine removal at overhaul). No movement at bolted joints shall be allowed.

c. Understructure at the coach sides in the lowered floor area shall have crash protection consisting of continuous minimum 3/16" steel plate at an angle which will tend to cause an impacting vehicle to subvert. The crash protective steel plate shall be an integral, welded part of the structure, continuous between the wheelwells except for the exit door. Effectiveness of the design shall be documented by successful application of crashworthiness test. Results of such testing shall be submitted prior to delivery of first coach, and must meet the standards set forth in Federal Register Volume 47, No. 195, Section 2.1.2.10.

d. Understructure at the front and rear overhang (defined as the distance between axle centerline and bumpers) shall be sufficiently robust to permit towing or lifting without special rigging being required. The design shall be verified by submission of those part of the STRUAA (Altoona Test) which address towing/recovery.

e. The understructure shall incorporate minimum 3/16" steel floor material in the area of the vestibule, the driver's platform and the exit door area. The installation shall be sufficiently rigid to prevent flexing, and to permit rigid mounting of a farebox.

f. Understructure shall provide protected pathways for hydraulic lines, heater piping, airlines and electrical cabling. PVC tubing shall be used as protective conduit for wires and cables. Joints in lines, hoses, etc. shall be accessible for repairing.

15.3. Construction: Exterior Panels

a. Body structure shall be modern, and aesthetically pleasing without protruding fasteners. Visible exterior fasteners shall be kept to an absolute minimum.

b. Side panels below the window line shall be aluminum, etched, primed and painted to LAVTA paint scheme. These side panels shall each be replaceable by a mechanic without assistance. Welding, riveting, or adhesive attachment is deemed unacceptable, although adhesive, as a secondary method to control panel resonance will be permitted.

c. All side panels shall be essentially flat, without ripples and with minimal visible joints.

d. Side panels shall be simple enough in shape to allow fabrication with no more tooling than a shear brake and edge roller. Metal panels with compound curves, fluting, curved indentations, etc. will not be permitted.

15.4. Construction: Hardware

Fasteners must be of non-corroding material or finished to prevent rust and corrosion. Boron fasteners are not acceptable.

15.5. Insulation

a. Interior of body, including roof, must be well insulated against heat, cold and noise.

b. Roof insulation shall polystyrene EPS insulation.

c. Sidewall insulation shall meet the same specifications as roof insulation. It shall be installed in all sidewalls, window post areas, and areas over the front and rear wheelhouses.

d. The insulation referred to above, or other additional insulation, shall provide effective sound attenuation for the passenger.

e. There shall be Barymat BYUF-14C 1” foam insulation in the engine compartment to restrict, to the maximum practical extent, the entry of fumes, odors and heat into the passenger area.

15.6. Flooring: Plywood or approved composite material

a. Floor shall be constructed of marine grade, seven (7) ply 3/4”, Greenwood Alkaline Copper Quat (ACQ) hardwood plywood or approved composite material.

b. The underside shall be primed with PPG Corashield 7972. The cut edges shall be sealed with either white lead, liquid neoprene, liquid urethane, Tuffcote, or Dolchem 606.

c. Floor shall be laid in such a manner as to be free from squeaks. All edges shall be over underframe members.

d. Floor shall be reasonably level throughout and all joints between the floor and vertical surfaces shall have a cove molding.

e. Flooring material shall be securely bolted to frame members. Material appropriate self-tapping screws may be used.

f. Underframe shall be stiff enough to prevent floor from excessive flexing under normal loads. The floor shall be supported so that when a person of 250 pounds or more steps on any area, there will be no discernible flexing or movement.

g. The area at the farebox shall be of adequate strength to support the farebox safely and durably.

h. The entire floor shall be thoroughly sanded in preparation for application of floor covering material.

15.7. Roof

a. Roof shall be an one piece fiber reinforced plastic (FRP) sheet constructed in accordance with the manufacturer's standard and of sufficient strength and stiffness to prevent vibration, drumming or flexing in service.

b. Front and rear roof hatches shall be provided to meet the requirements of FMVSS 217.

c. All seams, joints and overlapping panels, shall be thoroughly sealed to prevent the entry of water and dust. Where dissimilar metals meet, proper care shall be taken to prevent electrolytic corrosion.

15.8. Stepwells

The entrance and exit floor areas are to be sloped to prevent accumulation of water or ice.

15.9. Wheelhouse

Wheelhouses shall be of sturdy construction, manufactured of fiberglass, providing ample clearance at front and rear tires under load and under all positions of front wheel steering.

15.10. Fenders

Rubber fenders shall be furnished at each wheelhouse and shall be formed so as to effectively prevent road water/dirt from splashing up and onto driver's mirror and windows.

15.11. Splash Apron

Splash aprons, made of not less than one-quarter inch (1/4"), three-ply rubberized fabric, or one-quarter inch (1/4") cured masticated tire friction material, black color, shall be provided at the rear of the wheelhousings, projecting downward to a point approximately six inches (6") above ground with coach loaded. Aprons shall have a maximum width compatible with the understructure of the coach.

15.12. Drip Moldings

Water-deflecting roof gutters shall be provided over the side windows and doors.

15.13. Access Panels

a. There shall be adequate access to the engine compartment and rear mounted air conditioning compressor. The manufacturer shall provide easily removable frame members, etc. so as to allow quick access of components.

b. All panels shall provide adequate space to assure easy removal of components or sub-components.

c. All access panels, except for the rear engine door, shall be secured by the use of five-sixteenths inch (5/16") square key locking devices.

d. There shall be exterior access to the engine compartment at the rear, left, and right side of the coach.

e. All service and access panels shall be hinged at the top with a continuous rubber or stainless steel hinge. Hinges shall not be painted.

f. All exterior service doors shall be equipped with no less than two (2) heavy duty gas assisted struts for ease of opening and firm closure of doors.

g. The fuel closure door shall be large enough to allow for easy hook-up of the Emco-Wheaton fuel nozzle. The minimum dimensions of the fuel door opening shall be ten inches (10") square.

h. DEF fluid door large enough to allow for easy hook-up of an industry standard filling nozzle. The minimum dimensions of the door opening shall be eight inches (8") square.

i. Any exterior accessible electrical compartments shall be sealed to protect its contents from inclement weather.

j. The battery box door shall be secured with no less than two (2) exterior locks to allow quick access to the batteries.

k. The front access panel (if equipped) for lights, towing connector and towing eyes shall be hinged and secured with no less than two (2) five-sixteenths inch (5/16") square key lock devices. Wiper motors shall be accessible from removable panels located on the exterior of the coach.

l. The radiator/surge tank fill, windshield solvent fill, and shop air/air start fill areas shall be accessed by use of small hinged closure doors. Doors shall be spring loaded with stainless steel hinges.

m. There shall be interior access to the engine and air conditioning system. Such access shall consist of no less than three (3) removable panels in the following locations:

- Rear bulkhead panel at the air return (with 5/16" square key locks).
- Top of the rear settee (with captive fasteners).

- Lower front section of rear settee (with captive fasteners).

The entire front vertical settee panel shall be covered with #302 stainless steel, #4 finish bolted in place with proper hardware.

15.14. Bumpers

a. Energy absorbing front and rear bumpers shall be furnished..

b. Bumper material shall be black in color and corrosion resistant. These qualities shall be sustained throughout the service life of the coach.

c. No part of the coach, including the bumper, shall be damaged as a result of a five (5) miles per hour impact of the coach at curb weight with a fixed, flat barrier perpendicular to the coach's longitudinal centerline.

d. Bumpers shall protect the coach and a stationary four-thousand (4,000) pound, post 1983 American automobile from damage as a result of impacting at six and one-half (6.5) miles per hour into the rear bumper of the automobile parallel into the longitudinal centerline of the coach and at five and one-half (5.5) miles per hour into the rear bumper of the automobile at a thirty (30) degree angle to the longitudinal centerline of the coach. The energy absorption system of the bumper shall be independent of every power system of the coach and shall not require service or maintenance in normal operation during the service life of the coach. The flexible portion of the bumper may increase the overall coach length by no more than six inches (6").

e. The rear bumper and its mounting shall provide impact protection to the coach at curb weight from a two (2) miles per hour impact with a fixed, flat barrier perpendicular to the longitudinal centerline of the coach. The rear bumper shall protect the coach, when impacted by the striker defined in FMVSS No. 215 loaded to four thousand (4,000) pounds, at four (4) miles per hour parallel to, or up to a thirty (30) degree angle to the longitudinal centerline of the coach. The rear bumper or bumper extensions shall be shaped to preclude unauthorized riders standing on the bumper and shall wrap around the coach to protect the engine compartment doors and radiator.

f. The bumper extensions shall not hinder service and shall be flared into the coach body with no protrusion or sharp edges. The bumper shall be independent of all power systems of the coach and shall not require service or maintenance in normal operation during the service life of the coach. Any flexible portion of the bumper may increase the overall length by no more than six inches (6").

15.15. Towing Eyes

Two (2) front towing eyes, concealed and located above the bumper, shall be provided. Two (2) rear towing eyes will be located beneath the rear bumper on the main chassis structure to allow the coach to be lifted by a towing vehicle without damage to the rear bumper, body panels, or structure.

16. WINDOWS

16.1. Windshield

The windshield shall incorporate a two-piece design constructed of one-quarter inch (1/4") thick safety plate laminated glass. Both right-hand and left-hand windshields shall be retained in the body structure with "zip-lock" black rubber extrusions for ease of maintenance. The operator's section of the windshield shall be sloped at sufficient angle to minimize windshield reflections and glare.

16.2. Windshield Wipers and Washers

a. Windshield wipers and equipment shall be Electric and shall provide an adjustable time delay feature. The coach shall be equipped with variable speed windshield wiper for each half of the windshield with separate controls for each side. No part of the windshield mechanism shall be damaged by manual manipulation of the arm. At 60 MPH, no more than 10 percent (10%) of the wiped area shall be lost due to windshield wiper lift. Both wipers shall park along the edges of the windshield glass. Windshield wiper motor mechanisms shall be easily accessible for repairs or service from inside or outside the coach and shall be removable as complete units.

b. The windshield washer system shall deposit washing fluid on the windshield from nozzles attached to the wiper arms and shall evenly and completely wet the entire wiped area. The windshield washer system shall have a reservoir of at least two (2) gallons located for easy refilling. The reservoir itself shall be translucent for easy determination of fluid level. Reservoir, reservoir pumps, lines and fittings shall be corrosion resistant and protected from freezing.

16.3. Side Windows

a. All passenger windows shall be manufactured by Ricon.

b. Windows shall have black anodized aluminum frames. All windows shall be ¾ lower egress and all windows of the same size shall be interchangeable. All egress handles shall be located towards the front of the coach. Windows shall be designed to prevent the entrance of air and water when windows are closed. Near each window there shall be instructions on decals or aluminum plates that sufficiently explain emergency exit procedures. Location of the metal decal shall be determined by LAVTA.

c. The lower section of the window, approximately thirty inches (30") shall be fixed. The upper portion of approximately nine inches (9") shall be inwardly openable to provide adequate outside air ventilation and shall have locking latches.

d. Windows shall be one-quarter inch (1/4"). Glazing material: Tempered with Thermo Guard Dark Grey 20-24%. Glass Guard: Transit Care. Glazing Attachment: Bonded Serviceable. Glazing color shall be consistent from window to window with the exception of the upper destination sign window. Upper destination sign's window shall be clear in color.

16.4. Driver's Window

Driver's window shall be a two (2) piece standard slider window with ¼" laminated safety glass. The window shall have a ratchet mechanism to prevent uncontrolled sliding. There shall be an interior and exterior "non-locking" handle on front vertical bar of the Operator's window. There shall also be a "non-locking" handle placed on the second interior vertical window frame. The rear window section shall be equipped with a locking mechanism which may be incorporated as part of a handle.

17. PASSENGER DOORS

17.1. Front Entrance Door

a. The front door shall be of aluminum, two-section, slide-glide with minimum clear opening dimensions of 34 inches wide. The vertical and horizontal door clearances will comply with all A.D.A. requirements.

b. Door shall be inward opening and shall have stainless steel hinges with joints at the door posts covered by rubber seals. Meeting edges of door shall have four inches (4"), extruded overlapping type rubber safety edges two inches (2") on each half.

c. Door shall be fully air-operated with Vapor door motor. An air shut-off valve, located either immediately above the front door within the header compartment, or at left of driver controls, shall be supplied. When valve is in "Off" position, front door shall be capable of being opened and closed manually.

d. Each door section will be equipped with a handrail, powder coated yellow, that is designed to minimize the incursion into the clear door opening. The area between the front entrance and driver's station shall have a yellow powder coated handrail to aid in boarding the coach.

e. Access door to door mechanism compartment 5/16" square key and shall have a chain or other acceptable device to hold door in the open position, when necessary.

17.2. Rear Exit Door

a. Rear exit door shall be aluminum two-section outward opening manually opened by passengers via touch-bar controls and closed by spring-loaded check mechanism. Clear opening of door shall be a forty eight inch 48" wide plug door option

b. The door operating mechanism, mounted on a removable steel base plate in a compartment directly above the door, shall be a Vapor Corporation.

c. Meeting edges of the door shall have four-inch (4") extruded overlapping type rubber safety edges, two inches (2") on each half.

d. Access door to door operating mechanism shall have a chain or other acceptable device to hold door in the open position, when necessary.

e. Rear exit door shall be equipped with door ajar alarm.

17.3. Door Controls and Interlocks

a. Both front and rear doors shall be controlled by a five (5) position door operating control, with the following positions:

- Front door open - rear door unlocked
- Front door open
- Both doors closed
- Rear door unlocked
- Rear door unlocked - front door open.

This control shall be located on the console to the left of the operator.

b. A brake and accelerator interlock shall be provided that prevents movement of the coach when the rear doors are open. The interlock equipment shall be mounted together as one assembly.

c. A rear door override lever shall be provided for emergency exit. The lever shall be located in the rear, door control, compartment. The lever is used to release the rear door from the locked position for manual operation and also shall engage the interlock.

d. A master interlock override switch shall be provided. It shall be located in the electric panel near the driver and shall be in a secure position. Location to be approved by LAVTA.

17.4. Door Glass

Each section of the door shall be glazed with one-quarter-inch (l/4") nominal laminated glass.

18. EXTERIOR MIRRORS

18.1. General

Coaches shall be equipped with two (2) mirrors, one (1) mounted on the roadside front corner post and one (1) mounted on the curbside front corner post. Roadside mirror just above lower edge of driver's roadside window. Curbside mirror is not to extend further than a twelve inch (12") radius from the corner of coach and shall be mounted on the curbside front corner post.

18.2. Curbside and Roadside Mirrors

a. Mirrors shall be a remote adjustable Metagal with all metal hardware. The controls shall be located to the roadside of the driver and provide for a full range of adjustment of the mirrors. The glass shall be easily replaceable and be secured with Velcro. The mirrors section shall be with 8" wide by 15" high mirror glass.

b. The driver's side glass shall be flat. The curb side shall be split with a lower convex mirror of no less than 2-1/2" in height.

c. All hardware utilized for the exterior mirrors shall be stainless steel.

d. There shall be a weatherproof electrical quick disconnect, located between the coach body and the exterior of the mirror head for easy removal of the assembly.

e. The mirror heads and arms shall be a heavy-duty retractable design to prevent damage from fixed objects and during bus washing through automatic washers. The mirror heads shall be connected to the arms with adjustable aluminum or brass ball type stems with metal set screws. No plastic parts shall be used on the mirror head adjustment. The mirror heads shall be spring loaded for additional protection. Mirrors shall be fully adjustable by the operator without the use of tools.

f. Mirror shall not be less than six and one-half feet (6 1/2') above the pavement nor extend more than a twelve inch (12") radius from the corner of the coach. Final location of each side mirror shall be approved by LAVTA at the pre-manufacturing meeting.

19. INTERIOR

19.1. Floor Covering

a. Floor shall utilize Altro Transit floor flooring material,. Floor covering shall seamless where possible. Should any seams be unavoidable, they shall be filled with color matching material so as to be tight against any influx or seepage of water present in any uneven floor edges which might cause a person, walking on them, to trip. The floor shall be cleaned thoroughly before delivery.

b. Steps at the front entrance and rear exit shall be covered with matching ALTRO flooring not less than five-sixteenths inch (5/16") flooring,. Entrance and exit step treads shall include integral molded yellow noses on stainless steel metal backing. Backing to be totally enclosed in rubber.

c. Entrance area and front standee area shall be covered with matching ALTRO flooring not less than five-sixteenth inch (5/16") in thickness. The entrance area and the standee area are to be separated by a yellow strip molded into the flooring. A six-inch (6") stainless steel backing shall be furnished under standee line edge.

19.2. Modesty Panels

a. All modesty panels shall be covered with matching Melamine paneling, color to be determined at pre-build meeting.

b. All modesty panels shall be attached to the stanchions and/or handrails with bolts with self-locking nuts.

c. A modesty panel of approximately thirty-four inches (34") in height shall be installed within the handrail area of the rear side of the front stepwell. This panel shall have adequate clearance from the front door, to prevent injury to passenger's hand(s) during the opening cycle. The upper section of the front door modesty panel shall be constructed of 3/8" thick 14" Graylite (dark tint) Lexan.

d. A modesty panel of approximately thirty-four inches (34") in height will be installed within the handrail area of the rear side of the rear stepwell.

e. All modesty panels shall be raised three inches (3") above floor level.

19.3. Driver's Barrier

a. A full height barrier shall be provided directly in back of the driver's station to separate the driver from the passenger compartment. The barrier shall extend from the left side coach wall to the stanchion at the right rear of the driver's station and then wrap around the side of the driver's seat. This panel shall in no way interfere with the safe normal operation of the coach or restrict movement of the driver's seat.

b. The manufacturer will be responsible for the purchase and installation of a LAVTA designed schedule rack on the rear facing side of the Driver's barrier.

19.4. Interior Trim

a. Interior panels shall be applied to ensure a neat and finished appearance. Fasteners shall be of such type that they will not loosen because of vibration. Panels shall be supported so as to prevent buckles, drumming, or flexing when the vehicle is in service. All panel joints shall be sealed and covered with protective trim strips to guard against sharp edges. All interior ledges shall be angled so as to prevent any unwanted storage of materials.

b. Ceiling trim panels shall be Melamine, Melamine bonded to aluminum one-tenth inch (1/10") minimum thickness. Color shall be complementary to the interior of coach. Color shall be Wilson Art Frosty White 1573-1.

c. Sidewall trim/panels below the windows shall be Melamine, 1/10 inch minimum thickness. Color for the lower sidewall panels shall be Nepal Teak, with paneling grain running horizontally.

d. Window mullions shall be Melamine, 1/10 inch minimum thickness applied in sections with trim strips covering panel joints. Color for the window mullions shall be Wilson Art Frosty White 1573-1 to match the ceiling panels.

e. All interior surfaces forward of the standee line shall be non-reflective black or a color complementary to the interior of the coach.

f. Panel behind rear settee shall conform to the requirements of Federal Safety Standard No. 302-Flammability of Interior Materials. The inside rear bulkhead panel shall be covered with Melamine, 1/10 inch minimum thickness. Such a

panel shall have an easily removable access door equipped with tamper proof captive fasteners for servicing of the air conditioning/heater unit.

g. All trim moldings around wheel wells, sidewall, cove area, settee riser, front dash area, and panel below driver's window, shall be stainless steel.

h. LAVTA color final interior scheme shall be furnished for LAVTA approval during the pre-production meeting.

19.5. 19.5 Stanchions/Grab Rails

a. All Proposers shall be responsible for supplying a stanchion/grabrail layout during the technical proposal process for review by LAVTA.

b. All stanchions and grab rails shall be one and one-quarter inch (1-1/4") diameter smooth surface anodized extruded stainless steel tubing, with fittings that match tubing. Minimum tubing thickness shall be .065-inch.

c. Fittings shall be stainless steel, heavy-cast aluminum, or cast zinc corrosion resistant material.

d. A full length ceiling grab rail, shall be provided on each side of the coach. Such a grab rail shall be attached with baked enamel finished, wraparound clamps.

e. Ceiling grab rail ends shall terminate at the ceiling connection. A vertical stanchion shall be mounted from the floor to the ceiling or ceiling grab rail at the right rear of the Operator's seat. A vertical stanchion shall be mounted from the floor to the ceiling or ceiling grab rail at the inside rear of the front stepwell and at the front and rear of the rear stepwell.

f. A handrail shall extend from the front and rear stanchions to the body side, approximately thirty-four inches (34") above the floor.

g. A handrail shall extend from the aisle side stanchion to the bottom stepwell riser. Such a handrail shall maintain a distance of approximately thirty-four inches (34") above the stepwell risers. This will be provided on each side of the rear stepwell.

h. A vertical stanchion running from the seat bottom to the ceiling or ceiling grab rail shall be installed in the middle of all longitudinal passenger seats.

i. Entrance grab rails shall be installed at the front stepwell area of the coach. Such a grab rails shall be affixed to the wheelchair lift platform. The grab rail shall not interfere with wheelchair maneuverability. They shall be stainless steel construction. In addition, grab rails shall be installed on each half of the front door which do not interfere with the lift grab rails.

j. All grab rails in the front entrance, including the doors and vertical stanchions shall be surface anodized extruded stainless steel tubing,. Rear door area stepwell and transition grabrails shall be powder coated in yellow for increased visibility.

19.6. Interior Panel/Door Securement

a. The Operator compartment shall be equipped with no less than two (2) five-sixteenths inch (5/16") square key locking devices to be accessed by use of the door interlock control. This door will also be equipped with a gas prop or spring loaded hinge.

b. All removable dash panels and service compartments shall be equipped with non-removable locking fasteners with a Phillips, straight edge or special designed head.

c. All door motor access doors shall be equipped with no less than two (2) five-sixteenths inch (5/16") square key locking devices to be accessed by use of the door interlock control. All doors will be equipped with no less than two (2) spring loaded hinges.

d. Air conditioning evaporator grille shall be equipped with no less than two (2) five-sixteenths inch (5/16") square key locking devices to be accessed by use of the door interlock control. The door shall be equipped with no less than two (2) spring loaded hinges.

19.7. Interior Mirrors

a. Coaches shall be equipped with two (2) inside rear view mirrors. Center rear view mirror above windshield shall be four inches (4") by sixteen inches (16"), and right windshield header mirror shall be a six inch (6") round. The four inch (4") by sixteen inch (16") mirror shall be located so as not to interfere with passengers. All mirrors shall be mounted so that they will be vibration-free when engine is idling and when coach is moving.

b. Coaches shall be equipped with twelve inch (12") round diminishing mirror to be mounted at the rear exit door in such a way so it will not interfere with passengers and may be viewed by the operator from the forward mirror.

19.8. Sun Visors

Padded visors or roller type shades shall be provided on driver's side; one shall be for the windshield and one shall be for the driver's side window. They shall be adjustable horizontally and vertically and shall meet requirements of California law. Visor shall be constructed of heavy-duty material and assembled to last the life of the coach in normal operations.

19.9. Passenger Stop Request Signal System

a. A passenger "Stop Request" chime system shall be installed and integrated into the AVL system.

b. The system shall consist of a clear plastic coated wire rope, running horizontal from directly behind the front modesty panels to the last rear window of both sides of the coach. The cable shall run horizontal between the bottom of the top "opening" window and the top of the bottom "fixed" window. Such a cable shall

not sag below the horizontal window frame more a maximum of one inch (1"). Cable shall be affixed with eye loops at every window post. The pull cords shall not cause interference upon opening of windows.

c. The cable shall also run vertical at the wheelchair securement area and shall comply with ADA requirements. Tape switches may be substituted for pull cords in the wheelchair tie-down area.

d. A "Stop Request" sign shall be displayed upon the integrated AVL annunciation system sign. This sign shall be mounted near the front of the coach and will illuminate upon activation of the "Stop Request." Exact location and configuration shall be approved by LAVTA at the design review meeting

e. A "Stop Request" Passenger signal control push button, Yellow Housing With Red Push Button, shall be Mounted on Stanchion Forward of Rear Door

f. The passenger signal shall chime only one (1) time to stop continuous use by passengers. System will reset automatically when the front doors are cycled open and closed. The sign shall be equipped with an on/off switch located on the Operator's console.

19.10. Miscellaneous Interior Equipment

a. A storage space of no less than one and one-half (1-1/2) cubic feet shall be supplied in the Operator's area. Such an area shall be located within easy access of the Operator. The compartment door shall be secured by two (2) five-sixteenths (5/16") square key locking devices.

b. A metal coat hook (stainless steel) shall be furnished and installed at LAVTA-approved location. A leather buckle-type strap (or vinyl/Velcro) shall also be installed to prevent coats from swaying.

c. Amerex Model 400T ABC five-pound (5 lb.) dry chemical fire extinguisher and KD #610-4645 safety triangle kit shall be installed. Location of both the fire extinguisher and the kit to be approved by LAVTA.

d. The Contractor shall install one (1) trash receptacle. Final locations shall be determined at the pre-manufacturing meeting.

19.11. Passenger Seats

a. The passenger seats shall be 40NE ARIES 4MA SEATS, WITH STROLLER STORAGE Transit Seats and shall meet flammability requirements of FMVSS-302.

b. The passenger transverse flip up seats located in the wheel chair securements areas shall be of appropriate size and shape to fill the space allotted correctly. . Flip up seats shall be identical in size and configuration.

c. There shall be no less than twenty-eight inches (28"), hip to knee room between each seat.

d. Seat assemblies and components of identical seats shall be mechanically interchangeable.

e. The Proposer shall provide a completed seating layout for each length bus with their "Technical Proposal" for review by LAVTA. The layout shall include all seat dimensions, hip to knee space, wheelchair maneuvering dimensions, modesty panels, grab rails and stanchions.

f. The Contractor shall provide a seating layout with the maximum forward facing seating.

g. The seats over the rear wheelhousings shall be longitudinal seats facing inward, providing seating accommodations for two or more passengers in various multiple arrangements.

h. The rearmost bench seat shall provide seating accommodations for four (4) or five (5) passengers.

i. All forward facing wheelchair flip up seats shall be constructed to have the same high back appearance as the fixed 2 passenger seats. Individual side facing flip up seats in the wheel chair securement area shall match the other longitudinal seats in configuration.

j. The passenger seat shall be supported from the sidewall by a cantilevered bracket of adequate structural design to support the seat under all conditions. The supporting structure shall be constructed and mounted in such a manner that the work of the coach dusting and cleaning is reduced to a minimum. Special attention shall be given to elimination of dirt-catching pockets.

k. Each seat shall have a passenger assist hand grip which shall be upswept on the aisle end to provide a vertical hand hold for the standing passengers. The hand grip shall be constructed of a structure covered with a vandal-proof energy-absorbing material. The overall design of the hand grip shall be aesthetically pleasing and enhance the general appearance of the seat.

l. Back pads shall be separate from the seat cushions and shall be individual passenger type contoured for occupant comfort and retention. The foam padding shall be a minimum of two-inch (1") compound attached to a rigid inner panel and covered with LAVTA Approved fabric materials. Back pads shall be securely fastened, firmly supported and readily removable without the use of special tools.

m. Seat cushions shall be individual passenger type contoured for occupant comfort and retention. The foam padding shall be a minimum of two-inch (2") neoprene compound.

n. All panels shall be made of stainless steel.

o. The rear cross seat shall be comprised of an upholstered back pad assembly and a seat cushion assembly with a minimum of two inch (2") padding which shall be removable if required for engine access. Seat cushion shall be supported by a tubular steel frame.

p. Jump or fold-up type seats shall be furnished in lieu of standard transverse seats at first right-hand and left-hand normal transverse seat locations. Seat belt reel shall not protrude into aisle way. The flip up seats shall appear the same as the normal transverse seats when folded down.

q. Seat cushions shall be upholstered in Camria (Holdsworth) material. LAVTA shall approve the upholstery configuration and specific material prior to manufacture of the seats.

r. The seat backs, sides, and any armrests shall be coated with no less than four (4) mils thickness of Anti Graffiti coating. No coating shall be applied to the seat cushion materials.

19.12. Wheelchair Access/Securement Stations/Restraint System

a. Bus will be designed to maximize accessibility by wheelchairs and other mobility devices. The front entrance shall allow for a clear turning radius of 36 inches (36") from the driver's station to the door side entrance modesty panel. The front wheelhouse shall provide a minimum clear opening of 36 inches (36") to allow mobility devices to maneuver from the entrance door back to the tie down area.

b. Accommodations shall be provided for two (2) wheelchair passengers to be secured in a forward-facing position in the area immediately rear of the front wheelhouses. The length of this area shall be fifty-eight inches (58") or greater, and the width shall equal the length of the transverse seats and the modesty panels. Modesty panels shall be adequately reinforced to withstand impact of wheelchairs.

c. The exit signal shall be no higher than four feet (4') above the floor in this area. Maneuvering room inside the coach shall accommodate easy travel for a passenger in a wheelchair from the loading device through the coach to the designated parking area, and back out. No portion of the wheelchair or its occupant shall protrude into the normal aisle of the coach when parked in the designated parking space(s).

d. All dimensions for wheelchair maneuvering, parking, foot clearances, and turning area shall comply with ADA regulations applicable at time of bus manufacture or exceed them if as stated in these specifications. <u>The Proposer shall provide a plan including layout drawings for entry, maneuvering, parking, and exiting of wheelchair passengers, with their Technical Proposal submittal</u>.

e. The Contractor shall furnish and install wheelchair restraints for each tie down location in the coach which comply with ADA regulations, including the accommodation of "scooter" type vehicles. The restraint devices as a minimum shall include:

- Four (4) permanently affixed retractable wheelchair securement belts at the front and rear of the tie down area.

- A black three point lap/shoulder belt for passenger securement. The belt length shall allow for large motorized mobility devices.

Contractor shall furnish wheelchair tie-down specifications of the equipment to be furnished for LAVTA in their proposal.

19.13. Access Ramp

a. An access ramp shall be provided at the entrance door. The ramp shall have a useable width of thirty-one inches (31") and meet all A.D.A. requirements. The ramp is to be operated by the driver from the seated position. In case of malfunction, the ramp shall be able to be manually stowed.

b. Because LAVTA loads many mobility devices from stop locations that are not equipped with sidewalks and curbs, a minimum ramp angle of 6 to 1 is strongly preferred and required if available on the buses offered. Proposers must state if their access ramp meets the minimum 6 to 1 ramp angle, and provide documentation that illustrates their access ramp installation and ramp angles when deployed.

c. All interlocks required to meet FMVSS, ADA and Calif. Title 13 requirements will be provided with the wheelchair ramp.

19.14. Driver's Station

a. The design of the driver's station shall have as its primary objective the provision of an environment for the driver that will aid him or her to operate the coach safely and efficiently for long periods of time with minimum fatigue. Human factors design principles shall be used in the layout and proportioning of the driver's station and its components with attention given to safety, "comfort and fatigue", body support; the size, shape and location of switches, levers, pedals and gauges; and all other factors that affect the design objective.

b. The driver's station shall accommodate drivers who are of various heights and body proportions by the use of human factors design in locating and proportioning the devices in the station and by the use of adjustable components such as the driver's seat and the steering column. It is required that the station accommodate drivers within a height range of 57 to 80 inches.

c. The Contractor shall, as a joint effort with LAVTA, determine the location of all equipment with respect to proper lighting, ease of operation, accessibility and passenger flow. Factors to be considered include, but are not limited to, the provision of mountings for and deterring the location of the farebox, AVL equipment and any other equipment supplied by LAVTA. Complete details of the driver's station design shall be presented at the design review and at the prototype review for approval by LAVTA.

d. The Operator's seat shall be the USSC 9100 ALX3, The seat shall be covered with heavy-duty black vinyl fabric, perforated for ventilation. High density polyurethane foam shall be used for the seat cushions. Seat shall be equipped with 3-point seat belt. The seat shall be provided with double shock vibration

damping, and a step less seat rake and back recline. Air operated lumber adjustments and an air slide release shall be mounted a panel accessible to the driver. The seat shall provide for adjustment of the ride height via a pneumatic suspension which includes a quick dump air release. A limit/lockout lever shall be provided to allow operators to set the seat in a fixed suspension height. Seat mounting shall allow for maximum fore and aft travel to suit a variety of drivers. The slides shall provide a minimum of 9 inches of usable fore and aft travel without contacting any part of the operator compartment area.

19.15. Communication and Data System

a. Contractor will provide and install all components required for a Trapeze TransitMaster Communication/Data system with ADA compliant AUDIO ANNOUNCEMENT SUB-SYSTEM (1.1.1). System must be compatible with the Trapeze TransitMaster APTS (Advanced Public Transportation System) currently deployed and in use by the Livermore/Amador Valley Transit Authority (LAVTA). The system must interface with the electronic Destination sign and fare box systems and will include the following parts and functions:

- VI Integrated Vehicle logic unit (VI IVLU)
- Tait TM9155 Radio (Voice/Data)
- Touch Screen Mobile Data Terminal (MDT)
- 1-Line Interior ADA Sign w/ Stop Request
- Dual-Band GPS / WLAN Antenna and cables
- Radio Antenna 806-894 MHz and Cable
- Telephone style receiver for private communications
- J1708 Device Access Box (DAB)
- Covert Microphone
- Covert Switch
- Drivers Speaker
- IRMA Gen IV 3D Automatic Passenger Counting System
- All necessary interface cables
- All necessary mounting brackets and hardware
- Speaker (6 internal 1 external)
- A dedicated, 12VDC, 30A power supply, not on the multiplex system.
- An ignition wire, fed from the driver's master switch, to the radio box.

b. The Communications/Data System will interface with bus warning systems, location systems, and radio network systems for purposes of scheduling, tracking, and monitoring status of vehicle

c. This self-contained vehicle location sub-system shall utilize door openings, odometer pulses, and a Global Positioning System (GPS) receiver to achieve the required announcement accuracy.

d. LAVTA will provide the software to operate system.

e. Additionally, the Contractor shall supply the following for LAVTA as components of a radio/AVL system:

f. LAVTA desires that the CONTRACTOR provide adequate space for these components and wiring for installation of these components using SAE J1708 standards. At a minimum, the contractor shall provide:

- An isolated filtered power supply cable with ground wire from the batteries to the radio box.
- An AVL compatible speedometer with signal cable to the radio box.
- An ignition sensing cable from the master switch to the radio box.

19.16. Audio Announcement Sub-System

a. Audio announcements shall be initiated automatically at points along the route as specified by LAVTA. This is accomplished via the AVL system. This vehicle location sub-system shall utilize door openings, odometer pulses, and a Global Positioning System (GPS) receiver to achieve the required announcement accuracy.

b. Each announcement shall be automatically designated interior and/or exterior.

c. This sub-system shall use the vehicle's interior and exterior public address speakers. Interior and/or exterior operator announcements must be selectable via an internal/both/external switch. Inside speakers shall be placed strategically inside the bus to ensure broadcast abilities, in a clear tone, and announcements that are clearly perceived from all seat positions at approximately the same volume level. LAVTA requires a speaker be provided outside the bus so that announcements can be clearly heard by passengers standing near the front door. The system shall be muted when not in use.

d. The volume for each announcement shall be automatically set based upon analysis of the ambient noise level and adjustable by a maintenance technician.

e. All volume settings shall be digitally set to ensure consistent volume throughout the fleet.

19.17. ENVIRONMENTAL OPERATING CONDITIONS AND QUALITY REQUIREMENTS

a. The system shall operate reliably within an ambient temperature range of -30ºC to +90ºC.

b. The equipment shall be designed to operate in the vehicle without degradation due to shock and vibration encountered during normal service.

c. The signs are to be illuminated by LEDs.

d. The system shall incorporate a means of adjusting the length of time the messages are displayed. The interval shall be variable from 1 second to 10 seconds in duration. Power to the sign system shall be controlled by the Master Coach Run Switch. The sign shall operate in all positions of this switch except "OFF". The sign shall be internally protected against voltage transient and RF interference. Input power to the sign shall be protected by a manual reset circuit breaker.

20. DESTINATION SIGNS - FRONT, SIDE AND REAR

20.1. General

An electronic LED destination sign system, Hanover Displays, shall be furnished and installed in the coach by the manufacturer. The destination sign system shall consist of:

- Front Destination Sign LED Matrix, 17 rows by 160 columns; display height minimum 9 inches, display width 64”
- Side Destination Sign LED Matrix, 15 rows by 112 columns; display height minimum 6 inches, display width 42.5”
- Rear Destination Sign LED Matrix, 15 rows by 48 columns; display height minimum 6 inches, display width 18”
- Operator’s Control Unit (OCU) and Readout Display (Eric++ Controller)
- All Cables and Accessories
- Helen Programming Software & Interface Hardware (Key-Lo & Base Station)

20.2. Destination Sign Type

a. The System shall be microprocessor-based utilizing approved bi-directional serial communications, such as; S.A.E. J1708 or IBIS, E.I.A. RS-485, between System components, and shall utilize error detection techniques within the communication protocol.

b. The System shall be capable of communicating with, and/or controlling additional information devices, such as interior information signs, Voice Annunciation devices, farebox, etc. The System shall provide for destination and/or Public Relations (P/R) message entry.

c. Memory integrated circuits shall be capable of storing and displaying up to 10,000 message lines. Message memory shall be changeable by the use of a 9 pin serial Keyfob (Key-Lo) or USB of not less than one (1) megabyte memory capacity but sized according to the message listing noted herein.

d. The System shall have the ability to sequentially display multi-line destination messages, with the route number portion remaining in a constant “on” mode at all times, if so programmed. It shall also be capable of accepting manual entry of Route Alpha/Numeric information on any/all signs.

e. The System shall allow two (2) destination messages (1 outbound & 1 inbound) and one (1) public relations message to be pre-selected. The operator shall be able to quickly change between the pre-selected (outbound & inbound) messages without re-entering the message code. Public relations messages, when selected, shall be capable of being displayed alternately with the regular route message or separately choosing a “Blank” destination code.

f. The System message programming software shall provide a means of adjusting the length of time the messages are displayed from one (1) second to twenty-five (25) seconds duration. The blanking time between messages shall also be adjustable. Each line of text or the blanking time of each individual message shall be capable of having a different retention time.

g. The System shall be of plug-in modular design, to facilitate maintenance and to allow destination display board changes and additions without removing any signs from the coach. The front and side sign system shall incorporate drive circuits and connectors for plug-in of the rear sign. The entire display area of all signs shall be clearly visible in direct sunlight or at night.

h. An emergency message shall be activated by a push button or toggle switch in a location to be approved by the LAVTA. The emergency message shall be displayed on the front sign only while signs inside the vehicle, including the OCU (Eric++) display, remain unchanged. The emergency message shall be canceled by entering a new destination code, or power cycling (after removal of the emergency signal).

i. Power to the Sign System shall be controlled by the Master Coach run switch. The signs shall operate in all positions of this switch except the “off” position. The signs shall be internally protected against voltage transients and RF interference.

j. All electronic circuit boards used in the Sign System shall be conformal coated to meet the requirements of military specification MIL-I-46058C. All Sign System components shall be certified to have been subjected to a “burn-in” test of a minimum of twelve (12) hours operation in a temperature of 150^{o} F prior to final inspection.

20.3. Display and Display Illumination

a. All sign displays shall consist of pixels utilizing high intensity Light Emitting Diode’s (LED), for superior outdoor environmental performance, (of amber illumination appearance of light wavelength of 590 NM). LED should be made of AlInGaP II, superior UV resistant epoxy lens and superior resistance to the effects of moisture. Each pixel shall have a dedicated LED for illumination of the pixel in all lighting conditions. The Sign System shall have multi-level intensity changes, which adjust automatically as a function of ambient lighting conditions. There shall be no requirement for any fan or any specialized cooling or air circulation.

b. This LED shall be mounted such as to be visible directly to the observer positioned in the viewing cone, allowing for full readability 65 degrees either side of the destination sign centerline. The LEDs shall be the only means of illumination of the Sign System. The LED illumination source shall have an operating life M.T.B.F. of not less than 100,000 hours. Each LED shall not consume more than 0.02 watts.

c. The LED characters formed by the System shall meet the requirements of the Americans with Disabilities Act (ADA) of 1990 Reference 49 CFR Section 38.39.

20.4. Front Destination Sign

a. The front sign shall be mounted on the front of the coach, near the top edge of the body, behind windshield protection, and in an enclosed but accessible compartment provided by the coach manufacturer. The compartment access door shall be secured by 3, 5/16" square locks. The compartment opening shall also be large enough to allow easy removal and installation a complete front sign assembly.

b. The front destination sign message shall be readable by a person with 20/20 vision from a distance of 350 feet for signs of display height greater than 8 inches and from and distance not less than 275 feet for display heights less than 8 inches. The front sign shall have a viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display. The intensity of the illumination of the display pixels shall appear to the naked eye to be approximately uniform throughout the full viewing cone.

c. The sign mechanism shall be hinged on brackets to permit cleaning of the front inside side glass without the use of tools. The compartment shall be sealed to prevent entry of dust, dirt, water, and insects during normal operation and cyclone cleaning.

d. The front sign compartment shall be enclosed by a UV protected clear glazing.

20.5. Side Destination Sign

a. The side destination sign shall be located on the curbside, towards the upper portion of the passenger window that is located next to the front door. The side sign shall be mounted in a fixed position using brackets provided by the destination sign manufacturer.

b. The side destination message shall be readable by a person with 20/20 vision from a distance of 110 feet. The sign shall have viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display. The side sign shall be easily readable from the sidewalk level. The intensity of the illumination of the display pixels shall appear to the naked eye to be approximately uniform throughout the full viewing cone.

20.6. Rear Destination Sign

a. The rear sign shall be located such that it will provide clear visibility of the sign from the rear curbside of the coach. The final location of the sign must be approved by the LAVTA.

b. The rear sign shall be capable of independently displaying alpha-numeric characters. Its message shall be readable by a person with 20/20 vision, from a distance of not less than 225 feet. The rear sign shall have a viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display. The intensity of the illumination of the display pixels shall appear, to the naked eye, to be approximately uniform throughout the full viewing cone.

c. The sign shall be completely sealed to prevent the entry of dust, dirt, or water from normal operation, automatic bus washers, and steam cleaning. The sign installation shall not interfere with driver's vision or reduce access for other component repairs.

20.7. Operator's Control Unit (OCU) Eric++ Controller

a. The OCU shall be used to view and update display messages. It shall be recess mounted on the coach vehicle front sign compartment access cover or door. The OCU shall utilize a multi-key conductive rubber pad keyboard and be designed for transit operating conditions.

b. The OCU shall contain a display of at least two lines of 16-character capability. The OCU shall continuously display the message associated with the selected destination readings (except the emergency message feature as noted above).

c. The OCU shall also contain the capability to manually select the block number sign information (from 1 to 4 alpha-numeric characters) to be sent to the block number sign, independent of any pre-programmed destination sign message information.

d. If the J1708 interface is selected for the Destination Sign System, an auxiliary J1708 port shall be made available on the J1708 OCU so that auxiliary J1708 commands may be provided to the Destination Sign System from a wireless source that conforms to the J1708 command structure. Hanover Displays can provide wireless apparatus, and the Hanover Displays Destination Sign System has the capability of interfacing via the J1708 link with any such inputs, providing that the apparatus conform with the appropriate signaling specifications.

20.8. Transferring Messages and Updates

a. The Sign System shall be reprogrammable on the coach vehicle with the use of a 9 pin serial Keyfob (Key-Lo) or USB. A 9 pin serial port shall be provided on the OCU face for this purpose. The maximum reprogramming time for a 10,000 line listing shall be one minute. 9 pin serial Keyfob's, of appropriate memory capacity based on requirements of the message listing noted below shall be supplied at the rate of one Key-Lo for each 50 systems/buses, or fraction thereof, but in any event not less than two such 9 pin serial Key-Lo shall be supplied.

b. All buses shall be programmed with the LAVTA's most current run-book at the time of delivery.

c. Adequate memory shall be provided with each sign system to hold the LAVTA's current sign program, with a minimum reserve capacity of fifty percent (50%) for program expansion.

20.9. Programming Software

a. A programming software package (Helen V3.3 or greater) shall be provided to generate message lists for the destination sign system. The software package shall operate on any personal computer in the Windows operating system. The

software package shall allow the 9 pin serial Keyfob to be programmed directly from the PC utilizing a USB interface and other interfacing hardware (Base Station). The program shall be designed to easily delete or add messages to an existing destination listing.

b. The software shall provide capabilities for custom message writing by selection of preprogrammed standard and/or variable fonts; by creation of custom fonts; by varying spacing between message elements; by allowing creation of graphic displays or selecting preprogrammed images; and by allowing use of multiple fonts and graphic symbols placed anywhere within the display area.

c. Complete documentation and instructions for use shall be supplied with the software package.

20.10. Electronic Interference

Electronic sign system shall not interfere with radio communications system, public address system, or any other electronic equipment installed on the coach by the coach manufacturer, or the LAVTA.

20.11. Destination Sign System Readings

LAVTA shall provide the Contractor with a complete, up-to-date, list of Destination Sign codes to allow the signs to be preprogrammed with the correct readings.

20.12. Interior Headsign

An all LED interior Hanover Displays headsign, compatible with an Automated Visual Annunciator System, shall be provided with cabling routed to the radio box for use with the LAVTA's Clever Devices ACS radio system. It shall be mounted on the rear of the Driver's barrier facing rear towards the passengers.

21. VIDEO SURVEILLANCE SYSTEM

A video surveillance system, 7000 Series Digital Video Recording System shall be provided and installed in each bus.

21.1. Basic System

a. Power Requirement: The DVR shall operate from 18 to 36 VDC. It shall be self-regulating and internally protected from power surges and spikes.

b. Physical Attributes of DVR: The DVR shall have a maximum 11.5" x 11.25" x 3" outer housing and weigh no more than 14 lbs.

c. External DVR Material Construction: The DVR shall be constructed with a ruggedized outer housing that offers shock and vibration protection.

d. External Camera Housing Material Construction: The external camera housing for the DVR system shall be constructed out of ¼" cast aluminum.

e. Video Inputs: The DVR shall record NTSC/RS170, 1 volt peak to peak video, from up to 8 sources.

f. Inputs: The DVR inputs shall be NTSC/RS170 video format. The image capture rate of the system shall be user-selectable up to a maximum 8 frames per second. Playback shall not reduce the quality or resolution of the recorded scenes.

g. Color: The DVR shall record images in color..

h. Audio Input: The DVR shall record and playback a single channel of audio simultaneously with the recorded video.

i. Compression: The DVR shall utilize wavelet hardware image compression.

j. External Ports: The DVR shall be supplied with auxiliary ports for custom programming. These shall be a keypad port and a 10base T Ethernet port.

k. Removable Drive: The DVR shall be a self-contained removable hard disk unit for storing digitized images and audio information. This configuration shall allow for easy removal of images for playback and archiving. The removable drive shall be portable and interchangeable.

l. Dust Resistant Unit: The DVR shall filter dust from entry into the unit.

m. Shock Resistant Mounting (all parts): The DVR shall be designed for heavy-duty automotive use, as well as be enclosed in a tamper-proof housing. The unit shall function within the normal operating characteristics of a coach or transit vehicle and shall be capable of withstanding a shock of 20 G's operational.

n. Clock: The DVR shall have an on-board, real-time clock that operates independently of the main power supply. It shall be programmable to automatically adjust for daylight savings time.

o. Lock: The DVR shall employ a key locking mechanism to secure unit contents and provide security to the removable unit.

21.2. LCD Keypad

a. On-line: The LCD keypad shall display the system's on-line status.

b. Date: The LCD keypad shall display the correct date in relation to the DVR's internal clock.

c. Time: The LCD keypad shall display the correct time in relation to the DVR's internal clock.

d. Frames Per Second (fps): The LCD keypad shall display the fps recording rate.

e. Temperature: The LCD keypad shall display the system temperature while in the programming mode.

f. Vehicle ID Number: The LCD keypad shall enable the user to program the vehicle ID number.

g. Central Station Number: The LCD keypad shall enable the user to program the Central Station IP address and telephone number.

h. Modem Password: The LCD keypad shall enable the user to program the modem password.

i. Camera Name: The LCD keypad shall enable the user to program the camera name(s).

j. Resolution Setting: The LCD keypad shall enable the user to program the camera resolution setting.

k. Trigger Capture Rate: The LCD keypad shall enable the user to program the trigger capture rate.

l. Trigger Resolution Setting: The LCD keypad shall enable the user to program the trigger resolution setting.

m. Six Programmable Inputs: The LCD keypad shall enable the user to program up to six inputs.

n. ID Name for Input: The LCD keypad shall enable the user to program the ID name for each input.

o. Selectable Frame Per Second (fps) Capture Rate: The LCD keypad shall enable the user to increase the fps capture rate from .25 to 8.

p. DVR Shut Down Delay: The LCD keypad shall enable the user to program the DVR shut down delay from 0 to 50 minutes.

q. Audio Enable/Disable: The LCD keypad shall enable the user to enable or disable the audio feature.

r. Surveillance Storage Time: The LCD keypad shall enable the user to program the desired surveillance storage time from 0 to 9 days.

s. Alarm Storage Time: The LCD keypad shall enable the user to program the desired alarm storage time from 0 to 90 days.

t. Transmission Feature Enable/Disable: The LCD keypad shall enable the user to enable or disable the transmission feature.

21.3. System Functionality

a. Digital Video Recorder (DVR): The DVR can digitize, capture and record high-quality images. The images are then stored on the portable removable unit for review and playback at the Central Station. The DVR shall have, at a minimum, the following features and capabilities.

b. Image Capture: The DVR shall store digitized video images.

c. Image Capture Rate: The DVR shall capture images at a maximum of twelve frames per second.

d. Time: The DVR shall record the actual time while recording images. This information shall be tied to images during playback at the Central Station.

e. Date: The DVR shall record the actual date while recording images. This information shall be tied to images during playback at the Central Station.

f. Vehicle ID: The DVR shall record the programmable vehicle identification number while recording images. This information shall be tied to images during playback at the Central Station.

g. Camera Source: The DVR shall record the programmable camera name while recording video. This information shall be tied to images during playback at the Central Station.

h. File Format of Recorded Images: The recording software should store the images captured via the DVR in a proprietary file format that can only be viewed by MobileView's software. It is not reasonably possible to view the images using any other viewing software. In addition, it is not readily practicable to alter the pixels with common graphics tools or programs while they remain in the proprietary file format.

i. Recording Audio: The DVR shall have the ability to record single channel audio by adding a microphone.

j. Initialization of Recording: The DVR shall be signaled to begin recording at the start-up of the engine run switch of the vehicle.

k. End Recording: The system shall remain fully functional for a programmable period of time up to fifty minutes after the ignition has been turned off. This process shall be initiated by deactivating the engine run switch.

l. Continuous Recording: The DVR shall be capable of continuous image recording at a user-defined recording rate.

m. Loop Recording: The DVR shall record continuously onto the removable hard drive. The system recognizes when the available storage capacity for surveillance images has reached capacity and automatically begins to purge the oldest data in sequential fashion, making room for additional images without operator intervention. Images that are tagged due to the activation of the system's inputs are protected from automatic overwriting until the relevant images are manually deleted, or until all available space is filled with tagged images, at which time the system performs a "first-in, first-out" (FIFO) overwrite.

n. Event Tagging: The DVR shall tag events when a system input, such as a panic button, is activated. Tagged events are stored on the hard drive. When retrieved,

the tagged events shall be easily identifiable and will remain saved for a programmable period of time before being overwritten.

21.4. System Options

a. Synchronized Audio and Image Playback: The Central Station software shall have the ability to playback image databases with single channel audio if this option has been previously configured on the DVR.

b. Cellular or Wi-Fi Transmission System: The DVR shall be upgradeable to a video transmission system (DVRT). The transmission system shall utilize cellular or commercially available Wi-Fi technology. The Central Station shall support multiple simultaneous incoming video transmissions. The Central Station shall also have the ability to call out to the vehicle and request images at multiple resolution settings.

21.5. Central Station

a. The DVR system shall include, at a minimum, three Central Stations. The Central Station shall be a personal computer (PC) operating under Windows®. The Central Station Browser software can search and recall previously recorded video from the DVR's removable drive and shall include playback features (such as "animate") and selectable speed utilizing a slide speed bar. The Central Station software can also output the recorded images to other devices. The Central Station shall meet the following specifications, capabilities and features.

- Central Processing Unit (CPU): The Central Station shall be a minimum dual core Intel processor based PC with 4 gigabytes of RAM. The display card shall be sufficient to operate the 24 inch LED display in its native resolution.
- Random Access Memory (RAM): The Central Station shall include a minimum of 4 GB of RAM.
- Internal Hard Drive: The Central Station shall include a minimum of 500GB hard drive.
- Monitor: The Central Station shall include a wide screen 24" LED color WSXGA monitor with a native resolution of 1600x1200, with a minimum contrast ratio of 1000:1 and a minimum refresh rate of 8ms.
- Keyboard: The Central Station shall include a full-size PC keyboard.
- Mouse: The Central Station shall include a mouse.
- Operating System: The Central Station shall operate under the latest 64 bit Windows®operating system supported by Mobile View**.**
- Docking Station: The Central Station shall include an external docking station that is compatible with the DVR's removable unit.
- Ports and Expansion Slots: The Docking Station shall include a 10base T Ethernet port.
- Digital Output: Once files are downloaded standard software tools may be used to export video data to digital recording devices such as tapes or any high capacity storage medium.

b. Windows® Compatible Printing Device: The Central Station can output still frames of previously recorded video sequences to a Windows® compatible printer with suitable graphics capabilities.

21.6. Central Station Software

a. Central Station Software: The software shall allow the user to search, review, enhance, and print previously recorded images by hotkeys, mouse clicks and menu selections. The following describes the Central Station features.

b. Search Capability of the Central Station: The Central Station software shall allow the operator to search previously recorded images from a DVR's removable hard drive. The operator shall use search criteria such as date and time. The following describes the search capabilities of the Central Station software.

c. Date: The Central Station software shall have the ability to search and retrieve image databases based on a specific date.

d. Time: The Central Station software shall have the ability to search and retrieve image databases based on a specific time.

e. Alarm Event: The Central Station software shall have the ability to search and retrieve image databases based on a specific alarm event. This event is tagged and appears in a special window of the software.

f. Central Station Reviewing Features: The Central Station software shall have the ability to review and playback image databases. The following describes these features.

g. Animate: The Central Station software shall have the ability to playback or "animate" previously recorded image databases at user-selectable speed using the slide speed bar.

h. Step Forward: The Central Station software shall have the ability to step forward in increments of one frame at user-activated intervals during playback.

i. Step Back: The Central Station software shall have the ability to step back in decrements of one frame at user-activated intervals during playback.

j. Go to End: The Central Station software shall have the ability to go to the end of the selected image database.

k. Maximize Image: The Central Station software shall have the ability to maximize the size of the selected image to the largest image widow.

l. Pause: The Central Station software shall have the ability to pause or "freeze" an image database during playback.

m. Windows Viewing (Playback): The Central Station software shall view previously recorded image databases within viewing windows. These viewing windows shall have the following capabilities.

n. Multiple View (1, 4 or 8 View): The Browser software shall have the ability to place 1, 4 or 8 video viewing windows upon the desktop. The user shall be able to select which image database to review by selecting the appropriate viewing windows (unrelated to Microsoft Windows®). Once the viewing window has been selected, the user shall have the ability to use all playback tools for the selected window. The software shall allow the playback of images in the eight windows to be synchronized so that the viewer sees images tied together.

o. Maximizing Current Viewing Window: The Browser software shall have the ability of maximizing any image to the largest window.

p. Image Enhancement: The Browser software shall be able to enhance images using tools such as zoom, sharpen, blur, etc.

q. Zoom In: The Browser software shall have the ability to zoom in on an image a minimum of 4+ times.

r. Zoom Out: The Browser software shall have the ability to zoom out of an image a minimum of 4+ times.

s. Zoom to Window: The Browser software shall have the ability to shrink or enlarge an image to fit the size of the viewing window.

t. Zoom to Image: The Browser software shall enable the user to view an image even if the image is larger than the window that it is being viewed in.

u. Enhance: The Browser software shall have the ability to enhance an image.

v. Sharpen: The Browser software shall have the ability to sharpen an image.

w. Blur: The Browser software shall have the ability to blur or smooth an image.

x. Restore: The Browser software shall have the ability to restore an image back to its pre-enhanced state.

y. Brightness: The Browser software shall have the ability to increase or decrease the brightness of an image.

z. Contrast: The Browser software shall have the ability to increase or decrease the contrast of an image.

aa. Printing: The Browser software shall have the ability to print an image to a Windows® compatible printer with suitable graphics capabilities.

bb. Print Preview: The Browser software shall have the ability to preview an image before printing.

cc. Print Setup: The Browser software shall have the ability to specify printer and paper size, source and orientation for printing.

dd. Page Layout: The Browser software shall have the ability to specify range of images and image size.

ee. Save Image As: The Browser software shall have the ability to save an image as a browser image record, BMP or JPEG file to a specified drive or folder.

ff. Send Image To: The Browser software shall have the ability to send an image to another recipient via e-mail.

21.7. System Upgrade

a. The system's hardware and software shall be capable of being upgraded in the field. The upgrade shall be easy and user friendly.

b. The DVR may be programmed with time, date, and vehicle I.D., as well as camera input and capture rate via keypad programming or Ethernet port.

22. HEATING, DEFROSTING, VENTILATING & AIR CONDITIONING SYSTEMS

22.1. System Characteristics

a. A heating and ventilating system shall be provided with proper correlation to provide practical maximum comfort to passengers and the operator. Heating and ventilating system shall incorporate introduction of approximately twenty percent (20%) fresh air.

b. Air for heating and ventilating shall be evenly distributed throughout the coach body in such a manner as to minimize temperature variation. Provision shall be made for minor adjustment of controls to maintain desired temperatures within the coach without changing supply of outside air required for ventilation.

c. A manual control or modulating valve shall be provided to permit the fans to be used for power ventilation of outside air in warm weather.

d. Main heating system shall be thermostatically controlled. The heating system shall provide heated, filtered air for an ambient temperature differential from sixty (60) degrees to zero (0) degree F. Heating filtering elements must be of the disposable type.

e. All motors shall be MCC Brushless.

f. Blower motor(s) shall be two-speed, heavy-duty with adequate output to provide circulation throughout the coach. Blowers shall also circulate fresh air throughout the coach.

g. Main heater shall be mounted in the rear of the coach above the engine compartment. It shall be a hot water type with heavy-duty motors and a minimum capacity of 110,000 B.T.U. at 100-degree water-air temperature differential. A water shut-off valve shall be provided at the heater.

22.2. Driver's Heater

a. A separate dash heater and blower shall be provided for the driver's comfort and for windshield defrosting. Capacity of 40,000 BTU output at 100-degree water-air temperature differential, is required.

b. A two-speed blower, using a 24V, electric motor, shall be provided with air volume of 500 cfm minimum with separate switch and manual valve to control air flow.

c. Defroster blower shall be automatically inoperative if the alternator is not charging.

d. A 12V 5-blade defroster fan, with fan guard, shall be located in the lower left corner of the windshield area of the coach. Switch shall be mounted on the driver's console. LAVTA to approve the location.

22.3. Heater Water Lines

a. Heater water lines shall not be exposed within the coach.

b. All water lines shall be heavily insulated throughout the coach. They shall be made of heavy-duty copper or brass, except where shock absorbing or flex lines are required.

22.4. Heater Cores

a. All heater cores fins shall be of aluminum, and the heater core tubes shall be copper. Metal used in the tanks shall be of adequate thickness with drawn reinforcements. All radii of the tanks shall be of sufficient size to preclude fatigue failure.

b. Heater cores, motor and fan must be readily accessible and installed to permit ready removal.

22.5. Heater and Blower Motors

a. All blowers required for the heating and ventilating system shall be balanced statically and dynamically.

b. All motors required for these blowers shall be heavy-duty type, motors three-eighth (3/8) horsepower minimum.

22.6. Air Conditioning System

a. The coach shall be equipped with a Thermo King Model T Series or an agency approved equal, **Thermo King preferred,** for zero emissions all electric drive vehicles **ONLY**.

b. Coach Air Conditioning System with Screw Compressor and Clutch Assembly, designed to operate on 407C refrigerant The T Series upper package mounts in

a compartment in the rear area of the coach above the coach engine. The compressor/clutch assembly mounts in the engine compartment, and is belt driven from either the engine or transmission. If an alternator is also driven from the same PTO, then the compressor and alternator shall be driven by a single serpentine design belt.

c. The air conditioning unit frame shall be constructed of 5052-H32 structural aluminum of .100 and .182 material thickness for strength, corrosion protection, and light weight. The frame shall be all welded and painted with a high solid polyester paint. All hardware shall be 300 Series stainless steel to protect against corrosion. “Neverseez” anti-seizing lubricant shall be applied to the threads of all stainless steel hardware during unit assembly to prevent thread galling.

d. The evaporator, heater and condenser coils shall be constructed of 3/8 inch outside diameter seamless Series 122 copper tubing having minimum .0195 inch wall thickness. The copper tubing shall be mechanically expanded into aluminum fins having a minimum thickness of .080 inch. The fin spacing shall be: evaporator and heater coils - 12 fins per inch; condenser coil - 10 fins per inch. The condenser coil shall be dipped in an acrylic base, polyvinyl material to provide a 2 mil thick coating of the entire exterior surface for corrosion protection and quick dirt release during washing. This coating shall not impair the performance of the air conditioning system. The condenser coil shall be mounted to allow easy removal and reinstallation without major disassembly of the unit frame or removal of the unit from the coach. Separate drains shall be provided for the condenser and evaporator/heater sections to allow moisture to be routed out of the unit to the street. Drain seals and/or traps shall be installed at the outlet of the evaporator/heater drain tubes to prevent entrance of dirt or fumes into the coach.

e. The motors shall be brushless 27VDC. The condenser shall have two motors; the evaporator/heater shall have one. Motors shall be selected and applied to maximize efficient operation, airflow and long life.. Motors shall be capable of two speed operation. Evaporator/heater motor shall operate at low speed during heat mode and high speed during cool, vent or reheat modes. Condenser fans shall be axial flow type with a steel spider, aluminum blades and aluminum hub. The fans shall be coated with high solid polyester paint for corrosion protection.

f. Evaporator/heater blowers shall be 9” x 5”, forward curve, single inlet centrifugal type. Regreasable, self-aligning outboard bearings shall support the blower shafts. Heavy duty, ring type flexible couplings shall connect the shafts to the motor.

22.7. Temperature and Electrical Controls

a. There shall be a unitized control panel consisting of reliable electromechanical relays, magnetic motor circuit breakers, bi-metal control circuit breakers, adjustable return air thermostat with a range of 60^{o} - 90^{o} F, ambient thermostat, evaporator coil anti-freeze thermostat and terminal board for ease of troubleshooting.

b. This control panel shall be located in the evaporator/heater return air area, or in an enclosed control box if mounted in an ambient location. The return air thermostat shall have a maximum tolerance from set point of 2.5° F.

22.8. Electrical Wiring and Terminals

All unit wiring shall be UL758, Style 3173/3196 having copper strands with tinned ally coating rated for up to 600 volts. The insulation shall be cross-linked polyethylene, rated for 125° C and shall be white in color with hot stamp number coding the entire length at a maximum spacing of 1-3 inches. All terminals shall be "forklok" or ring type with vinyl insulation. All terminals shall be machine crimped. Hand crimping is not acceptable. All terminations exposed to ambient shall be coated with glycol for corrosion protection.

22.9. 22.10 Receiver Tank, Dry Eye, Filter/Dehydrator

The unit shall be equipped with a refrigerant receiver tank installed vertically to ensure a steady liquid feed to the expansion valve. The receiver tank shall meet all ASTM requirements and have two (2) sight glasses for checking refrigerant level. The top sight glass shall have a floating plastic ball to indicate proper refrigerant level. A refrigerant dry eye shall be provided in the liquid line, or in the lower sight glass of the receiver tank, to indicate the presence of moisture in the refrigerant system. The unit shall have a disposable liquid line filter/dehydrator.

22.10. Refrigerant Hoses, Copper Tubing, Fittings

a. Suction and discharge hoses shall be provided to connect the air conditioning unit to the compressor. The hoses shall have reusable swivel fittings, Teflon liner, stainless steel interior support coil, stainless steel exterior braid, and asbestos exterior sleeve for abrasion protection. Length of such hoses shall be kept to a minimum to minimize effusion of refrigerant or permeation of moisture.

b. All copper tubing provided shall be refrigeration grade, Series 122 seamless type meeting ASTM specifications. All solder joints shall be silver soldered. All flux and scale shall be cleaned from solder joints, prior to soldering, and all tubing exposed to ambient shall be sprayed with fungus proof varnish.

c. All JIC and SAE swivel fittings of 3/4" flare size and larger shall include "O" rings for added sealing protection. "O" ring material must be compatible with refrigerant.

22.11. Expansion Valve

The expansion valve shall be externally equalized. It shall have a replaceable power head and cage assembly and be equipped with a 100 mesh screen at the inlet to prevent contaminants from plugging the seat. The superheat shall be factory set, requiring no field adjustment. The expansion valve bulb shall be clamped to the suction line in the evaporator compartment and insulated from effects of surrounding air temperature. The expansion valve body shall be properly secured and mounted in the return air area for ease of access.

22.12. System Performance

The T Series system shall control the interior coach temperature to meet all White Book temperature control performance requirements defined in Chapter 3.7, INTERIOR CLIMATE CONTROL, of the Department of Transportation URBAN MASS TRANSPORTATION ADMINISTRATION, BASELINE ADVANCE DESIGN TRANSIT COACH SPECIFICATIONS.

22.13. System Protective Controls

The air conditioning system will be equipped with the following protective control:

a. High pressure cutout switch.

b. Low pressure cutout switch.

c. Ambient sensing switch: 45 + 5 F cutout 55 + 5 F cut-in.

d. These switches will interrupt the compressor energizing circuit. Both the high and low pressure switches will energize a trouble light at the driver's console.

e. High pressure relief valve.

f. Evaporator coil freeze protection - The system will be equipped with an evaporator pressure regulator or Anti-Freeze thermostat to prevent condensate freezing on the evaporator coil.

22.14. Compressor

a. The air conditioning system shall be provided with either a S391 or S616 Screw compressor. The compressor shall be capable of cycling on/off at any operating speed - no unloaders are to be used. High and low refrigerant pressure cutout switches shall be mounted on the compressor. Suction and discharge service valves shall be made of brass, with steel stems.

b. The compressor clutch shall be an electromagnetic design which utilizes a double row, open type ball bearing. The inner race of the ball bearing shall mount on the hub of the front compressor seal plate and shall be held in place by a locking nut. The outer race of the bearing shall be pressed into the pulley cavity and held in place by a snap ring. External Teflon grease seals mounted in the clutch pulley shall hold a large reserve of high temperature grease on both sides of the clutch bearing for maximum lubrication. The front seal shall have a grease zerk to conveniently enable bearing relubrication without disassembly of the clutch disc.

c. The air gap between the clutch disc and mating pulley plate surface shall be adjustable. The clutch pulley plate shall be thick enough to allow for removal of .030 inch of material during resurfacing on a lathe during overhaul.

23. BIKE RACKS

(a) The Proposer shall install front mounted bicycle racks to each coach prior to delivery. The rack shall be a Sportworks Model Apex 3™, including all necessary brackets, mounting hardware and bike retention accessories. A sensors manufactured by Sportworks one of which warns the Operator the rack is deployed and the others providing rack occupancy to the TransitMaster AVL system shall be provided. The warning indicator shall be located on the dash in a location approved by LAVTA. The other sensor wires shall be routed to the Equipment box and integrated into the TransitMaster AV system

(b) The Proposer shall advise, during the approved equal period, if the bike rack installation will impact the front headlights of the coach design to be offered and what, if any, modifications are necessary to accommodate the specified racks.

The mounted bike rack shall not interfere with attaching towing equipment, accessing towing connectors or obstruct the driver's field of vision.

24. BODY PREPARATION/PAINT AND DECALS

24.1. Painting and Striping

a. Color charts shall be furnished by the Contractor for LAVTA approval, based on two (2) solid body colors exterior plus two (2) color stripes, and one (1) interior color.

b. Both exterior and interior paint is to be DuPont low VOC. All paint shall be applied to a minimum thickness of six (6) mils.

c. Exterior paint scheme is divided as follows:

1. White B8951-HN. Basic bus plus front roof fairing.
   Black semi-gloss Dupont N5636-HN behind window glass, across doors plus last panels curbside and roadside behind passenger windows.

2. Black Hubs.

3. Stripes:. Exact location and scheme to be furnished by LAVTA to successful Proposer.

4. The dash, side console, front and rear doors, and the front overhead ceiling shall be painted black.

24.2. Manufacturer's Emblems

Exterior manufacturer's emblem plate or decals shall not be installed.

24.3. Interior Signs

a. All interior signs shall be supplied and installed in a metal, permanent plate design mounted to the body with rivets. All sign locations shall be reviewed by LAVTA and approved prior to installation.

b. "No Smoking, No Eating, No Radios, No Drinking" plates shall be placed on the driver's modesty panel above the schedule rack. The plate shall be identical to LAVTA's current inventory. A sample shall be provided to the Contractor.

c. Interior coach number in one (1) location (front header) shall be three inch (3"), plastic engraved type. Number sequence shall be furnished to the Contractor.

d. Metal plate type decal explaining instructions for operating the wheelchair lift, and a metal plate explaining instructions for operating the kneeling system shall be installed at an approved location in the drivers compartment area.

e. Metal plate type decal "No Standing Ahead of the Yellow Line", shall be located on front destination sign door in an approved location.

f. Metal plate type decal "For optimum air conditioning, keep windows closed" to be located at the center horizontal window ledge between each window in locations approved by LAVTA. The Contractor shall provide a sample to the LAVTA.

g. Metal plate type decals for the chime system shall be provided at each window mullion and in appropriate areas at the wheelchair tie downs.

h. All emergency exit instructions shall be metal plates installed in LAVTA approved locations, or as required by law. The rear door "breakout" panel shall have the emergency instructions printed directly on the plastic panel in lieu of a metal plate.

i. Metal plate type decal "Do not push on exit door" shall be located on each door leaf of the rear doors in a location approved by LAVTA.

24.4. Exterior Decals and Signs

a. Exterior coach numbers in seven (7) locations shall be four inch (4") Scotchlite, reflective type material. Locations are listed below:

Bus Numbers:
Quantity: 1 per bus, Color: TBD, Size: 4" high, Location: Interior-rear engine door.
Quantity: 5 per bus, Color: TBD, Size: 4" high, Locations: Roadside 2 numbers, curbside 2 numbers, front (over headlight).
Quantity: 1 per bus, Color: TBD, Size: Each number 4" high – stacked, Location: Rear cap.

b. "Diesel Fuel", to be located inside fuel filler door, manufactured of metal or plastic engraved.

c. "DEF" to be located inside DEF tank filler door, manufactured of metal.

d. "Caution Water Hot", to be located inside surge tank filler door, manufactured of metal or plastic engraved.

e. "Caution-Negative Ground", to be located inside battery compartment door as well as all necessary instructions to operate the battery disconnect switch(es), manufactured of metal or plastic engraved.

f. "Battery Cut-off Switch Inside", manufactured of metal or plastic engraved, to be furnished and installed by the Contractor on the outside of the battery box compartment per sample provided by LAVTA.

g. The International Handicapped Symbol shall be furnished and installed at one (1) approved location. This symbol must be the white symbol on a blue background, manufactured from 3M Scotchcal. Final size and location shall be designated and approved by LAVTA.

h. ""Wheels" decal. Quantity 2 per bus, Color: TBD, Size: TBD" high by TBD long, Locations: Roadside and curbside over rear wheels.

i. "A Service of LAVTA" decal. Quantity 1 per bus, Color: TBD, Size: TBD high by TBD" long (one line), Location: Rear engine door.

j. Bus Numbers. Color & Location: TBD .

k. Passenger Rules Decal (required). Gillig #59-2142-000, "No Smoking, Eating/Drinking, Radio", Quantity: 2, Locations: (1) at rear bulkhead I/O panel door, (1) at AFT side of air tank enclosure below "Stop Request" sign.

l. Video Surveillance Decals (required).

m. "Exact Fare Please", manufactured from 3M reflective vinyl, decal shall be furnished and installed by the Contractor per the sample furnished by LAVTA in an approved location.

n. "Wheelchair Lift/Kneeling" decal, manufactured from 3M vinyl, shall be furnished and installed by the Contractor at the warning light in an approved location.

o. CHP "CA" number decals, manufactured from 3M vinyl, shall be provided and installed in two locations by the Contractor per the sample furnished by LAVTA in an approved location.

p. "1-925-455-7500 manufactured from by 3M vinyl, shall be provided and installed on the engine door by the Contractor per the sample furnished by LAVTA in an approved location.

25. VEHICLE PERFORMANCE

(a) Power Requirements – All Categories

The propulsion system shall be sized to provide sufficient power to enable the bus to meet the defined acceleration, top speed and grade ability requirements, and operate all propulsion-driven accessories using actual road test results and computerized vehicle performance data.

(b) Top Speed

The bus shall be capable of achieving a top speed of 65 mph on a straight, level road at GVWR with all accessories operating. The bus shall be capable of safely maintaining the vehicle speed according to the recommendations by the tire manufacturer.

NOTE: Values are assumed to be sustained. Manufacturer shall supply Agency with data if there is a variance between peak performance and sustained vehicle performance.

(c) Grade Ability

Grade ability requirements shall be met on grades with a dry commercial asphalt or concrete pavement at GVWR with all accessories operating.

The propulsion system shall enable the bus to achieve and maintain a speed of 48 mph on a 2½ percent ascending grade and 15 mph on a 12 percent ascending grade continuous.

NOTE: Values are assumed to be sustained. Manufacturer shall supply Agency with data if there is a variance between peak performance and sustained vehicle performance.

25.2. Acceleration Non-Hybrid

a. The acceleration shall meet the requirements in **Table 3** below and shall be sufficiently gradual and smooth to prevent throwing standing passengers off balance. Acceleration measurement shall commence when the accelerator is depressed.

TABLE 3

Maximum Start Acceleration Times on a Level Surface[1]

Speed (mph)	Maximum time (seconds)
10	5
20	10
30	18
40	30

Speed (mph)	Maximum time (seconds)
50	60
Top speed	

1. Vehicle weight = GVWR

25.3. Acceleration Hybrid

The propulsion and braking systems shall meet the performance requirements of the Duty Cycle.

Braking application and performance shall remain consistent regardless of hybrid system state of charge (SOC) or other variances related to regenerative braking.

The system shall be programmable to allow optimization of acceleration and deceleration rate. Performance may be affected when reprogramming. The manufacturer shall supply the new performance data.

25.4. Operating Range

The operating range of the coach shall be designed to meet the operating profile as stated in the "Design Operating Profile" section.

a. **Diesel (Transit Coach)**

The operating range of the coach when run on the FTA ABD Cycle shall be at least 350 miles (560 km) or 20 hours with full fuel capacity.

b. **Hybrid**

The operating range of the coach when run on the design operating profile "Design Operating Profile" shall be at least 350 miles on a full tank of fuel.

25.5. Fuel Economy (Design Operating Profile)

a. Test results from the FTA ABD Cycle economy tests or other applicable test procedures shall be provided to the Agency. Results shall include vehicle configuration and test environment information. Fuel economy data shall be provided for each design operating profile. The design operating profile is assumed to be defined by the FTA ABD Cycle.

Fuel economy tests shall be run on these four duty cycles:

- Manhattan: 6.8 mph
- Orange County: 12.7 mph
- UDDS: 19 mph
- Idle time

25.6. Powerplant

a. Engine

The engine shall be a CARB Approved Cummins heavy-duty diesel engine appropriate to the configuration proposed, Diesel, Diesel-Electric Hybrid or CNG. This engine shall comply with applicable local, state, and/or federal emissions and useful life requirements. The engine shall have a design life of not less than 300,000 miles without replacement or major service. The lifetime estimate is based on the design operating profile.

The engine shall be equipped with an electronically controlled management system, compatible with either 12V or 24V power distribution. The engine control system shall be capable of transmitting and receiving electronic inputs and data from other drivetrain components and broadcasting that data to other vehicle systems. Communication between electronic drivetrain components and other vehicle systems shall be made using the communications networks. The engine's electronic management system shall monitor operating conditions and provide instantaneous adjustments to optimize both engine and bus performance. The system shall be programmable to allow optimization of programmable features.

The engine starting system shall be protected by an interlock that prevents its engagement when the engine is running. Special equipment or procedures may be employed to start the bus when exposed to temperatures less than 30°F for a minimum of four hours without the engine in operation. All cold weather starting aids, engine heating devices, and procedures shall be of the type recommended by the engine manufacturer and approved by the Agency. The integration of all systems on the vehicle relative to engine idle speed shall be the responsibility of the vehicle manufacturer to meet the requirements of the transit property.

The engine control system shall protect the engine against progressive damage. The system shall monitor conditions critical for safe operation and automatically de-rate power and/or speed and initiate engine shutdown as needed.

b. Automatic Engine Protection/Shutdown Override Feature

A control shall be available to the operator/driver that when constantly depressed and released will delay the engine shutdown or allow the bus to be moved. Override action shall be recorded. This data shall be retrievable by the Agency.

25.7. Propulsion System (Hybrid)

a. Propulsion System Description

The bus shall be powered by a hybrid propulsion system. Function and operation of the bus shall be transparent to the bus operator and passengers. The OEM shall ensure that the bus structure can successfully accept the installation of the propulsion system and be operated on the stated duty-cycle for a period of 12 years without a structural failure. At a minimum, the propulsion system shall comply with applicable local, state, and/or federal emissions and

useful life requirements. The propulsion system shall comply with local, state, and federal (maintenance) and other applicable sections.

The hybrid drive system shall be rated for the GVWR or greater of the bus.

b. **Propulsion System Service**

The propulsion system shall be arranged so that accessibility for all routine maintenance is ensured. No special tools, other than dollies and hoists, shall be required to remove the propulsion system or any subsystems. However, the Agency shall recognize that properly rated test equipment and safe electrical work practices are essential when servicing high-voltage hybrid components. The exhaust system, air cleaner, air compressor, starter (if used), alternator, radiator, all engine accessories, and any other component requiring service or replacement shall be easily removable. The Contractor shall provide all specialty tools and diagnostic equipment required for maintaining the propulsion system in accordance with the Special Tools List.

c. **Primary Propulsion Unit and Traction Motor**

The propulsion system may be configured in a variety of methods dependent upon type of drive, series and/or parallel. The definition of motor in the context of this specification assumes that the device can provide or consume energy as well as provide or retard mechanical motion.

d. **Energy Storage and Controller**

Design and performance shall be provided to the Agency. Energy storage shall be of a commercial design capable of operating in the Agency transit environment. The primary charging of the energy storage system shall be accomplished by the on-board hybrid system controller and regenerative braking.

Thermal management will be provided to ensure optimal life and performance of the ESS over the environmental operating range.

e. **Hybrid System Controller (HSC)**

The HSC regulates energy flow throughout hybrid system components in order to provide motive performance and accessory loads, as applicable, while maintaining critical system parameters (e.g., voltages, currents, temperatures, etc.) within specified operating ranges.

The controller shall monitor and process inputs and execute outputs as appropriate to control the operation of all propulsion system components.

Energy storage system SOC correction methods stated in SAE J2711 shall be utilized.

f. **Engine**

The engine and related emission systems shall meet all applicable emissions and design/durability guidelines and standards.

The Contractor shall provide the Agency with expected durability of the engine and related emission systems and shall define required power plant.

The engine shall be equipped with an electronically controlled management system, compatible with multiplex wiring systems and either 12V or 24V electrical systems.

The engine shall have on-board diagnostic capabilities, be able to monitor vital functions, store out-of-parameter conditions in memory, and communicate faults and vital conditions to service personnel. Diagnostic reader device connector ports, suitably protected against dirt and moisture, shall be provided in the operator's area and near or inside the engine compartment. The on-board diagnostic system shall inform the operator via visual and/or audible alarms when out-of-parameter conditions exist for vital engine functions.

The engine starting system shall be protected by an interlock that prevents its engagement when the engine is running. Special equipment or procedures may be employed to start the engine when exposed to temperatures less than 30°F for a minimum of four hours without the engine in operation. All cold weather starting aids, engine heating devices, and procedures shall be of the type recommended by the engine manufacturer and approved by the Agency.

g. **Automatically Activated Fast Idle as Required**

The fast idle device shall be activated and controlled automatically by the engine control system.

25.8. Compressed Natural Gas (CNG)

a. **CNG Engine**

General Requirements:

The engine and transmission shall be heavy duty and mounted at the rear of the bus in order to allow maximum accessibility to all components.

Engine must be CARB certified CNG engine at the time of delivery.

The engine shall be OEM certified suitable for heavy heavy-duty urban transit bus application. The engine/transmission combination shall require application testing and approval from the respective engine and transmission manufacturer. Engine shall be capable of diagnostics, archive of failure data, adaptive learning and programming via a laptop PC in a "windows" environment. This capability shall extend to time stamping of failure data, running in a real time mode for road testing and data storage.

The operating range of the bus run in revenue service (Design Operating Profile) shall be at least 400 miles when fully secured to 3,600 PSI (nominal) of natural gas during a single fill-up.

The engine shall be capable of sending and receiving data via the J1939 communications standard.

b. **CNG Fuel System**

Tanks:

The compressed natural gas (CNG) fuel tanks must be the lightest available tanks that meet all the standards that meet all the standards of NGV 2, NFPA 52, DOT, and provide a minimum of 21,000 SCF.

Eight (8) Type III fuel tanks must be roof-mounted with tanks located as far outboard as possible. A walkway along the centerline of the roof must also be provided. This walkway will allow maintenance personnel to safely walk between the tanks with the fuel tank cowlings either opened or closed.

The tanks must be a twenty (20) year tank and certifiable to twenty (20) years.

Low-pressure regulators shall be installed so that the drain hole is at the bottom of the regulator, as they occasionally require draining.

The high-pressure regulator shall be located so it is accessible for maintenance and adjustment.

There shall be an emergency ¼ turn shut-off valve between the tanks and the fueling head, no higher than 68” to allow actuation while standing on the ground.

The emergency relief valves on each cylinder shall have a vent pipe. The end of the pipe shall be covered with a plastic cap to prevent debris from entering, but still be capable of venting in case of emergency.

A provision shall be provided to unload all of the fuel from the storage cylinders to a facility based low-pressure gas line or storage facility. Connection shall be accessible at the fueling fitting area and be properly protected and labeled. It shall be possible to unload a full load of fuel in thirty minutes or less.

c. **Fueling:**

Fueling must take place on the right rear corner of the coach (curbside).

Fuel door must have a minimum height from the ground to the door opening of 48.”

Fuel door must have a starter and engine cut-out switch installed to prevent starting or running the engine of the coach during fueling.

Fueling must be able to be completed in less than five minutes from an empty state to a completely full state.

There shall also be a de-fueling fitting and valve system to unload the fuel supply from the bus tanks.

25.9. Electric Drive Motor (Category 2)

a. Propulsion System Service

The bus shall be powered by an all-electric, zero-emission propulsion system. Function and operation of the bus shall be transparent to the bus operator and passengers. The OEM shall ensure that the bus structure can successfully accept the installation of the propulsion system and be operated on the stated duty-cycle for a period of 12 years without a structural failure. At a minimum, the propulsion system shall comply with applicable local, state, and/or federal emissions and useful life requirements. The propulsion system shall comply with local, state, and federal (maintenance) and other applicable sections.

The all-electric, zero-emission drive system shall be rated for the GVWR or greater of the bus.

b. Propulsion System Service

The propulsion system shall be arranged so that accessibility for all routine maintenance is ensured. No special tools, other than dollies and hoists, shall be required to remove the propulsion system or any subsystems. However, the Agency shall recognize that properly rated test equipment and safe electrical work practices are essential when servicing high-voltage electric components. All drive system accessories requiring service or replacement shall be easily removable. The Contractor shall provide all specialty tools and diagnostic equipment required for maintaining the propulsion system in accordance with the Special Tools List.

c. Traction Motor

The traction motor shall be able to provide and recover kinetic energy as well as retard mechanical momentum (regenerative braking). The traction motor shall be a permanent magnet type with a minimum power rating of 160 kW and be able to achieve a maximum torque of 1019 N*m (750 lb.-ft.). Traction motor speed control shall be continuously variable and not rely on shift points.

d. Energy Storage System

Design and performance shall be provided to the Agency. Energy storage shall be of a commercial design capable of operating in the Agency transit environment. The electrical storage system shall be composed of modular Li-ion batteries. The total nominal system storage capacity shall be suitable for the desired operating profile and range.

A thermal management system, separate from the cooling system of the traction motor, shall be provided to ensure optimal life and performance of the ESS over the environmental operating range.

e. **Electric Vehicle System Controller (EVSC)**

The propulsion system shall be able to self-regulate, manage, and control energy flow throughout the propulsion system in order to provide motive performance, storage, and accessory loads, as applicable, while maintaining critical system parameters (e.g., voltages, currents, temperatures, etc.) within specified operating ranges.

The controller shall monitor and process inputs and execute outputs as appropriate to control the operation of all propulsion system components.

f. **Shop/Depot Charging Connection**

The bus shall be able to interface and receive a charge from shop/depot charging equipment with a charge rate of 100 kW. The shop/depot charger connection interface shall be located next to the fuse box on the rear curbside of the bus. The charger interface shall have its own access door.

LAVTA may choose to purchase charging equipment from the awarded bus manufacturer, or to purchase it elsewhere, from a different supplier. Proposers should offer pricing for one (1) charging system per electric bus being proposed.

TABLE 3

Maximum Start Acceleration Times on a Level Surface[1]

Speed (mph)	Maximum time (seconds)
10	5
20	10
30	18
40	30
50	60
Top speed	

1. Vehicle weight = GVWR

25.10. Acceleration Electric

The acceleration shall meet the requirements in Table 3 above and shall be sufficiently gradual and smooth to prevent throwing standing passengers off balance. Acceleration measurement shall commence when the accelerator is depressed.

25.11. Operating Range

The operating range of the coach shall be designed to meet the operating profile as stated in the “Design Operating Profile” section.

a. **Electric**

The operating range of the coach with full state of charge when run on the FTA ADB cycle shall be at least 130 miles.

SAMPLE AGREEMENT

THIS AGREEMENT is made as of the _____ day of _____, 2016, by and between the LIVERMORE AMADOR VALLEY TRANSIT AUTHORITY (LAVTA) and _____ ("CONTRACTOR").

WHEREAS, LAVTA desires to purchase a minimum of 12 and a maximum of 20 buses (which bus quantities may be assigned to other public agencies) to be delivered over the term of the Contract and has issued a Request for Proposals dated December 30, 2015, a copy of which is attached and incorporated as Exhibit A; and

WHEREAS, the CONTRACTOR desires to furnish such services and submitted a written proposal dated _____, 2016, a copy of which is attached and incorporated as Exhibit B.

NOW, THEREFORE, THE PARTIES AGREE AS FOLLOWS:

1. RENDITION OF SERVICES

The CONTRACTOR agrees to provide services to LAVTA in accordance with the terms and conditions of this Agreement.

2. SCOPE OF WORK

The Contractor shall perform all work and furnish all the labor, materials, tools, equipment, services, and incidentals as set forth in Exhibit A ("Work"), as supplemented by Exhibit B, except when inconsistent with Exhibit A.

3. TERM OF AGREEMENT

The term of this Agreement will be for a five-year term commencing upon LAVTA'S issuance of a written Notice to Proceed or unless sooner terminated pursuant to Section 22 of this Agreement. The CONTRACTOR shall furnish LAVTA with all the materials, equipment and services called for under this Agreement, and perform all other work, if any, described in the Contract Specifications.

It is further understood that the term of Contract is subject to LAVTA'S right to terminate the Contract in accordance with Section 22 of this Agreement.

4. OWNERSHIP OF WORK

All reports, designs, drawings, plans, specifications, schedules, and other materials prepared, or in the process of being prepared for the services to be performed by CONTRACTOR are and shall be the property of LAVTA. LAVTA shall be entitled to copies and access to these materials during the progress of the work. Any such materials remaining in the hands of the CONTRACTOR or in the hands of any subcontractor upon completion or termination of the work shall be immediately delivered to LAVTA. If any materials are lost, damaged, or destroyed before final delivery to LAVTA, the CONTRACTOR shall replace them at its own expense and the CONTRACTOR assumes all risks of loss, damage, or destruction of or to such materials. The CONTRACTOR may retain a copy of all material produced under this Agreement for its use in its general business activities.

5. CONFIDENTIALITY

Any LAVTA materials to which the CONTRACTOR has access or materials prepared by the CONTRACTOR during the course of this Agreement ("confidential information") shall be held in confidence by the CONTRACTOR, who shall exercise all reasonable precautions to prevent the disclosure of confidential information to anyone except the officers, employees and agents of the CONTRACTOR as necessary to accomplish the rendition of services set forth in Section 2 of this Agreement.

The CONTRACTOR shall not release any reports, information, or promotional materials prepared in connection with this Agreement, whether deemed confidential or not, without the approval of LAVTA'S General Manager.

6. USE OF SUBCONTRACTORS

The CONTRACTOR shall not subcontract any services to be performed by it under this Agreement without the prior written approval of LAVTA, except for service firms engaged in drawing, reprographics, typing, and printing. The CONTRACTOR shall be solely responsible for reimbursing any subcontractors and LAVTA shall have no obligation to them.

7. CONTRACTOR'S KEY PERSONNEL

It is understood and agreed by the parties that at all times during the term of this Agreement that

shall serve as the primary staff person of CONTRACTOR to undertake, render, and oversee all of the services under this Agreement.

8. CHANGES

LAVTA may, make changes at any time, by written order, within the scope of services described in this Agreement. If such changes cause an increase or decrease in the budgeted cost of or the time required for performance of the agreed upon work, an equitable adjustment as mutually agreed shall be made in the limit on compensation as set forth in Section 16 of this Agreement. In the event that CONTRACTOR encounters any unanticipated conditions or contingencies that may affect the scope of work or services and result in an adjustment in the amount of compensation specified herein, or identifies any LAVTA conduct (including actions, inaction, and written or oral communications other than a formal contract modification) that the CONTRACTOR regards as a change to the contract terms and conditions, CONTRACTOR shall so advise LAVTA immediately upon notice of such condition or contingency. The written notice shall explain the circumstances giving rise to the unforeseen condition or contingency and shall set forth the proposed adjustment in compensation. This notice shall be given to LAVTA prior to the time that CONTRACTOR performs work or services related to the proposed adjustment in compensation. The pertinent changes shall be expressed in a written supplement to this Agreement prior to implementation of such changes. Failure to provide written notice and receive LAVTA approval for extra work prior to performing extra work may, at LAVTA'S sole discretion, result in nonpayment of the invoices reflecting such work.

9. CLAIMS OR DISPUTES

The CONTRACTOR shall be solely responsible for providing timely written notice to LAVTA of any claims for additional compensation and/or time in accordance with the provisions of this Agreement. It is LAVTA'S intent to investigate and attempt to resolve any CONTRACTOR claims before the CONTRACTOR has performed any disputed work. Therefore, CONTRACTOR's failure to provide timely notice shall constitute a waiver of CONTRACTOR's claims for additional compensation and/or time.

The CONTRACTOR shall not be entitled to the payment of any additional compensation for any cause, including any act, or failure to act, by LAVTA, or the failure or refusal to issue a modification, or the happening of any event, thing, or occurrence, unless it has given LAVTA due written notice of potential claim. The potential claim shall set forth the reasons for which the CONTRACTOR believes additional compensation may be due, the nature of the costs involved, and the amount of the potential claim.

If based on an act or failure to act by LAVTA, such notice shall be given to LAVTA prior to the time that the CONTRACTOR has started performance of the work giving rise to the potential claim for additional compensation. In all other cases, notice shall be given within 10 days after the happening of the event or occurrence giving rise to the potential claim.

If there is a dispute over any claim, the CONTRACTOR shall continue to work during the dispute resolution process in a diligent and timely manner as directed by LAVTA, and shall be governed by all applicable provisions of the Contract. The CONTRACTOR shall maintain cost records of all work which is the basis of any dispute.

If an agreement can be reached which resolves the CONTRACTOR claim, the parties will execute a Contract modification to document the resolution of the claim. If the parties cannot reach an agreement with respect to the CONTRACTOR claim, they may choose to pursue a dispute resolution process or termination of the contract.

10. DISADVANTAGED BUSINESS ENTERPRISES

LAVTA, as a recipient of Federal financial assistance from the Federal Transit Administration (FTA) and the Federal Highway Administration (FHWA), is committed to and has adopted a Disadvantaged Business Enterprise (DBE) Program for Contracts in accordance with Federal regulations 49 CFR §26, issued by the U.S. Department of Transportation (DOT).

It is the policy of LAVTA to ensure non-discrimination in the award and administration of all contracts and to create a level playing field on which Disadvantaged Business Enterprises (DBE) can compete fairly for contracts and subcontracts relating to LAVTA'S construction, procurement, and professional services activities. To this end, LAVTA has developed procedures to remove barriers to DBE participation in the bidding and award process and to assist DBEs to develop and compete successfully outside of the DBE Program. Concerning the performance of this contract, the CONTRACTOR will cooperate with LAVTA in meeting these commitments and objectives.

Pursuant to 49 CFR §26.13, and as a material term of any agreement with LAVTA, the CONTRACTOR hereby makes the following assurance and agrees to include this assurance in any agreements it makes with subcontractors in the performance of this contract:

"The CONTRACTOR or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The CONTRACTOR shall carry out applicable requirements of 49 CFR §26 in the award and administration of U.S. DOT-assisted contracts. Failure by the CONTRACTOR or subcontractor to carry out these requirements is a material breach of this Contract, which may result in the termination of this Contract or such other remedy, as LAVTA deems appropriate."

11. EQUAL EMPLOYMENT OPPORTUNITY (EEO)

In connection with the performance of this Agreement the CONTRACTOR shall not discriminate against any employee or applicant for employment because of race, color, religion, national origin, ancestry, sex, gender, sexual orientation, age (over 40), marital status, pregnancy, medical condition, or disability as specified in federal, State, and local laws. The CONTRACTOR shall take affirmative actions to ensure that applicants are employed, and that employees are treated during their employment, without regard to their race, religion, color, sex, disability, or national origin. Such actions shall include, but not be limited to, the following: employment, upgrading, demotion, transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. CONTRACTOR further agrees to insert a similar provision in all subcontracts, except subcontracts for standard commercial supplies or raw materials.

12. CONFLICT OF INTEREST

Depending on the nature of the work performed, a CONTRACTOR of LAVTA is subject to the same conflict of interest prohibitions established by the Federal Transit Administration and California law that govern LAVTA employees and officials (Cal. Govt. Code Section 1090 et seq. and Cal. Govt. Code Section 87100 et seq.). During the proposal process or the term of the Agreement, CONTRACTOR and their employees may be required to disclose financial interests.

The CONTRACTOR warrants and represents that it presently has no interest and agrees that it will not acquire any interest that would present a conflict of interest under California Government Code §1090 et seq. or §87100 et seq. during the performance of services under this Agreement. The CONTRACTOR further covenants that it will not knowingly employ any person having such an interest in the performance of this Agreement. Violation of this provision may result in this Agreement being deemed void and unenforceable.

Depending on the nature of the work performed, CONTRACTOR may be required to publicly disclose financial interests under LAVTA's Conflict of Interest Code. Upon receipt, the CONTRACTOR agrees to promptly submit a Statement of Economic Interest on the form provided by LAVTA.

No person previously in the position of Director, Officer, employee or agent of LAVTA may act as an agent or attorney for, or otherwise represent the CONTRACTOR by making any formal or informal appearance, or any oral or written communication, before LAVTA, or any Officer or employee of LAVTA, for a period of twelve months after leaving office or employment with LAVTA if the appearance or communication is made for the purpose of influencing any action involving the issuance, amendment, award or revocation of a permit, license, grant, or contract.

13. PROHIBITED INTEREST

No member, officer, or employee of LAVTA during his or her tenure or for one year after that tenure shall have any interest, direct or indirect, in this Agreement or the proceeds under this Agreement, nor shall any such person act as an agent or attorney for, or otherwise represent, a Bidder or Contractor/Consultant by making a formal or informal appearance, or any oral or written communication, before LAVTA, or any officer or employee of LAVTA, for a period of one year after leaving office or employment with LAVTA if the appearance or communication is made for the purpose of influencing any action involving the issuance, amendment, award or revocation of a Contract.

14. RESPONSIBILITY: INDEMNIFICATION

The CONTRACTOR shall indemnify, keep and save harmless LAVTA, and its directors, officers, agents and employees against any and all suits, claims, or actions arising out of any injury to persons or property, including but not limited to damages arising from the infringement of intellectual property rights of third parties, that may occur, or that may be alleged to have occurred, arising from the performance of this Agreement by the CONTRACTOR caused by a negligent act or omission of the CONTRACTOR or its employees, subcontractors or agents. The CONTRACTOR further agrees to defend any and all such actions, suits, or claims and pay all charges of attorneys and all other incurred costs and expenses. If any judgment is rendered against LAVTA or any of the other individuals enumerated above in any such action, CONTRACTOR shall, at its expense, satisfy and discharge the same. This indemnification shall survive termination or expiration of this Agreement.

15. INSURANCE

The insurance requirements specified in this section shall apply to CONTRACTOR and any subcontractors, suppliers, temporary workers, independent contractors, leased employees, or any other persons, firms or corporations that CONTRACTOR authorizes to work under this Agreement (hereinafter collectively referred to as “Agents”). CONTRACTOR is required to procure and maintain at its sole cost and expense the insurance coverages subject to all of the requirements set forth below. CONTRACTOR is also required to assess the risks associated with the work to be performed by Agents under subcontract and to include in every subcontract the requirement that the Agent maintain adequate insurance coverages with appropriate limits and endorsements to cover risks; the limit for the commercial general liability insurance in each subcontract shall not be less than **$1 million**. Such insurance shall remain in full force and effect throughout the term of this Agreement. To the extent that any Agent does not procure and maintain such insurance coverage, CONTRACTOR shall be responsible for said coverage and assume any and all costs and expenses that may be incurred in securing said coverage or in fulfilling CONTRACTOR’s indemnity obligation as to itself or any of its Agents in the absence of coverage. In the event CONTRACTOR or its Agents procure excess or umbrella coverage to maintain certain requirements outlined below, these policies shall also satisfy all specified endorsements and stipulations, including provisions that the CONTRACTOR’s insurance be primary without any right of contribution from LAVTA. Prior to beginning work under this contract, CONTRACTOR shall provide LAVTA with satisfactory evidence of compliance with the insurance requirements of this section.

A. Types of Insurance

1. Workers' Compensation and Employers' Liability Insurance

   (a) Workers' Compensation with Statutory Limits, as required by Section 3700 et seq. of the California Labor Code, or any subsequent amendments or successor acts thereto governing the liability of employers to their employees.

   (b) Employer's Liability coverage with minimum limits of **$1 million**.

   (c) Such insurance shall include the following endorsement as further detailed in the Endorsements Section below:

   - Waiver of Subrogation.

2. Commercial General Liability Insurance

   Commercial General Liability insurance for bodily injury and property damage coverage with a combined single limit for bodily injury and property damage of at least **$1 million** per occurrence or claim and a general aggregate limit of at least **$1 million**. Such insurance shall cover all of CONTRACTOR's operations both at and away from the project site.

   (a) This insurance shall include coverage for, but not be limited to:

   - Premises and operations.
   - Products and completed operations.
   - Contractual liability.
   - Personal injury.
   - Advertising injury.
   - Explosion, collapse, and underground coverage (xcu).
   - Broad form property damage.

   (b) Such insurance shall include the following endorsements as further detailed in the Endorsements Section below:

   - Additional Insured.
   - Cross Liability or Severability of Interests Clause.
   - Primary and Non-Contributory wording.
   - Waiver of Subrogation.

   Products and completed operations insurance shall be maintained for three years following termination of this Agreement.

3. Automobile Liability Insurance

   Business Automobile Liability insurance providing bodily injury and property damage with a combined single limit of at least **$1 million** per occurrence.

(a) This insurance shall include coverage for, but not be limited to:

- All Owned vehicles.
- Non-owned vehicles.
- Hired or rental vehicles.

(b) Such insurance shall include the following endorsements as further detailed in the Endorsements Section below:

- Additional Insured.
- Primary and Non-Contributory wording.
- Waiver of Subrogation.

4. Property Insurance

Property and/or transit insurance, whichever is applicable, with Special Form coverage including theft but excluding earthquake, with limits at least equal to the replacement cost of the property described below.

(a) This insurance shall include coverage for, but not be limited to:

- CONTRACTOR's own business personal property and equipment to be used in performance of this Agreement.
- Materials or property to be purchased and/or installed on behalf of LAVTA, if any.
- Debris removal.
- Builders risk for property in the course of construction.

(b) Such insurance shall include the following endorsement as further detailed in the Endorsements Section below:

- Waiver of Subrogation.

B. Endorsements

1. Additional Insured

The referenced policies and any Excess or Umbrella policies shall include as Additional Insureds LAVTA and its directors, officers, employees, volunteers and agents while acting in such capacity, and their successors or assignees, as they now, or as they may hereafter be constituted, singly, jointly or severally.

2. Waiver of Subrogation

The referenced policies and any Excess or Umbrella policies shall contain a waiver of subrogation in favor of LAVTA and its officers, directors, employees, volunteers and agents while acting in such capacity, and their successors and assignees, as they now, or as they may hereafter be constituted, singly, jointly or severally.

3. Primary Insurance

The referenced policies and any Excess or Umbrella policies shall indicate that they are primary to any other insurance and the insurance company(ies) providing such policy(ies) shall be liable thereunder for the full amount of any loss or claim, up to and including the total limit of liability, without right of contribution from any of the insurance affected or which may be affected by LAVTA.

4. Severability of Interests or Cross Liability

The referenced policies and any Excess or Umbrella policies shall contain either a Cross Liability endorsement or Severability of Interests Clause and stipulate that inclusion of LAVTA as an Additional Insured shall not in any way affect LAVTA's rights either as respects any claim, demand, suit or judgment made, brought or recovered against the CONTRACTOR. Said policy shall protect CONTRACTOR and LAVTA in the same manner as though a separate policy had been issued to each, but nothing in said policy shall operate to increase the insurance company's liability as set forth in its policy beyond the amount or amounts shown or to which the insurance company would have been liable if only one interest had been named as an insured.

C. Evidence of Insurance

All Coverages - Prior to commencing work or entering onto the Property, CONTRACTOR shall provide the Director of Maintenance of LAVTA with a certificate evidencing coverage, and upon request, a certified duplicate original of the policy. The certificate shall also show that the CONTRACTORS' policy(ies) will not be cancelled or coverage altered without 30 days prior written notice to LAVTA's Director of Maintenance.

D. General Provisions

1. Notice of Cancellation

The policies shall provide that the CONTRACTORS' policies will not be cancelled or have limits reduced or coverage altered without 30 days prior written notice to LAVTA's Director of Maintenance.

2. Acceptable Insurers

All policies will be issued by insurers acceptable to LAVTA (generally with a Best's Rating of A- 10 or better).

3. Self-insurance

Upon evidence of financial capacity satisfactory to LAVTA and CONTRACTOR's agreement to waive subrogation against LAVTA respecting any and all claims that may arise, CONTRACTOR's obligation hereunder may be satisfied in whole or in part by adequately funded self-insurance.

4. Failure to Maintain Insurance

   All insurance specified above shall remain in force until all work to be performed is satisfactorily completed, all of CONTRACTOR's personnel and equipment have been removed from LAVTA property, and the work has been formally accepted. The failure to procure or maintain required insurance and/or an adequately funded self-insurance program will constitute a material breach of this Agreement.

E. Claims Made Coverage

If any insurance specified above shall be provided on a claim-made basis, then in addition to coverage requirements above, such policy shall provide that:

1. Policy retroactive date coincides with or precedes the CONTRACTOR's start of work (including subsequent policies purchased as renewals or replacements).

2. CONTRACTOR shall make every effort to maintain similar insurance for at least three years following project completion, including the requirement of adding all named insureds.

3. If insurance is terminated for any reason, CONTRACTOR agrees to purchase an extended reporting provision of at least three years to report claims arising from work performed in connection with this Agreement.

4. Policy allows for reporting of circumstances or incidents that might give rise to future claims.

F. Deductibles and Retentions

CONTRACTOR shall be responsible for payment of any deductible or retention on CONTRACTOR's policies without right of contribution from LAVTA.

16. COMPENSATION

The CONTRACTOR agrees to perform all the services included in Section 2, in accordance with the cost information provided in its Cost Proposal included in Exhibit B, which shall include all labor, materials, taxes, profit, overhead, insurance, delivery costs, subcontractor costs, and other costs and expenses incurred by the CONTRACTOR.

The Contractor's Base Offer per Bus as submitted on Appendix B, Cost Proposal, shall remain firm during the first 180 days of the Contract. After the initial 180 days of the Contract, the Contractor will be allowed, upon written request, to adjust prospectively the Base Offer per Bus based on the Producer Price Index (PPI). If requested, the Base Offer per Bus shall be that quoted plus/minus any adjustment which will be calculated based on the U.S. Department of Labor/Bureau of Labor Statistics Producer Price Index (PPI) Category 1413, "Trucks and Bus Bodies" formula as described in the Section 13.T of Appendix A. However, in no event will the price(s) for any order issued exceed, by more than five percent, the price(s) that would have been in effect 12 months prior to the date of issuance of the order.

17. MANNER OF PAYMENT

LAVTA shall pay the full price of each bus upon issuance of final acceptance of the bus and receipt of an approved invoice, as provided for in the RFP. Invoice entries shall conform to the rates specified in the Cost Proposal set forth in Exhibit B, as agreed upon. LAVTA will endeavor to pay approved invoices within 30 days of their receipt. Invoices shall be mailed or delivered to LAVTA at 1362 Rutan Ct, Suite 100, Livermore, CA 94551.

18. CONTRACTOR'S STATUS

Neither the CONTRACTOR nor any party contracting with the CONTRACTOR shall be deemed to be an agent or employee of LAVTA. The CONTRACTOR is and shall be an independent CONTRACTOR and the legal relationship of any person performing services for the CONTRACTOR shall be one solely between that person and the CONTRACTOR.

19. ASSIGNMENT

The CONTRACTOR shall not assign any of its rights nor transfer any of its obligations under this Agreement without the prior written consent of LAVTA.

20. LAVTA WARRANTIES

LAVTA makes no warranties, representations, or agreements, either express or implied, beyond such as are explicitly stated in this Agreement.

21. LAVTA REPRESENTATIVE

Except when approval or other action is required to be given or taken by the Board of Directors of LAVTA, LAVTA'S Director of Maintenance or such person or persons as they shall designate in writing from time to time, shall represent and act for LAVTA.

22. TERMINATION

A. Termination for Convenience

The performance of Work under this Agreement may be terminated by LAVTA in accordance with this clause in whole, or from time to time in part, whenever LAVTA determines that such termination is in the best interest of LAVTA. Any such termination shall be effected by delivery to the CONTRACTOR of a notice of termination specifying the extent to which performance of Work under the Agreement is terminated, and the date upon which such termination becomes effective.

After receipt of a notice of termination, and except as otherwise directed by LAVTA, the CONTRACTOR shall do the following:

- Stop Work under the Agreement on the date and to the extent specified in the notice of termination.
- Place no further orders or subcontracts for materials, services or facilities, except as may be necessary for completion of such portion of the Work under the Agreement as is not terminated.

- Terminate all orders and subcontracts to the extent that they relate to the performance of work terminated by the notice of termination; assign to LAVTA in the manner, at the times, and to the extent directed by LAVTA, all of the right, title and interest of the CONTRACTOR under the orders and subcontracts so terminated, in which case LAVTA shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts.

- Settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, with the approval or ratification of LAVTA, to the extent he or she may require, which approval or ratification shall be final for all the purposes of this clause.

- Transfer title to LAVTA and deliver in the manner, at the times and to the extent, if any, directed by LAVTA the fabricated or unfabricated parts, Work in process, completed Work, supplies and other material produced as part of, or acquired in connection with the performance of, the Work terminated, and the completed or partially completed plans, drawings, information and other property which, if the Agreement had been completed, would have been required to be furnished to LAVTA.

- Use its best efforts to sell, in the manner, at the times, to the extent, and at the price(s) directed or authorized by LAVTA, any property of the types referred to above, provided, however, that the CONTRACTOR shall not be required to extend credit to any purchaser, and may acquire any such property under the conditions prescribed by and at prices approved by LAVTA, and provided further that the proceeds of any such transfer or disposition shall be applied in reduction of any payments to be made by LAVTA to the CONTRACTOR under this Agreement or shall otherwise be credited to the price or cost of the Work covered by this Agreement or paid in such other manner as LAVTA may direct.

- Complete performance of such part of the Work as shall not have been terminated by the notice of termination.

- Take such action as may be necessary, or as LAVTA may direct, for the protection or preservation of the property related to this Agreement that is in the possession of the Contractor and in which LAVTA has or may acquire an interest.

The CONTRACTOR shall be paid its costs, including reasonable Agreement close-out costs, and profit on Work performed up to the time of termination. The CONTRACTOR shall promptly submit its termination claim to LAVTA to be paid the CONTRACTOR. Settlement of claims by the CONTRACTOR under this termination for convenience clause shall be in accordance with the provisions set forth in Part 49 of the Federal Acquisition Regulations (48 CFR 49) except that wherever the word “Government” appears, it shall be deleted and the word “LAVTA” shall be substituted in lieu thereof.

B. Termination for Default

LAVTA may, by written notice of default to the CONTRACTOR, terminate the whole or any part of this Agreement if the CONTRACTOR fails to make delivery of the supplies or to perform the services within the time specified herein or any extension thereof; or if the CONTRACTOR fails to perform any of the other material provisions of the Agreement, or so fails to make progress as to endanger performance of this Agreement in accordance with its terms, and in either of these two circumstances does not cure such failure within a period of ten (10) business days, or such longer period as LAVTA may authorize in writing, after receipt of notice from LAVTA specifying such failure.

If the Agreement is terminated in whole or in part for default, LAVTA may procure, upon such terms and in such manner as LAVTA may deem appropriate, supplies or services similar to those so terminated. The CONTRACTOR shall be liable to LAVTA for any excess costs for such similar supplies or services and shall continue the performance of this Agreement to the extent not terminated under the provisions of this clause.

Except with respect to defaults of Subcontractors, the CONTRACTOR shall not be liable for any excess costs if the failure to perform the Agreement arises out of a cause beyond the control and without the fault or negligence of the CONTRACTOR. If the failure to perform is caused by the default of a Subcontractor, and if such default arises out of causes beyond the control of both the CONTRACTOR and Subcontractor, and without the fault or negligence of either of them, the CONTRACTOR shall not be liable for any excess costs for failure to perform, unless the supplies or services to be furnished by the Subcontractor were obtainable from other sources and in sufficient time to permit the CONTRACTOR to meet the required delivery schedule.

Payment for completed supplies delivered to and accepted by LAVTA shall be at the Agreement price. LAVTA may withhold from amounts otherwise due the CONTRACTOR for such completed supplies such sum as LAVTA determines to be necessary to protect LAVTA against loss because of outstanding liens or claims of former lien holders.

If, after notice of termination of this Agreement under the provisions of this clause, it is determined for any reason that the CONTRACTOR was not in default under the provisions of this clause, or that the default was excusable under the provisions of this clause, then the rights and obligations of the parties shall be the same as if the notice of termination had been issued pursuant to termination for convenience of LAVTA.

23. MAINTENANCE, AUDIT AND INSPECTION OF RECORDS

The CONTRACTOR shall permit the authorized representatives of LAVTA and the FTA to inspect, audit, make copies and transcriptions of books and all data and records of the CONTRACTOR relating to its performance under the Agreement. CONTRACTOR shall maintain all such records for a period of three years after LAVTA makes final payment under this Agreement.

24. NOTICES

All communications relating to the day to day activities of the project shall be exchanged between LAVTA'S Director of Maintenance, or designee, and the CONTRACTOR's.

All other notices and communications deemed by either party to be necessary or desirable to be given to the other party shall be in writing and may be given by personal delivery to a representative of the parties or by mailing the same postage prepaid, addressed as follows:

If to LAVTA:

General Manager
Livermore Amador Valley Transit Authority
1362 Rutan Ct, Suite 100, Livermore, CA 94551

If to the CONTRACTOR:

Attn:_____

_____

_____

The address to which mailings may be made may be changed from time to time by notice mailed as described above. Any notice given by mail shall be deemed given on the day after that on which it is deposited in the United States Mail as provided above.

25. ATTORNEYS' FEES

If any legal proceeding should be instituted by either of the parties to enforce the terms of this Agreement or to determine the rights of the parties under this Agreement, the prevailing party in said proceeding shall recover reasonable attorneys' fees, in addition to all court costs.

26. APPLICABLE LAW

This Agreement, its interpretation and all work performed under it shall be governed by the laws of the State of California.

The CONTRACTOR must comply with all federal, State, and local laws, rules, and regulations applicable to the Agreement and to the work to be done hereunder, including all rules and regulations of LAVTA.

27. RIGHTS AND REMEDIES OF LAVTA

The rights and remedies of LAVTA provided herein shall not be exclusive and are in addition to any other rights and remedies provided by law or under the Agreement.

28. BINDING ON SUCCESSORS

All of the terms, provisions, and conditions of this Agreement shall be binding upon and insure to the benefit of the parties and their respective successors, assigns and legal representatives.

29. SURVIVAL OF TERMS

The following sections shall survive the nominal expiration or discharge of other Agreement obligations, and LAVTA may obtain any remedy under law, Agreement or equity to enforce the obligations of the CONTRACTOR that survive the manufacturing, warranty and final payment periods:

- "Intellectual Property Warranty" – Exhibit A, Section 13.U.
- "Data Rights" – Exhibit A, Section 13.V.

- "Responsibility/Indemnification" – Section 14
- "Applicable Law" – Section 26
- "Disputes" – Section 9
- "Confidentiality" – Section 5
- "Parts Availability Guarantee" – Exhibit A, Section 13.Q.
- "Maintenance, Audit and Inspection of Records" – Section 23
- "Training" - Exhibit A, Section 13.R.

30. COMPLIANCE WITH LAWS AND REGULATIONS

The CONTRACTOR shall at all times comply with all applicable laws, regulations, policies, procedures and directives (together, the "Law"), including without limitation, FTA regulations, policies, procedures and directives, including those listed directly or by reference in the agreement between LAVTA and FTA that funds any part of this Agreement, as they may be amended or promulgated from time to time during the term of this Agreement. CONTRACTOR's failure to so comply shall constitute a material breach of this Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement by their duly authorized officers as of the day and year first above written.

LAVTA:

LIVERMORE AMADOR VALLEY TRANSIT AUTHORITY

By:_____

Title: Executive Director

By:_____

ATTEST:_____

Title:_____

By:_____
Secretary for the LAVTA

APPROVED AS TO FORM:_____

By:_____
Attorney for the LAVTA

CONTRACTOR: (See footnote below*)

By:_____

Title:_____

*Note: If the CONTRACTOR is a Corporation, this Agreement must be executed by two Corporate Officers, consisting of:

(1) the President, Vice President or Chair of the Board, and

(2) the Secretary, Assistant Secretary, Chief Financial Officer, Assistant Chief Financial Officer, Treasurer, or Assistant Treasurer.

In the alternative, this Agreement may be executed by a single Officer or a person other than an Officer provided that evidence satisfactory to LAVTA is provided demonstrating that such individual is authorized to bind the Corporation (e.g. a copy of a certified resolution from the Corporation's Board or a copy of the Corporation's bylaws.)

COST PROPOSAL

The Proposer shall use this form for submission of its cost proposal. Proposers may submit an offer for Category 1, Category 2 or both categories of buses. For each bus category Proposer chooses to submit an offer, Proposer must submit an offer on each of the bus configurations as designated in the Technical Specifications.

1. QUANTITY

This Proposal offers the buses as specified and is effective for a five-year period. The Proposer agrees to deliver a minimum of 12 buses and a maximum of up to 20 buses within the time periods set forth in the solicitation documents. In the event that all of the participating Consortium Members enters into a contract with the successful Proposer, the Proposer agrees to deliver a minimum of 104 and a maximum of 195 additional buses over the contract term pursuant to the terms of the solicitation documents. All buses to be furnished under the contract shall be ordered by issuance(s) of a Purchase Order(s) by LAVTA or another procuring agency in accordance with the specifications.

2. PRICES

The Livermore Amador Valley Transit Authority (LAVTA) and other procuring agencies, reserve the right to order buses over the five-year period beginning upon the date LAVTA's Maintenance Department issues a written Notice to Proceed (NTP). The prices of such buses and equipment shall be at the prices quoted below. These prices shall remain firm, fixed for any orders issued by LAVTA or other procuring agencies within a period of 180 days from the effective date of each contract. The price(s) of any buses or equipment ordered by LAVTA or other procuring agencies after the initial 180 day firm fixed price period shall be that quoted (Base Offer per Bus) plus/minus any adjustment which will be calculated based on the U.S. Department of Labor/Bureau of Labor Statistics Producer Price Index (PPI) Category 1413, "Trucks and Bus Bodies" formula as described in the Section **13.T** of the RFP. **However, in no event will the price(s) for any order issued exceed, by more than five percent, the price(s) that would have been in effect 12 months prior to the date of issuance of the purchase order.**

CATEGORY 1

HEAVY DUTY BUS

		30 Foot	35 Foot	40 Foot
A.	Base Offer per Bus:	$_____	$_____	$_____
B.	California Sales Tax: @9.50% (.00950 x Line A)	$_____	$_____	$_____
C.	Non-Taxable ADA Equipment:	$_____	$_____	$_____
D.	*Delivery Cost per Bus: (To LAVTA location only)	$_____	$_____	$_____
E.	**Total Base Offer per Bus: (Add lines A, B, and C)**	$_____	$_____	$_____
F.	Date of FTA Bus Test:_____ (If required, see Appendix H)			

CATEGORY 1

HEAVY DUTY BUS

		30 Foot	35 Foot	40 Foot
G.	Vehicle Mfg. and Model:			

*Delivery charges to other procuring agencies shall be determined at time of contract with each individual agency.

Additional Cost Per Bus:

Hybrid Drive	$_____	$_____	$_____
Compressed Natural Gas	$_____	$_____	$_____

CATEGORY 2

HEAVY DUTY BUS – ALL-ELECTRIC ZERO EMISSION PROPULSION SYSTEM

		35 Foot	40 Foot
A.	Base Offer per Bus:	$_____	$_____
B.	California Sales Tax: @9.50% (.00950 x Line A)	$_____	$_____
C.	Non-Taxable ADA Equipment:	$_____	$_____
D.	*Delivery Cost per Bus: (To LAVTA location only)	$_____	$_____
E.	**Total Base Offer per Bus: (Add lines A, B, and C)**	$_____	$_____
F.	Date of FTA Bus Test: (If required, see Appendix H)		
G.	Vehicle Mfg. and Model:		

*Delivery charges to other procuring agencies shall be determined at time of contract with each individual agency.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that LIVERMORE AMADOR VALLEY TRANSIT AUTHORITY ("LAVTA") has entered into a contract with_____, ("Principal") for the PROVISION OF_____; and

WHEREAS, said Principal is required under the terms of the Contract to furnish a bond of faithful performance of the Contract;

NOW, THEREFORE, we, the Principal, and _____, as Surety duly organized under the laws of the State of _____, having its principal place of business at _____ in the State of _____ are held and firmly bound into LAVTA, in the penal sum of **$**_____ lawful money of the United States being a sum equal to 20% of the total amount payable for the initial order of buses by the term of said Contract, for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if the above bounded Principal shall in all things stand to and abide by and well and truly keep and perform the covenants, conditions and agreements in the said Contract and any alteration thereof made as provided in the Contract, on his part to be kept and performed at the time and in the manner specified, and in all respects according to their true intent and meaning, as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force; and

The said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the specifications.

In the event that LAVTA, or its successors or assigns, shall be the prevailing party in an action brought upon this bond, then, in addition to the penal sum herein above specified, we agree to pay to LAVTA, or its successors or assigns, a reasonable sum on account of attorney's fees in such action, which sum shall be fixed by the court.

IN WITNESS WHEREOF, the above bounded parties have executed this instrument under their seals this ____ day of_____, 20___, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

TO BE CONSIDERED COMPLETE, BOTH THE PROPOSER AND AN ADMITTED SURETY INSURER AUTHORIZED BY THE CALIFORNIA INSURANCE COMMISSIONER TO TRANSACT SURETY BUSINESS IN THE STATE OF CALIFORNIA, MUST SIGN THIS PROPOSER'S BOND. IN ADDITION, THE SURETY'S SIGNATURE MUST BE NOTARIZED AND A COPY OF THE SURETY'S POWER OF ATTORNEY MUST BE ATTACHED.

_____

_____
Principal's Name (Print)

Principal's Signature

_____

_____
Surety's Name Print

Notarized By:

_____
Surety's Signature

Surety's Address:

_____

_____
City/State/Zip

(Notary Stamp)

NOTE: SAMPLE FORMAT ONLY. ORIGINAL LETTER MUST BE ON THE FINANCIAL INSTITUTION'S LETTERHEAD FROM WHICH IT IS DRAWN.

Date:

Livermore Amador Valley Transit Authority

1362 Rutan Ct, Suite 100
Livermore, CA 94551

Re: Irrevocable Standby Letter of Credit No.

Director, Contracts & Procurement:

We hereby issue in your favor of the Livermore Amador Valley Transit Authority (LAVTA) this Irrevocable Standby Letter of Credit for the account of _____, a (insert nature of organization, whether sole proprietorship, partnership, corporation), in the sum equal to 20% of the total amount of the initial order of buses by the term of the Contract, $_____, which is available upon your demand when accompanied by a signed statement from an officer of LAVTA, stating that:

The amount drafted is due to LAVTA because of the default or failure to perform by _____ in accordance with the terms of the Contract dated_____ by and between LAVTA and_____.

We hereby agree with the drawers and/or bona fide holders that drafts drawn and negotiated in conformity with the terms of this Letter of Credit will be duly honored upon presentation when presented on or before _____, 20___. Partial drawings are permitted.

Except so far as otherwise expressly stated, this credit is subject to the Uniform Customs and Practice for Documentary Credits (1993 Revision) of the International Chamber of Commerce Publication No. 500.

Sincerely,

_____
(Name of financial institution)

By:_____
(Signature)

Title:_____

BUY AMERICA CERTIFICATE OF COMPLIANCE
(Buses, Other Rolling Stock, and Associated Equipment)

IMPORTANT: SELECT AND COMPLETE ONLY ONE OF THE FOLLOWING CERTIFICATES:

Certificate of Compliance with 49 USC 5323(j)(2)(C)

The bidder hereby certifies that it will comply with the requirements of 49 USC 5323(j)(2)(C) and the applicable regulations in 49 CFR 661.

_____ Firm Name

_____ Signature of Authorized Official

_____ Name and Title of Authorized Official

_____ Date

OR:

Certificate for Non-Compliance with 49 USC 5323(j)(2)(C)

The bidder hereby certifies that it cannot comply with the requirements of 49 USC 5323(j)(2)(C), but it may qualify for an exception pursuant to 49 USC 5323(j)(2)(B) or (j)(2)(D) and the regulations in 49 CFR 661.7.

_____ Firm Name

_____ Signature of Authorized Official

_____ Name and Title of Authorized Official

_____ Date

SUBCONTRACTOR/DBE FORMS

1. Is your firm a registered Disadvantaged Business Enterprise (DBE)?

Yes _____ No _____

If the answer is "**Yes**", please fill in your DBE Certification Number:_____

2. Does your firm plan to subcontract any of the work or services required under this contract to any subcontractors or subconsultants, or procure items from suppliers?

Yes _____ No _____

If the answer is "**Yes**", please continue with completing this questionnaire.

If the answer is "**No**", you may stop here and you do not need to continue to Question 3. Please sign and submit this **page**.

3. Describe briefly how your firm solicited small businesses, including DBEs, to participate on this contract.

4. Identify the portion(s) of the work or service that were selected for subcontracting and explain why these portions of work were selected:

5. Explain the reasons for rejecting bids and accepting the bids from the selected subcontractor, subconsultant or supplier:

6. Describe any efforts your firm made to assist small businesses, including DBEs, in obtaining (1) adequate information about this solicitation, and (2) necessary equipment, supplies, bonding, or insurance, among other requirements, to perform this contract:

7. Describe any other steps your firm used to encourage or select small businesses, including DBEs:

The undersigned certifies that the above narrative is true and accurate and may be relied upon by the Agency in evaluating the Proposer's compliance with the proposal requirements.

Signature of Owner or Authorized Representative	Title	Date
_____	_____	_____

Designation of Subconsultants and Sub-bidders

Proposer's Name: _____ Is your firm a Disadvantaged Business Enterprise: Yes___ No___

Address: _____ Firm's Annual Gross Receipts: _____ Age of Firm:

Phone: (___) _____ Fax: (___) _____

Instructions: Proposer MUST provide information below for ALL subcontractors/subconsultants/suppliers ("sub-bidders") that provided Proposer a bid, quote, or proposal for work, services or supplies associated with this contract. This information shall be provided for all sub-bidders regardless of tier for both DBEs and non-DBEs alike. Include all bid acceptance(s) AND rejection(s). Please state "None" if there are no sub-bids.

	Subcontractor/Subconsultant/Supplier Firm Name/Address/Phone/Fax/Contact Person	DBE? (Yes/No)	Description of Work, Services, or Supplies	Dollar Amount of Work, Services, or Supplies	Bid/Quote Accepted? (Yes/No)
1					
2					
3					
4					
5					

Note: Do not indicate more than one 'Yes' in the column 'Bid/Quote Accepted' for alternative subcontractors for the same work. Use additional sheets if necessary.

The undersigned will enter into a formal agreement with the subcontractor(s), subconsultant(s) and/or supplier(s) whose bid/quote was accepted conditioned upon execution of a contract with the AGENCY. The undersigned certifies that any DBE listed whose quote was accepted will be performing a commercially useful function on the contract. I certify under penalty of perjury that the information included on this form is accurate and true.

Signature of Owner or Authorized Representative	Title	Date

FEDERAL MOTOR VEHICLE SAFETY STANDARDS AND POLLUTION CERTIFICATE

The undersigned bidder hereby certifies the following:

3. The horsepower of the vehicle is adequate for the speed, range and terrain in which it will be required to operate and also to meet the demands of the auxiliary power equipment.

4. All gases and vapors emanating from the crankcase of a spark-ignition engine are controlled to minimize their escape into the atmosphere.

5. Visible emission from the exhaust will not exceed #1 on the Ringlemann Scale when measured six inches from the tailpipe with the vehicle in steady operation.

6. When the vehicle has been idled for three minutes and then accelerated to 80% of rated speed under load, the opacity of the exhaust will not exceed #2 on the Ringlemann Scale for more than five seconds and not more than #1 on the Ringlemann Scale thereafter.

7. The vehicle engine furnished meets the Federal and State regulations for year of manufacture. Certificate to include the values of the H.C. + NO and Co and PM grams per BHP-HR.

8. The vehicles shall comply with the Federal Motor Vehicle Safety Standards as established by the United States Department of Transportation in effect on the date of manufacture.

9. That the vehicle shall comply with all requirements of the laws of the State of California, including all regulations set forth by the California Highway Patrol in effect on the date of manufacture.

Company Name: _____

Signature: _____

Title: _____

Date: _____

PROPOSER SERVICE AND PARTS SUPPORT DATA

Location of nearest Authorized Dealership to LAVTA with full Warranty Repair capabilities:

Name_____

Address_____

Telephone_____

Proposer to describe technical services readily available from said representative.

Location of nearest Parts Distribution Center to LAVTA:

Name_____

Address_____

Telephone _____

Proposer shall describe the extent of parts available at said center.

Policy for Delivery of Parts and Components to be Purchased for Service and Maintenance:

Regular Method of Shipment:

Cost of delivery to be included in price of parts.

FTA BUS TESTING CERTIFICATION

(SELECT ONLY ONE)

I. NEW BUS MODEL TO BE TESTED

In accordance with 49 CFR Part 665, "Bus Testing Program," the Proposer certifies that the bus model being proposed for this Contract is a new bus model or a bus model with a major change in configuration or components (as described in Subpart A of the interim rule). Contractor, at its own expense, will arrange for the required testing at the FTA Bus Testing Facility at Altoona, Pennsylvania prior to LAVTA's acceptance of the first vehicle in a manner that the Time for Performance outlined in the Contract Specifications will not be impacted. Contractor will provide a copy of the Test Report prepared for this bus model prior to acceptance.

OR

II. BUS MODEL ALREADY TESTED

In accordance with 49 CFR Part 665, "Bus Testing Program," the Proposer certifies that the bus model being proposed for this Contract is not a new bus model and does not incorporate a major change in configuration or components (as described in Subpart A of the interim rule). The Contractor will provide, upon request of LAVTA, a copy of the Test Report prepared for the bus model accepted under this Contract.

Date: _____

Firm: _____

Signature: _____

DISCLOSURE OF LOBBYING ACTIVITIES
Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352

1. Type of Federal Action:	2. Status of Federal Action:	3. Report Type:
a. contract b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	a. bid/offer/application b. initial award c. post-award	a. initial filing b. material change For Material Change Only: Year _____ Quarter _____ Date of last report:_____

4. Name and Address of Reporting Entity:	5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime:
❑ Prime ❑ Subawardee Tier, if known:_____ Congressional District, if known:_____	Congressional District, if known:_____
6. Federal Department/Agency:	7. Federal Program Name/Description: CFDA Number, if applicable:_____
8. Federal Action Number, if known:_____	9. Award Amount, if known: $_____
10.a. Name and Address of Lobbying Entity (if individual, last name, first name, MI):	10.b. Individuals Performing Services (including address if different from No. 10a) (last name, first name, MI):

(Attach Continuation Sheet(s), if necessary)

11. Amount of Payment (check all that apply):	13. Type of Payment (check all that apply):
$_____ ❑ actual ❑ planned	❑ a. retainer ❑ b. one-time fee ❑ c. commission ❑ d. contingent fee ❑ e. deferred ❑ f. other; specify
12. Form of Payment (check all that apply): ❑ a. cash ❑ b. in-kind; specify: nature _____ value_____	

14. Brief description of services performed or to be performed and date(s) of service, including Officer(s), employee(s), or Member(s) contacted, for payment indicated in Item 11:

(Attach Continuation Sheet(s), if necessary)	
15. Continuation Sheet(s) SF-LLL-A attached: ❑ Yes ❑ No	
16. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reference was placed by the user above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each failure.	Signature:_____ Print Name:_____ Title:_____ Telephone No.:_____ Date:_____

DISCLOSURE OF LOBBYING ACTIVITIES
CONTINUATION SHEET SF-LLL-A

Reporting Entity:_____ Page ___ of ___

Authorized for Local Reproduction
Standard Form - LLL-A
BILLING CODES 3410-01-C; 6450-01-C; 6690-01-C; 8025-01C; 7510-01-C; 3510-FE-C; 8120-01-C; 4710-24-C; 6116-01-C; 6051-01-C; 8230-01-C; 3210-01-C; 4210-32-C; 4410-18-C; 4510-23-C;4810-25-C; 3001-01-C; 4000-01-C; 3820-01-C; 6560-50-C; 6820-61-C; 4310-RF-C; 6718-01-C; 4150-04-C; 7555-01- C; 7537-01-C; 7536-01-C; 6050-28-C; 4910-62-C

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Use the SF-LLL-A Continuation Sheet for additional information if the space on the form is inadequate. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this is a follow-up report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, state and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in item 4 checks “Subawardee”, then enter the full name, address, city, state and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitation for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency. Include prefixes, e.g., “RFP-DE-90-001.”
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, state and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influence the covered Federal action.
    (b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a).
    (c) Enter Last Name, First Name, and Middle Initial (MI).
11. Enter the amount of compensation paid or reasonably expected to be paid by the reporting entity (item 4) to the lobbying entity (item 10). Indicate whether the payment has been made (actual) or will be made (planned). Check all boxes that apply. If this is a material change report, enter the cumulative amount of payment made or planned to be made.

12. Check the appropriate box(es). Check all boxes that apply. If payment is made through an in-kind contribution, specify the nature and value of the in-kind payment.
13. Check the appropriate box(es). Check all boxes that apply. If other, specify nature.
14. Provide a specific and detailed description of the services that the lobbyist has performed, or will be expected to perform, and the date(s) of any services rendered. Include all preparatory and related activity, not just time spent in actual contact with Federal officials. Identify the Federal official(s) or employee(s) contacted or the officer(s), employee(s), or Member(s) of Congress that were contacted.
15. Check whether or not a SF-LLL-A Continuation Sheet(s) is attached.
16. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, D.C. 20503.

FEDERAL MOTOR VEHICLE SAFETY STANDARDS (FMVSS)

The Proposer and (if selected) Contractor shall submit 1) manufacturer's FMVSS self-certification sticker information that the vehicle complies with relevant FMVSS or 2) manufacturer's certified statement that the contracted coaches will not be subject to FMVSS regulations.

District Name: _____

Date: _____

Signature: _____

Title: _____

Company Name: _____

CERTIFICATE OF COMPLIANCE WITH COACH TESTING REQUIREMENT

The undersigned certifies that the vehicle offered in this procurement complies and will, when delivered, comply with 49 U.S.C. § 5323(c) and FTA's implementing regulation at 49 CFR Part 665 according to the indicated one of the following three alternatives.

(mark one and only one of the three blank spaces with an "x")

1.___ The coaches offered herewith have been tested in accordance with 49 CFR Part 665 on _____(date). The vehicles being sold should have the identical configuration and major components as the vehicle in the test report, which must be submitted with this Proposal. If the configuration or components are not identical, the manufacturer shall provide with its Proposal a description of the change and the manufacturer's basis for concluding that it is not a major change requiring additional testing.

2.___ The manufacturer represents that the vehicle is "grandfathered" (had been used in mass transit service in the United States before October 1, 1988, and is currently being produced without a major change in configuration or components), and submits with this Proposal the name and address of the recipient of such a vehicle and the details of that vehicle's configuration and major components.

3.___ The vehicle is a new model and will be tested and the results will be submitted to LAVTA prior to acceptance of the first coach.

The undersigned understands that misrepresenting the testing status of a vehicle acquired with Federal financial assistance may subject the undersigned to civil penalties as outlined in the Department of Transportation's regulation on Program Fraud Civil Remedies, 49 CFR Part 31. In addition, the undersigned understands that FTA may suspend or debar a manufacturer under the procedures in 49 CFR Part 29.

Date:_____

Signature:_____

Title:_____

Company Name:_____

ACKNOWLEDGEMENT OF ADDENDA

The following form shall be completed and included in the Proposal. Failure to acknowledge receipt of all addenda may cause the Proposal to be considered nonresponsive to the solicitation. Acknowledged receipt of each addendum must be clearly established and included with the Proposal.

The undersigned hereby acknowledges receipt of the following noted addenda from the Livermore Amador Valley Transit Authority for Proposal 2015-08.

Addendum #	Dated	Received By

Name of Proposer

Address

City, State, Zip Code

Authorized Signature

Title

Date

BUY AMERICA AUDIT WORKSHEET -- ROLLING STOCK

A. **Law Regarding Compliance with Buy America Regulations** (49 CFR §661.11(a))

1. The cost of **components** produced in U.S. is more than 60% the cost of all components:

   a. **component** is of domestic origin if more than 60% of the **subcomponents** of that **component**, by cost, are of domestic origin and component is manufactured in U.S. (49 CFR §661.11(i)).

   b. a **subcomponent** is of domestic origin if manufactured in U.S. (49 CFR §661.11(j)).

2. Final assembly occurs in U.S. (defined as creation of the end product from individual elements brought together for that purpose through application of manufacturing processes (49 CFR §661.11(t)).

B. **Procedure for Showing Buy America Compliance**

1. **Step 1**: Show information for **components**, listing as many **components** needed to reach a cost percentage greater than 60% of the cost of all of the components. Example (assuming the bid price is $200, the fully allocated cost of all components if $100 and the cost of final assembly is $100):

Manufacture Component	Mfgr.	Location	Cost	or	Percentage of Cost of All Components of the Rolling Stock
Seating	XYZ	Must be U.S.	$30		30%
Car Shells	ABC	Must be U.S.	$31		31%
					Total must be greater than 60%

The cost information can be shown as a dollar amount or as the percentage of the cost of a specific component in relation to the cost of all components for the rolling stock.

2. **Step 2:** Show information for **subcomponents** for each component, listing as many **subcomponents** needed to reach a cost percentage greater than 60% of the cost of all subcomponents of that **component**. Example (assuming that the fully allocated cost of all subcomponents for the component, which excludes the manufacturing cost, is $25):

Seating Component Manufacture Subcomponents	Mfgr.	Location	Cost	or	Percentage of Cost of All Subcomponents
Cushions	LMT	Must be U.S.	$12		48%
Metal Frame	ARE	Must be U.S.	$10		40%
					Total greater than 60%

The cost information can be shown as a dollar amount or as the percentage of the cost of the specific subcomponent in relation to the cost of all of the subcomponents of the component.

3. **Step 3:** Final assembly occurs in U.S.

   a. state location of final assembly;

   b. briefly describe activities to occur during final assembly; and state proposed total cost of final assembly.

IMPORTANT: **USE A SEPARATE FORM FOR EACH SEPARATE SOLICITATION, PROVISION, OR SPECIFICATION ITEM REQUEST! COPY THIS FORM AS NEEDED.**

Submitted By:_____

Company Name:_____ Date:_____

REQUEST FOR APPROVED DEVIATIONS

IMPORTANT: **USE A SEPARATE FORM FOR EACH SEPARATE SOLICITATION, PROVISION, OR SPECIFICATION ITEM REQUEST. COPY THIS FORM AS NEEDED.**

LAVTA requires that all prospective bidders completely fill out and attach this form **with every separate specification item request** for an Approved Deviation pertaining to this Contract. Failure to completely fill out this form and submit with the request may result in denial of the request. Any further information that may be useful in reviewing such a request should also be attached to this form.

1. Approved deviation is being requested for _____, to be used in place of _____ (list technical specification or other reference number, [e.g. page TS-11, title, subsection, item]).

2. Description of approved deviation request/substitution:

3. Product purpose:

4. Does this proposed approved deviation request/substitution meet all applicable federal, state and local laws and regulations? (If NO, please explain):

5. List three (3) commercial firms within the United States, which have used the proposed approved deviation request/substitution (list California properties first):

   A. Company Name_____
   Street Address_____
   City/State/Zip Code_____
   Area Code/Telephone No. (___)_____
   Name of Contact Person_____

   B. Company Name_____
   Street Address_____
   City/State/Zip Code_____
   Area Code/Telephone No. (___)_____
   Name of Contact Person_____

   C. Company Name_____
   Street Address_____
   City/State/Zip Code_____
   Area Code/Telephone No. (___)_____
   Name of Contact Person_____

6. List the benefits and any other reasons why LAVTA should approve this request for approved deviation/substitution:_____.

7. **Attach pertinent test data, technical data, and background information on the approved deviation/substitution request**.

TRANSIT VEHICLE MANUFACTURER'S (TVM) CERTIFICATION OF COMPLIANCE WITH 49 CFR §26.49(a)

This procurement is subject to the provisions of 49 CFR §26.49(a). Accordingly, as a condition of permission to bid, the following certification must be completed and submitted with the bid. A bid which does not include such certification will not be considered.

TRANSIT VEHICLE MANUFACTURER'S CERTIFICATION

(Name of Firm) _____, a TVM, hereby certifies that it has complied with the requirements of 49 CFR §26.49(a) by submitting a current annual DBE goal to FTA. The goal applies to Federal Fiscal Year _____ (October 1, ____, to September 30, ____), and has been approved or not disapproved by FTA.

(Name of Firm) _____, hereby certifies that (Name of Firm) _____, manufacturer of the transit vehicle to be supplied by (Name of Manufacturer) _____ has complied with the above-referenced requirement of 49 CFR §26.49(a)

Signature:_____

Title:_____

Firm:_____

Date:_____

Sample Insurance Certificate
C-9

ACORD. CERTIFICATE OF LIABILITY INSURANCE

OP ID BG BARBA-1

DATE (MM/DD/YY) 03/14/02

PRODUCER

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED

XYZ Company
123 Main Street
Any Town CA 12345

INSURERS AFFORDING COVERAGE	
INSURER A:	Chubb Group
INSURER B:	Kemper National Ins. Co.
INSURER C:	Lexington Insurance Company
INSURER D:	Lloyd's of London
INSURER E:	Allianz Insurance Company

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	GENERAL LIABILITY				EACH OCCURRENCE	$1,000,000
A	X COMMERCIAL GENERAL LIABILITY	AB 12345678	03/14/02	03/14/03	FIRE DAMAGE (Any one fire)	$250,000
	CLAIMS MADE X OCCUR				MED EXP (Any one person)	$10,000
					PERSONAL & ADV INJURY	$1,000,000
					GENERAL AGGREGATE	$2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:				PRODUCTS - COMP/OP AGG	$2,000,000
	X POLICY PRO-JECT LOC					
	AUTOMOBILE LIABILITY					
A	X ANY AUTO	AU45678901	03/14/02	03/14/03	COMBINED SINGLE LIMIT (Ea accident)	$1,000,000
	ALL OWNED AUTOS				BODILY INJURY (Per person)	$
	SCHEDULED AUTOS					
	HIRED AUTOS				BODILY INJURY (Per accident)	$
	NON-OWNED AUTOS					
					PROPERTY DAMAGE (Per accident)	$
	GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
	ANY AUTO				OTHER THAN AUTO ONLY: EA ACC	$
					AGG	$
	EXCESS LIABILITY				EACH OCCURRENCE	$
	OCCUR CLAIMS MADE				AGGREGATE	$
						$
	DEDUCTIBLE					$
	RETENTION $					$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				X WC STATU-TORY LIMITS OTH-ER	
B		WC 9012345	03/14/02	03/14/03	E.L. EACH ACCIDENT	$1,000,000
					E.L. DISEASE - EA EMPLOYEE	$1,000,000
					E.L. DISEASE - POLICY LIMIT	$1,000,000
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS
STL
LAVTA its directors, officers, employees and agents are added as Additional Insured on General Liability and Auto.
Severability of Interests Clause on General Liability.
Waiver of Subrogration on all above coverages.

CERTIFICATE HOLDER	Y ADDITIONAL INSURED; INSURER LETTER: A	CANCELLATION
Livermore Amador Valley Trans. Auth. 1362 Rutan Court, Suite100 Livermore		SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL XXXXXXXX MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, XXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXX. AUTHORIZED REPRESENTATIVE

ACORD 25-S (7/97)

VEHICLE TECHNICAL INFORMATION

This form must be completed and included in the Technical Proposal.

GENERAL COACH DATA SHEET

[insert bus type]

Bus manufacturer:	
Bus model:	
Understructure manufacturer:	
Model number:	

Basic Body Construction

Type:	
Tubing or frame member thickness and dimensions	
Overstructure	
Understructure	
Skin thickness and material	
Roof	
Sidewall	
Skirt panel	
Front end	
Rear end	

Dimensions

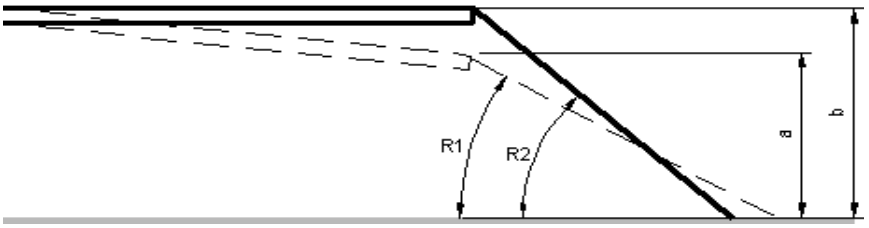
Overall length	Over bumpers		ft		in.
	Over body		ft		in.
Overall width	Over body excluding mirrors		ft		in.
	Over body including mirrors–driving position		ft		in.
	Over tires front axles		ft		in.
	Over tires center axle		ft		in.
	Over tires rear axles		ft		in.

Overall height (maximum)		ft	in.
Overall height (main roof line)		ft	in.

Angle of approach		deg
Breakover angle		deg
Breakover angle (rear)		deg
Angle of departure		deg

Doorway Dimensions	**Front**		**Rear**	
Width between door posts		in.		in.
Door width between panels		in.		in.
Clear door width		in.		in.
Doorway height		in.		in.
Knuckle clearance		in.		in.

Step height from ground measured at center of doorway



	Front doorway, empty		**Ramp angle**			**Rear Doorway, empty**	
Kneeled	a.	in.	R1		deg	a.	in.
Unkneeled	b.	in.	R2		deg	b.	in.

Interior head room (center of aisle)

Front axle location		in.
Center axle location		in.
Rear axle location		in.

Aisle width between transverse seats | | in.

Floor height above ground (centerline of bus)

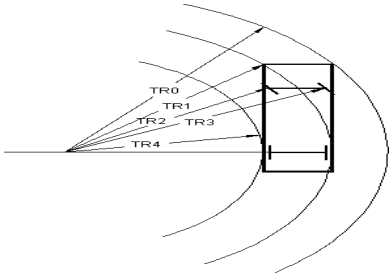
At front door		in.
At front axle		in.
At drive axle		in.
At rear door		in.

Minimum ground clearance (between bus and ground, with bus unkneeled)

Excluding axles		in.
Including axles		in.

Horizontal turning envelope (see diagram below)

Outside body turning radius, TR0 (including bumper)		ft		in.
Front inner corner radius, TR1		ft		in.
Front wheel inner turning radius, TR2		ft		in.
Front wheel outer turning radius, TR3		ft		in.
Inside Body Turning Radius innermost point, TR4 (including bumper)		ft		in.



Wheel base

Front		in.
Rear		in.

Overhang, centerline of axle over bumper

Front		in.
Rear		in.

Floor

Interior length		ft		in.
Interior width (excluding coving)		ft		in.
Total standee area (approximately)		ft^2		
Minimum distance between wheelhouses:	Front			in.
	Rear			in.
	Center			in.
Maximum interior floor slope (from horizontal)		deg		

Passenger capacity provided

Total maximum seating		
Standee capacity		
Minimum hip to knee room		in.
Minimum foot room		in.

Weight

	No. of people	**Front axle**			**Center axle**			**Rear axle**			**Total bus**
		Left	Right	Total	Left	Right	Total	Left	Right	Total	
Empty bus, full fuel and											

farebox											
Fully seated, full fuel and farebox											
Fully loaded standee and fully seated, full fuel and farebox											
Crush load (1.5x fully loaded)											
GVWR											
GAWR											

Engine, main

Manufacturer				
Type and weight rating				
Model number				
Bore		in.		
Stroke		in.		
Displacement		$in.^3$		
Compression ratio				
Injector type and size				
Net SAE horsepower		hp at		RPM
Net SAE torque		lb/ft at		RPM
Crankcase oil capacity				
New engine, dry		gal		
New engine, wet		gal		
Turbocharger make and model				
Maximum speed, no load		RPM		
Maximum speed, full load		RPM		
Speed at idle		RPM		
Speed at fast idle		RPM		

Engine information/graphs to be attached with this form:

Engine speed vs. road speed

Torque vs. engine speed

Horsepower vs. engine speed

Fuel consumption vs. engine speed

Vehicle speed vs. time (both loaded and unloaded)

Vehicle speed vs. grade (both loaded and unloaded)

Acceleration vs. time

Change of acceleration vs. time

Hybrid drive or transmission

Manufacturer				
Type				
Speeds				
Gear ratios	Forward:		Reverse:	
Shift speeds				
1st–2nd		mph		
2nd–3rd		mph		
3rd–4th		mph		
4th–5th (if applicable)		mph		
5th–6th (if applicable)		mph		
Fuel capacity (including heat exchanger and filters				

Voltage regulator

Manufacturer	
Model	

Voltage equalizer

Manufacturer	
Model	

Alternator

Manufacturer		
Type		
Model		
Output at idle		amps
Output at maximum speed		amps
Maximum warranted speed		rpm
Speed at idle (approximately)		rpm
Drive type		

Starter motor

Manufacturer	
Type	
Model	

Air compressor

Manufacturer	

Type		
Rated capacity		CFM
Capacity at idle (approximately)		CFMs
Capacity at maximum speed (engine)		CFM
Maximum warranted speed		rpm
Speed idle		rpm
Drive type		
Governor:		
Cut-in pressure		psi
Cut-out pressure		psi

Axles

First

Manufacturer		
Type		
Model number		
Gross axle weight rating		lbs
Axle load		lbs

Second

Manufacturer		
Type		
Model number		
Gross axle weight rating		lbs
Axle load		lbs

Third

Manufacturer		
Type		
Model number		
Gross axle weight rating		lbs
Axle load		lbs
Axle ratio		

Suspension system

Manufacturer		
Type:	First:	
	Second:	
	Third:	
Springs:	First:	
	Second:	

Third:	

Joint

Manufacturer	
Type	
Model number	

Wheels and tires

Wheels

Make	
Size	
Capacity	
Material	

Tires

Manufacturer	
Type	
Size	
Load range/air pressure	psi

Steering, power

Pump

Manufacturer and model number	
Type	
Relief pressure	psi

Booster/gear box

Manufacturer and model number	
Type	
Ratio	

Power steering fluid capacity	gal
Maximum effort at steering wheel	lbs (unloaded stationary coach on dry asphalt pavement)
Steering wheel diameter	in.

Brakes

Make of fundamental brake system		
Brake chambers vendor size and part number:	First:	
	Second:	
	Third:	

Brake operation effort	

Slack adjuster's vendor's type and part numbers

First:	Right:	
	Left:	
Second:	Right:	
	Left:	
Third:	Right:	
	Left:	
Length:	First take-up:	
	Second take-up:	
	Third take-up:	

Brake drums/discs

First:	Manufacturer		
	Part number		
	Diameter		in.
Second:	Manufacturer		
	Part number		
	Diameter		in.
Third:	Manufacturer		
	Part number		
	Diameter		in.

Brake lining manufacturer	
Type	

Brake lining identification

First:	Forward	
	Reverse	
Second:	Forward	
	Reverse	
Third:	Forward	
	Reverse	

Brake linings per shoe

First	
Second	
Third	

Brake lining widths

First		in.
Second		in.
Third		in.

Brake lining lengths

First		in.
Second		in.
Third		in.

Brake lining thickness _____ in.

Brake lining per axle

First		sq. in.
Second		sq. in.
Third		sq. in.

Cooling system

Radiator/charge air cooler

Manufacturer			
Type			
Model number			
Number of tubes			
Tubes outer diameter		in./	in.
Fins per inch		fins	
Fin thickness		in.	

Total cooling and heating system capacity _____ gal

Radiator fan speed control _____

Surge tank capacity _____ quarts

Engine thermostat temperature setting: Initial opening (fully closed) _____ °F

Fully open _____ °F

Overheat alarm temperature sending unit setting _____ °F

Shutdown temperature setting _____ °F

Air reservoir capacity

Supply reservoir		$in.^3$
Primary reservoir		$in.^3$
Secondary reservoir		$in.^3$
Packing reservoir		$in.^3$

Accessory reservoir		$in.^3$
Other reservoir type		$in.^3$

Heating, ventilation and air conditioning equipment

Heating system capacity		BTU/hr
Air conditioning capacity		BTU
Ventilating capacity		CFM

Compressor

Manufacturer				
Model				
Number of cylinders				
Drive ratio				
Maximum warranted speed				rpm
Operating speed				rpm (recommended)
Weight				lbs
Oil capacity	Dry			gal
	Wet			gal
Refrigerant:	Type			lbs

Condenser

Manufacturer		
Model		
Number of fins/in.		
Outer diameter of tube		in.
Fin thickness		in.

Condenser fan

Manufacturer		
Model		
Fan diameter		in.
Speed maximum		rpm
Flow rate (maximum)		CFM

Receiver

Manufacturer		
Model		
Capacity		lbs

Condenser fan drive motors

Manufacturer		
Model		
Type		
Horsepower		hp
Operating speed		rpm

Evaporator fan drive motors

Manufacturer		
Model		
Type		
Horsepower		hp
Operating speed		rpm

Evaporator(s)

Manufacturer		
Model		
Number of rows		
Number of fins/in.		
Outer diameter of tube		in.
Fin thickness		in.
Number of evaporators		

Expansion valve

Manufacturer	
Model	

Filter-drier

Manufacturer	
Model	

Heater cores

Manufacturer		
Model		
Capacity		Btu/hr
Number of rows		
Number of fins/in.		
Outer diameter of tube		in.
Fin thickness		in.

Number of heater cores	

Floor heater blowers

Front	
Rear	

Controls

Manufacturer	
Model	

Driver's heater

Manufacturer		
Model		
Capacity		Btu/hr

Ventilation system

Type	

Coolant heater

Make		
Model		
Capacity		Btu

Interior lighting

Manufacturer		
Type		
Number of fixtures		
Size of fixtures		
Power pack		

Doors

Front

Manufacturer of operating equipment	
Type of door	
Type of operating equipment	

Rear

Manufacturer of operating equipment	
Type of door	
Type of operating equipment	

Passenger windows

Front

Manufacturer				
Model				
Type				
Number:	Side			
	Rear			
Sizes:				
Glazing:	Type			
	Thickness			
	Color of tint			
	Light transmission			

Mirrors

	Size	Type	Manufacturer	Part no.	Model no.
Right side exterior					
Left side exterior					
Center rearview					
Front entrance area					
Upper-right corner					
Rear exit area					

Seats

Passenger

Manufacturer	
Model	
Type	

Operator

Manufacturer	
Model and part number	
Type	

Paint

Manufacturer	
Type	

Wheelchair ramp equipment

Manufacturer			
Model number			
Capacity			lbs
Width of platform			in.
Length of platform			in.
System fluid capacity			quarts
Type of fluid used			
Operating hydraulic pressure			psi
Hydraulic cylinders:	Size		
	Number		

Wheelchair securement equipment

Manufacturer	
Model number	

Destination signs

Manufacturer	
Type	

Character length

Front destination		in.
Front route		in.
Curbside destination		in.
Rear route		in.

Character height

Front destination		in.
Front route		in.
Curbside destination		in.
Rear route		in.

Number of characters

Front destination	
Front route	
Curbside destination	
Rear route	

Message width

Front destination		in.
Front route		in.

Curbside destination		in.
Rear route		in.

Electrical

Multiplex system

Manufacturer	
Model number	

Batteries

Manufacturer	
Model number	
Type	

Communication system

GPS

Manufacturer	
Model number	

PA system

	Manufacturer	Model number	Number
Amplifier			
Microphone			
Internal speakers			
External speaker			

Energy storage (hybrid drive)

Type		
Number of cells		V
Battery pack voltage		V
Weight		lbs

Security camera system

Manufacturer	
Model number	
Number of cameras	
Storage capacity	

Bike racks

Manufacturer	
Model number	

Fire detection system

Manufacturer	
Model number	
Fire detectors	
Type (thermal or optical)	
Number of detectors	

Automatic voice annunciator system

Manufacturer	
Model and part number	

Annunciator LED sign

Number of signs		
Housing dimensions		
Character length		in.
Character height		in.
Character width		in.

GPS antenna

Manufacturer	
Model and part number	

Automatic passenger counter

Manufacturer		
Model and part number	a.	
	b.	
	c.	
Sensor type		

Real-time bus arrival prediction system

	Manufacturer	**Model number**
Router		
Cellular modem		
Charge protection		

Electronic tire pressure monitoring system

Manufacturer	
Model number	

Electronic brake stroke/wear indicator system

Manufacturer	
Model number	

NOTE: All information above is accurate to the timeframe upon submission. LAVTA reserves the right to update above data if changes occur, upon consultation with the customer.

NEW BUS MANUFACTURING INSPECTION GUIDELINES
PRE-PRODUCTION MEETING RESPONSIBILITIES

LAVTA

- Provides conformed copy of technical requirements.
- Recommended staff to be involved may include the following:

Project manager
Technical engineer
Contract administrator
Quality assurance administrator
Warranty administrator

- Process for inspector's role (to deal with LAVTA) for negotiated changes after freeze date.
- Contractual requirements:

Milestones
Documentation
Title requirements
Deliverables
Payments
Reliability tracking

Manufacturer

- Identifies any open issues.
- Recommended staff to be involved may include the following:

Project manager
Technical engineer(s)
Contract administrator
Quality assurance administrator
Warranty administrator

- Production flow (buses/week, shifts).
- Delivery schedule and offsite component build-up schedule.
- Bus QA documentation (including supplier application approvals and/or any certifications required for the specific production).
- Communication flow/decision making.

Inspector

- Agree on decisions inspectors can and cannot make.
- Primary contact for problems, etc.
- Production flow process (description of manufacturing by station).
- Factory hours (manage inspection schedule based on production hours).
- Plant rules.
- Safety requirements.
- Orientation requirements.
- Work environment.
- Inspector's office space (per contract).

NOTE: As a result of this meeting, documentation should be produced detailing final production requirements and the planned configuration of the bus.

Build Schedule

The bus manufacturer's contract administrator shall supply a fleet build production schedule based on the dates in the Notice to Proceed, and a description of the manufacturer's schedule for plant operations.

The production schedule should contain specific milestone dates, such as the following:

- First vehicle on production line (date on which any work will begin).
- First vehicle off production line.
- First vehicle through manufacturer's quality assurance inspections.
- First vehicle shipped to LAVTA.
- Last vehicle on production line.
- Last vehicle off production line.
- Last vehicle shipped to LAVTA.

Plant Tour (if Meeting at OEM's Location)

LAVTA will review the entire process from start to finish and review the work completed at each line station, including quality control measures.

Vehicle Production

The Contractor shall conduct acceptance tests at its plant on each bus following completion of manufacture and before delivery to LAVTA. These pre-delivery tests shall include visual and measured inspections, as well as testing the total bus operation. The tests shall be conducted and documented in accordance with written test plans approved by LAVTA. The underfloor equipment shall be available for inspection by the resident inspectors, using a pit or bus hoist provided by the Contractor. A hoist, scaffold or elevated platform shall be provided by the Contractor to easily and safely inspect bus roofs. Delivery of each bus shall require written authorization of the primary resident inspector. Authorization forms for the release of each bus for delivery shall be provided by the Contractor. An executed copy of the authorization shall accompany the delivery of each bus.

Additional tests may be conducted at LAVTA's discretion to ensure that the completed buses have attained the required quality and have met the requirements in "Section 6: Technical Specifications." LAVTA may, prior to commencement of production, demand that the Contractor demonstrate compliance with any requirement in that section if there is evidence that prior tests have been invalidated by the Contractor's change of Supplier or change in manufacturing process. Such demonstration shall be by actual test, or by supplying a report of a previously performed test on similar or like components and configuration. Any additional testing shall be recorded on appropriate test forms provided by the Contractor and shall be conducted before acceptance of the bus.

The pre-delivery tests shall be scheduled and conducted with 30 days' notice so that they may be witnessed by the resident inspectors, who may accept or reject the results of the tests. The results of pre-delivery tests, and any other tests, shall be filed with the assembly inspection records for each bus.

Visual and Measured Inspections

Visual and measured inspections shall be conducted with the bus in a static condition. The purpose of the inspection testing includes verification of overall dimension and weight requirements, that required

components are included and are ready for operation, and that components and subsystems designed to operate with the bus in a static condition do function as designed.

Total Bus Operation

Total bus operation shall be evaluated during road tests. The purpose of the road tests is to observe and verify the operation of the bus as a system and to verify the functional operation of the subsystems that can be operated only while the bus is in motion.

Each bus shall be driven for a minimum of 15 miles during the road tests. If requested, computerized diagnostic printouts showing the performance of each bus shall be produced and provided to LAVTA. Observed defects shall be recorded on the test forms. The bus shall be retested when defects are corrected and adjustments are made. This process shall continue until defects or required adjustments are no longer detected.

Post-Delivery Tests

LAVTA shall conduct acceptance tests on each delivered bus. These tests shall be completed within 15 days after bus delivery and shall be conducted in accordance with LAVTA's written test plans. The purpose of these tests is to identify defects that have become apparent between the time of bus release and delivery to LAVTA. The post-delivery tests shall include visual inspection and bus operations. No post-delivery test shall apply new criteria that are different from criteria applied in a pre-delivery test.

Buses that fail to pass the post-delivery tests are subject to non-acceptance. LAVTA shall record details of all defects on the appropriate test forms and shall notify the Contractor of acceptance or non-acceptance of each bus, after completion of the tests. The defects detected during these tests shall be repaired according to procedures defined in the contract.

Vehicle Acceptance

In order to assess the Contractor's compliance with the Technical Specifications, LAVTA and the Contractor shall, at the Pre-Production Meeting, jointly develop a Configuration and Performance Review document for review of thefirst vehicle on production line . This document shall become part of the official record of the Pre-Production Meeting.

Potential dimensional/performance tests that may be included in the Configuration and Performance Review include the following:

- Complete electrical system audit
- Dimensional requirements audit
- Seating capacity
- Water test
- Water runoff test
- Function test of systems/subsystems and components
- Sound/noise level tests
- Vehicle top speed
- Acceleration tests
- Brake stop tests
- Airflow tests
- PA function tests

- Air/brake system audit
- Individual axle weight
- Standee capacity
- Body deflection tests
- Silent alarm function test
- Interior lighting
- Exterior lighting
- Gradability test
- Kneeling system function
- HVAC pulldown/heat
- Speedometer
- Outside air infiltration (smoke)
- Wheelchair ramps
- Engine performance qualification

This test shall be jointly conducted by the Contractor and the engine manufacturer (including but not limited to charge air cooler performance, air to boil test, loss of coolant, fuel system electrical inputs and engine protection system).

- Transmission performance qualifications

This test shall be jointly conducted by the Contractor and the transmission manufacturer (including but not limited to retarder operation, heat exchanger, interface with ABS and electrical inputs).

Buy America Audit

A post-delivery Buy America audit is required for federally funded bus procurements (see 49 CFR Part 663 for additional information). The onsite resident inspectors are to monitor the production processes to verify compliance with final assembly requirements identified by the Buy America pre-award audit. This audit is to verify compliance with final assembly requirements and final documentation of Buy America compliance and must be completed prior to title transfer.

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Resident Inspection Process for Serial Production

At the discretion of LAVTA, a decision is made to perform resident inspection using LAVTA's personnel, a contract inspector, or a combination of both. The decision is based on factors such as the availability of personnel, knowledge/expertise in bus build project management, the size of the bus order, etc.

> **NOTE:** The decision to have the resident inspection performed by LAVTA personnel results in a firm understanding and knowledge of the bus and affords the opportunity to identify parts that will be needed for general maintenance down the road.

Inspector Responsibilities

The resident inspection process for the serial production of the buses begins following the completion and acceptance of each vehicle if required, or according to the serial bus production schedule. Resident inspectors should represent LAVTA for all build-related issues (quality, conformance, etc.). Resident inspectors can also address contractual type issues but should only do so under the consult

of LAVTA's contracts administrator. Resident inspectors are sent to the manufacturer's facility according to a Resident Inspection Schedule. Typically, one or two inspectors arrive onsite at the manufacturing facility about one week prior to actual production to setup the resident inspection process and to begin preliminary quality assurance inspections for items such as power plant build-up and wire harness production, and to inspect incoming parts, fasteners, fluids, etc., that will be used in the production of the buses. During the serial production of the buses, the resident inspectors should monitor the production of each bus, verifying the quality of materials, components, sub-assemblies and manufacturing standards. In addition, the configuration of each vehicle should be audited using the vehicle manufacturer's Build Specification and other documents to ensure contract compliance and uniformity.

Inspector Rotation/Scheduling

During the resident inspection phase, a single inspector or multiple inspectors could be used. If it is decided to use multiple inspectors, then the inspectors could be rotated on a biweekly to monthly basis as required. During the rotation of inspectors, a sufficient period of overlap should be provided to guarantee the consistency of the resident inspection process.

Resident Inspector Orientation

A resident inspector orientation by the bus manufacturer should take place upon the arrival of the initial inspection team. The orientation should include expectations for the use of personal protective equipment (safety shoes, safety glasses, etc.), daily check-in and check-out requirements, lines of communication, use of production documents such as speed memos and line movement charts, inspector/production meetings, inspector office arrangements, and anything else pertinent to the inspection team's involvement during the build. Many of the above items should already be formalized during the Pre-Production Meeting.

Audits, Inspections and Tests

The resident inspection process monitors the production of each vehicle. Inspection stations should be strategically placed to test or inspect components or other installations before they are concealed by subsequent fabrication or assembly operations. These locations typically are placed for the inspection of underbody structure, body framing, electrical panels and harnesses, air and hydraulic line routings, installation of insulation, power plant build-up and installation, rust inhibitor/undercoating application, floor installation, front suspension alignment, and other critical areas.

Vehicle Inspections

Each bus is subjected to a series of inspections after the bus reaches the point of final completion on the assembly line. Typically, the vehicle manufacturer performs its own quality assurance inspections following assembly line completion before releasing each bus to the resident inspectors. The inspections for each vehicle are documented, signed off upon passing and included in the vehicle record.

These are the typical inspections performed on each bus by the resident inspectors:

- Water test inspection
- Road test inspection
- Interior inspection (including functionality)

- Hoist/undercarriage inspection
- Exterior inspection (including roof)
- Electrical inspection
- Wheelchair ramp/lift inspection

Water Test Inspection

The water test inspection checks the integrity of the vehicle's body seams, window frame seals and other exterior component close-outs for their ability to keep rainwater, road splash, melting snow and slush, and other exterior water from entering the inside of the vehicle. The vehicle's interior is inspected for signs of moisture and water leaks.

Road Test Inspection

The road test inspection checks all the vehicle's systems and subsystems while the vehicle is in operation. Typically, the road test inspection is performed immediately following the water test inspection to reveal any standing water that may be present due to a leak, but was not noticed during the "static" water test. Objectionable vibrations, air leakage and other factors that affect ride quality are recorded and reported to the vehicle manufacturer for resolution. Vehicle stability, performance, braking and interlock systems, HVAC, and other critical areas are checked to ensure that the vehicle is complete and ready to provide safe and reliable service.

The following tests may be performed and recorded during the road test:

- Acceleration test
- Top speed test
- Gradability test
- Service brake test
- Parking brake test
- Turning effort test
- Turning radius test
- Shift quality
- Quality of retarder or regenerative braking action

During the road test, a vehicle may be taken to a weigh station to record the vehicle's front axle weight, rear axle weight and total vehicle (curb) weight.

Interior Inspection

The interior inspection checks the fit and finish of the interior installations.

In addition, the inspection also verifies the installation and function of systems and subsystems according to the Build Specification. All systems and functions accessed from the interior are inspected for functionality, appearance and safety.

Examples of systems/functions inspected include the following:

- Interior and exterior lighting controls
- Front and rear door systems
- Flooring installation

- Passenger and operator's seat systems
- Wheelchair securement and ramp systems
- Fire suppression system
- Electrical installations (multiplex, tell-tale wiring, panels, etc.)
- Window systems and emergency escape portals
- Operator dash/side panel controls/indicators

Hoist/Undercarriage Inspection

The hoist/undercarriage inspection checks the installation of components, wiring, air lines, presence of fluid leaks, etc., located under the vehicle. Typically, this inspection is performed following the road test. The vehicle is lifted onto a hoist or pulled over a pit for the inspection. Areas inspected are the front suspension, air bags, air line routings, electrical connections and routings, drivetrain components, linkages and any other system or component that may be prone to early failure due to inadequate installation techniques. All lines, cables, hoses, etc., are inspected for proper securement and protection to prevent rubbing, chafing or any other condition that could result in a failure. The engine/powerplant and HVAC compartments are also inspected during this time.

Exterior Inspection

The exterior inspection checks the fit and finish of components installed on the exterior of the vehicle. Access panels are opened and accessories are inspected for proper installation. In addition, vehicle paint, graphics and proper decals are also inspected. Acceptable paint finish quality (orange peel, adhesion, etc.) should be agreed on with the vehicle manufacturer prior to production to ensure consistency of inspections.

Electrical Inspection

The vehicle's main electrical panels and other subpanels are inspected for proper components, to include relays, fuses, modules, terminal strips, decals, etc. In addition, electrical harnesses are inspected for proper wiring and termination techniques, bulkhead protection, looming and other items that could result in future electrical failure. Onboard vehicle compartment schematics are verified for accuracy.

Wheelchair Ramp Inspection

The wheelchair ramp assembly is inspected for proper installation and performance. Clearances critical to the operation of the ramp are verified, and the ramp's electrical systems are inspected to ensure appropriate wire routings and protection. The successful integration of the ramp assembly into the vehicle is verified, and the vehicle interlocks are checked during automatic and manual ramp operation.

Audits

During serial production of the bus's quality assurance inspection, tests may be performed to ensure that the manufacturer's quality standards are being followed. These inspection audits could be on items such as torque wrench calibrations, proper techniques for fastener installations, proper use and type of adhesives, use of correct installation drawings on the production line, etc.

Communications

The lines of communications, formal and informal, should be discussed and outlined in the Pre-Production Meeting. As previously discussed, resident inspectors should represent LAVTA for all bus-build related issues (quality, conformance, etc.).Resident inspectors can relay communications addressing contractual type issues but should do so only under the consult of LAVTA's contract administrator. Actual personnel contacts for the manufacturing facility should be established during resident inspector orientation. These contacts could include quality assurance, production, material handling, engineering and buy-off area personnel.

Documentation

The following documents/reports are typically generated during the bus build process:

- Vehicle build specification
- Sales order
- Pre-Production Meeting notes
- Prototype and production correspondence (vehicle build file)
- Manufacturer's vehicle record (Warranty file)

Vehicle line documents
Serialization documents (Warranty file)
Alignment verification
Brake testing
HVAC testing and checkout
Manufacturer's QA checklist and signoff
Weight slip (prototype and Warranty file)
Prototype performance tests document (vehicle build file)
- Acceleration Test
- Top Speed Test
- Gradability Test
- Interior Noise Test A – Stationary
- Interior Noise Test B – Dynamic
- Exterior Noise Test A – Pull Away
- Exterior Noise Test B – Pass-By
- Exterior Noise Test C – Curb Idle
- Turning Radius Test
- Turning Effort Test
- Parking Brake Test
- Service Brake Test

Vehicle acceptance inspections—production (Warranty file)
- Water Test Inspection Report
- Road Test Inspection Report
- Interior Inspection Report
- Hoist/Undercarriage Inspection Report
- Exterior Inspection Report
- Electrical Inspection Report
- Wheelchair Inspection Report

Speed Memos (Warranty file)
LAVTA Vehicle Inspection record (Warranty file)

Release for delivery documentation (Warranty file)
Post-Production Acceptance – Certificate of Acceptance (Accounting)
Post-Delivery Inspection Report – (Fleet Management & Warranty files)

Vehicle Release for Delivery

Upon satisfactory completion of all inspection, audit and test criteria, and resolution of any outstanding issues affecting the purchase of any or all buses, proper documentation (the Release for Delivery) is signed by the designated resident inspector authorizing the bus manufacturer to deliver the vehicle to LAVTA's facility, where it will undergo a post-delivery inspection process and final acceptance. The satisfactory sign-off of the Release for Delivery should complete the resident inspector's duties for each bus. In final preparation for delivery, the bus manufacturer may request the resident inspector to do a final walk-through of the bus after it has been cleaned and prepped for shipping.

Post-Delivery and Final Acceptance

LAVTA shall conduct acceptance tests on each delivered bus. These tests shall be completed within 15 days after bus delivery and shall be conducted in accordance with LAVTA's written test plans. The purpose of these tests is to identify defects that have become apparent between the time of bus release and delivery to LAVTA. The post-delivery tests shall include visual inspection, along with a verification of system(s) functionality and overall bus operations. No post-delivery test shall apply new criteria that are different from criteria applied in a pre-delivery test.

Buses that fail to pass the post-delivery tests are subject to non-acceptance. LAVTA shall record details of all defects on the appropriate test forms and shall notify the Contractor of acceptance or non-acceptance of each bus within five days after completion of the tests. The defects detected during these tests shall be repaired according to procedures defined in the contract after non-acceptance.

Certificate of Acceptance

- Accepted
- Not accepted: In the event that the bus does not meet all requirements for acceptance. LAVTA must identify reasons for non-acceptance and work with the OEM to develop a timeline of addressing the problem for a satisfactory resolution and redelivery.
- Conditional acceptance: In the event that the bus does not meet all requirements for acceptance, LAVTA may conditionally accept the bus and place it into revenue service pending receipt of Contractor furnished materials and/or labor necessary to address the identified issue(s).

APPENDIX R

NOTE: This form is to be completed and included in the Proposal Package. Attach additional pages if required.

LAVTA
RFP #2015-8

1.	Name of firm:
2.	Address:
3.	❑ Individual ❑ Partnership ❑ Corporation ❑ Joint Venture
4.	Date organized: State in which incorporated:
5.	Names of officers or partners: a. b. c. d. e.
6.	How long has your firm been in business under its present name?
7.	Attach as SCHEDULE ONE a list of similar current contracts that demonstrates your available capacity, including the quantity and type of bus, name of contracting party, percentage completed and expected completion date.
8.	Attach as SCHEDULE TWO a list of at least three similar contracts that demonstrates your technical proficiency, each with the name of the contracting party and number and they type of buses completed within the last five years.
9.	Have you been terminated or defaulted, in the past five years, on any Contract you were awarded? ❑ Yes ❑ No If yes, then attach as SCHEDULE THREE the full particulars regarding each occurrence.
10.	Attach as SCHEDULE FIVE a list of all principal Subcontractors and the percentage and character of Work (Contract amount) that each will perform on this Contract.
11.	If the Contractor or Subcontractor is a joint venture, submit PRE-AWARD EVALUATION DATA forms for each member of the joint venture.

The above information is confidential and will not be divulged to any unauthorized personnel.

The undersigned certifies to the accuracy of all information:
Name and title:
Company:

Authorized signature _____ Date _____