



State of Oklahoma
Office of Management and Enterprise Services
Central Purchasing Division

Solicitation

1. Solicitation #: SW797

2. Solicitation Issue Date: 01/31/2014

3. Brief Description of Requirement:

STATEWIDE CONTRACT FOR ADA TRANSIT VEHICLES

4. Response Due Date¹: 03/18/2014

Time: 3:00 PM CST/CDT

5. Issued By and RETURN SEALED BID TO:

Personal or Common Carrier Delivery or U.S. Postal Delivery:

Office of Management and Enterprise Services
Central Purchasing Division
Will Rogers Building
2401 N. Lincoln Blvd, Suite 116,
Oklahoma City, OK 73105

6. Solicitation Type (check one below):

- ☐ Invitation to Bid
☐ Request for Proposal
☐ Request for Quote

7. Requesting Agency: OMES, CENTRAL PURCHASING DIVISION

8. Contracting Officer:

Name: Laura Bybee

Phone: (405) 522-1037

Email: laura.bybee@omes.ok.gov

¹ Amendments to solicitation may change the Response Due Date (read CP GENERAL PROVISIONS, section 3, "Solicitation Amendments")
OMES-FORM-CP-070 (02/2013)



State of Oklahoma
Office of Management and Enterprise Services
Central Purchasing Division

Responding Bidder Information

"Certification for Competitive Bid and Contract" **MUST** be submitted along with the response to the Solicitation.

1. RE: Solicitation # SW797

2. Bidder General Information:

FEI / SSN : _____ VEN ID: _____

Company Name: _____

3. Bidder Contact Information:

Address: _____

City: _____ State: _____ Zip Code: _____

Contact Name: _____

Contact Title: _____

Phone #: _____ FAX#: _____

Email: _____ Website: _____

4. Oklahoma Sales Tax Permit²:

☐ YES – Permit #: _____

☐ NO – Exempt pursuant to Oklahoma Laws or Rules

5. Registration with the Oklahoma Secretary of State:

☐ YES - Filing Number: _____

☐ NO - Prior to the contract award, the successful bidder will be required to register with the Secretary of State or must attach a signed statement that provides specific details supporting the exemption the supplier is claiming (www.sos.ok.gov or 405-521-3911).

6. Workers' Compensation Insurance Coverage:

Bidder is required to provide with the bid a certificate of insurance showing proof of compliance with the Oklahoma Workers' Compensation Act.

☐ YES – include a certificate of insurance with the bid

☐ NO - attach a signed statement that provides specific details supporting the exemption you are claiming from the Workers' Compensation Act (Note: Pursuant to Attorney General Opinion #07-8, the exemption from 85 O.S. 2011, § 311 applies only to employers who are natural persons, such as sole proprietors, and does not apply to employers who are entities created by law, including but not limited to corporations, partnerships and limited liability companies.)³

Authorized Signature

Date

Printed Name

Title

² For frequently asked questions concerning Oklahoma Sales Tax Permit, see <http://www.tax.ok.gov/faq/faqbusssales.html>

³ For frequently asked questions concerning workers' compensation insurance, see <http://www.ok.gov/oid/faqs.html#c221>



State of Oklahoma
Office of Management and Enterprise Services
Central Purchasing Division

Certification for Competitive
Bid and/or Contract
(Non-Collusion Certification)

NOTE: A certification shall be included with any competitive bid and/or contract exceeding \$5,000.00 submitted to the State for goods or services.

Solicitation or Purchase Order #: SW797

Supplier Legal Name: _____

SECTION I [74 O.S. § 85.22]:

A. For purposes of competitive bid,

1. I am the duly authorized agent of the above named bidder submitting the competitive bid herewith, for the purpose of certifying the facts pertaining to the existence of collusion among bidders and between bidders and state officials or employees, as well as facts pertaining to the giving or offering of things of value to government personnel in return for special consideration in the letting of any contract pursuant to said bid;
2. I am fully aware of the facts and circumstances surrounding the making of the bid to which this statement is attached and have been personally and directly involved in the proceedings leading to the submission of such bid; and
3. Neither the bidder nor anyone subject to the bidder's direction or control has been a party:
 - a. to any collusion among bidders in restraint of freedom of competition by agreement to bid at a fixed price or to refrain from bidding,
 - b. to any collusion with any state official or employee as to quantity, quality or price in the prospective contract, or as to any other terms of such prospective contract, nor
 - c. in any discussions between bidders and any state official concerning exchange of money or other thing of value for special consideration in the letting of a contract.

B. I certify, if awarded the contract, whether competitively bid or not, neither the contractor nor anyone subject to the contractor's direction or control has paid, given or donated or agreed to pay, give or donate to any officer or employee of the State of Oklahoma any money or other thing of value, either directly or indirectly, in procuring this contract herein.

SECTION II [74 O.S. § 85.42]:

For the purpose of a contract for services, the supplier also certifies that no person who has been involved in any manner in the development of this contract while employed by the State of Oklahoma shall be employed by the supplier to fulfill any of the services provided for under said contract.

The undersigned, duly authorized agent for the above named supplier, by signing below acknowledges this certification statement is executed for the purposes of:

☐ the competitive bid attached herewith and contract, if awarded to said supplier;

OR

☐ the contract attached herewith, which was not competitively bid and awarded by the agency pursuant to applicable Oklahoma statutes.

Supplier Authorized Signature

Certified This Date

Printed Name

Title

Phone Number

Email

Fax Number

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A. GENERAL PROVISIONS

A.1. Definitions

As used herein, the following terms shall have the following meaning unless the context clearly indicates otherwise:

- A.1.1.** "Acquisition" means items, products, materials, supplies, services and equipment a state agency acquires by purchase, lease purchase, lease with option to purchase, or rental pursuant to the Oklahoma Central Purchasing Act;
- A.1.2.** "Bid" means an offer in the form of a bid, proposal or quote a bidder submits in response to a solicitation;
- A.1.3.** "Bidder" means an individual or business entity that submits a bid in response to solicitation;
- A.1.4.** "Solicitation" means a request or invitation by the State Purchasing Director or a state agency for a supplier to submit a priced offer to sell acquisitions to the state. A solicitation may be an invitation to bid, request for proposal, or a request for quotation; and
- A.1.5.** "Supplier" means an individual or business entity that sells or desires to sell acquisitions to state agencies.

A.2. Bid Submission

- A.2.1.** Submitted bids shall be in strict conformity with the instructions to bidders and shall be submitted with a completed "Responding Bidder Information", DCS-FORM-CP-076, and any other forms required by the solicitation.
- A.2.2.** Bids shall be submitted to the Central Purchasing Division in a single envelope, package, or container and shall be sealed. The name and address of the bidder shall be inserted in the upper left corner of the single envelope, package, or container. SOLICITATION NUMBER AND SOLICITATION RESPONSE DUE DATE AND TIME MUST APPEAR ON THE FACE OF THE SINGLE ENVELOPE, PACKAGE, OR CONTAINER.
- A.2.3.** The required certification statement, "Certification for Competitive Bid and/or Contract (Non-Collusion Certification)", DCS-FORM-CP-004, must be made out in the name of the bidder and must be properly executed by an authorized person, with full knowledge and acceptance of all its provisions.
- A.2.4.** All bids shall be legibly written or typed. Any corrections to bids shall be initialed. Penciled bids and penciled corrections shall NOT be accepted and will be rejected as non-responsive.
- A.2.5.** All bids submitted shall be subject to the Oklahoma Central Purchasing Act, Central Purchasing Rules, and other statutory regulations as applicable, these General Provisions, any Special Provisions, solicitation specifications, required certification statement, and all other terms and conditions listed or attached herein—all of which are made part of this solicitation.

A.3. Solicitation Amendments

- A.3.1.** If an "Amendment of Solicitation", DCS-FORM-CP-011, is issued, the bidder shall acknowledge receipt of any/all amendment(s) to solicitations by signing and returning the solicitation amendment(s). Amendment acknowledgement(s) may be submitted with the bid or may be forwarded separately. If forwarded separately, amendment acknowledgement(s) must contain the solicitation number and response due date and time on the front of the envelope. The Central Purchasing Division must receive the amendment acknowledgement(s) by the response due date and time specified for receipt of bids for the bid to be deemed responsive. Failure to acknowledge solicitation amendments may be grounds for rejection.
- A.3.2.** No oral statement of any person shall modify or otherwise affect the terms, conditions, or specifications stated in the solicitation. All amendments to the solicitation shall be made in writing by the Central Purchasing Division.
- A.3.3.** It is the Bidder's responsibility to check the DCS/Central Purchasing Division website frequently for any possible amendments that may be issued. The Central Purchasing Division is not responsible for a bidder's failure to download any amendment documents required to complete a solicitation.

A.4. Bid Change

If the bidder needs to change a bid prior to the solicitation response due date, a new bid shall be submitted to the Central Purchasing Division with the following statement "This bid supersedes the bid previously submitted" in a single envelope, package, or container and shall be sealed. The name and address of the bidder shall be inserted in the upper left corner of the single envelope, package, or container. SOLICITATION NUMBER AND SOLICITATION RESPONSE DUE DATE AND TIME MUST APPEAR ON THE FACE OF THE SINGLE ENVELOPE, PACKAGE, OR CONTAINER.

A.5. Certification Regarding Debarment, Suspension, and Other Responsibility Matters

By submitting a response to this solicitation:

- A.5.1.** The prospective primary participant and any subcontractor certifies to the best of their knowledge and belief, that they and their principals or participants:
 - A.5.1.1.** Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded by any Federal, State or local department or agency;

- A.5.1.2.** Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) contract; or for violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - A.5.1.3.** Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph A.5.1.2. of this certification; and
 - A.5.1.4.** Have not within a three-year period preceding this application/proposal had one or more public (Federal, State or local) contracts terminated for cause or default.
- A.5.2.** Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to its solicitation response.

A.6. Bid Opening

Sealed bids shall be opened by the Central Purchasing Division at the Department of Central Services, Will Rogers Building, 2401 N. Lincoln Blvd. First Floor, Suite 116, Oklahoma City, Oklahoma, 73105 at the time and date specified in the solicitation as Response Due Date and Time.

A.7. Bids Subject to Public Disclosure

Unless otherwise specified in the Oklahoma Open Records Act, Central Purchasing Act, or other applicable law, documents and information a bidder submits as part of or in connection with a bid are public records and subject to disclosure. Bidders claiming any portion of their bid as proprietary or confidential must specifically identify what documents or portions of documents they consider confidential and identify applicable law supporting their claim of confidentiality. The State Purchasing Director shall make the final decision as to whether the documentation or information is confidential pursuant to 74 O.S. §85.10.

A.8. Late Bids

Bids received by the Central Purchasing Division after the response due date and time shall be deemed non-responsive and shall NOT be considered for any resultant award.

A.9. Legal Contract

- A.9.1.** Submitted bids are rendered as a legal offer and any bid, when accepted by the Central Purchasing Division, shall constitute a contract.
- A.9.2.** The Contract resulting from this solicitation will consist of the following documents in order of preference: Contract award documents, including but not limited to the Purchase Order, Contract Modifications, required certification statement, affidavit, and change orders; the solicitation including any amendments; and the successful bid to the extent that the bid does not conflict with the requirements of the Contract award documents or solicitation or applicable law. In the event there is a conflict between any of the preceding documents, the Contract award documents prevail over the solicitation, and both the Contract award documents and the solicitation shall prevail over the successful bid.
- A.9.3.** Any contract(s) awarded pursuant to the solicitation shall be legibly written or typed.

A.10. Pricing

- A.10.1.** Bids shall remain firm for a minimum of sixty (60) days from the solicitation closing date.
- A.10.2.** Bidders guarantee unit prices to be correct.
- A.10.3.** In accordance with 74 O.S. §85.40, ALL travel expenses to be incurred by the supplier in performance of the Contract shall be included in the total bid price/contract amount.

A.11. Manufacturers' Name and Approved Equivalents

Unless otherwise specified in the solicitation, manufacturers' names, brand names, information and/or catalog numbers listed in a specification are for information and not intended to limit competition. Bidder may offer any brand for which they are an authorized representative, which meets or exceeds the specification for any item(s). However, if bids are based on equivalent products, indicate on the bid form the manufacturer's name and number. Bidder shall submit sketches, descriptive literature, and/or complete specifications with their bid. Reference to literature submitted with a previous bid will not satisfy this provision. The bidder shall also explain in detail the reason(s) why the proposed equivalent will meet the specifications and not be considered an exception thereto. Bids that do not comply with these requirements are subject to rejection.

A.12. Clarification of Solicitation

Clarification pertaining to the contents of this solicitation shall be directed in writing to the Central Purchasing Contracting Officer specified in the solicitation.

A.13. Rejection of Bid

The State reserves the right to reject any bids that do not comply with the requirements and specifications of the solicitation. A bid may be rejected when the bidder imposes terms or conditions that would modify requirements of the solicitation or limit the bidder's liability to the State. Other possible reasons for rejection of bids are listed in OAC 580:15-4-11.

A.14. Award of Contract

- A.14.1.** The State Purchasing Director may award the Contract to more than one bidder by awarding the Contract(s) by item or groups of items, or may award the Contract on an ALL OR NONE basis, whichever is deemed by the State Purchasing Director to be in the best interest of the State of Oklahoma.
- A.14.2.** Contract awards will be made to the lowest and best bidder(s) unless the solicitation specifies that best value criteria is being used.
- A.14.3.** In order to receive an award or payments from the State of Oklahoma, suppliers must be registered. The vendor registration process can be completed electronically through the DCS website at the following link:
<https://www.ok.gov/dcs/vendors/index.php>.

A.15. Contract Modification

- A.15.1.** The Contract is issued under the authority of the State Purchasing Director who signs the Contract. The Contract may be modified only through a written Contract Modification, signed by the State Purchasing Director.
- A.15.2.** Any change to the Contract, including the addition of work or materials, the revision of payment terms, or the substitution of work or materials, directed by a person who is not specifically authorized by the Central Purchasing Division in writing, or made unilaterally by the Supplier, is a breach of the Contract. Unless otherwise specified by applicable law or rules, such changes, including unauthorized written Contract Modifications, shall be void and without effect, and the Supplier shall not be entitled to any claim under this Contract based on those changes. No oral statement of any person shall modify or otherwise affect the terms, conditions, or specifications stated in the resultant Contract.

A.16. Delivery, Inspection and Acceptance

- A.16.1.** Unless otherwise specified in the solicitation or awarding documents, all deliveries shall be F.O.B. Destination. The bidder(s) awarded the Contract shall prepay all packaging, handling, shipping and delivery charges and firm prices quoted in the bid shall include all such charges. All products and/or services to be delivered pursuant to the Contract shall be subject to final inspection and acceptance by the State at destination. "Destination" shall mean delivered to the receiving dock or other point specified in the purchase order. The State assumes no responsibility for goods until accepted by the State at the receiving point in good condition. Title and risk of loss or damage to all items shall be the responsibility of the supplier until accepted by the receiving agency. The supplier(s) awarded the Contract shall be responsible for filing, processing, and collecting any and all damage claims accruing prior to acceptance.
- A.16.2.** Supplier(s) awarded the Contract shall be required to deliver products and services as bid on or before the required date. Deviations, substitutions or changes in products and services shall not be made unless expressly authorized in writing by the Central Purchasing Division.

A.17. Invoicing and Payment

- A.17.1.** Pursuant to 74 O.S. §85.44(B), invoices will be paid in arrears after products have been delivered or services provided.
- A.17.2.** Interest on late payments made by the State of Oklahoma is governed by 62 O.S. §34.71 and 62 O.S. §34.72.

A.18. Tax Exemption

State agency acquisitions are exempt from sales taxes and federal excise taxes. Bidders shall not include these taxes in price quotes.

A.19. Audit and Records Clause

- A.19.1.** As used in this clause, "records" includes books, documents, accounting procedures and practices, and other data, regardless of type and regardless of whether such items are in written form, in the form of computer data, or in any other form. In accepting any Contract with the State, the successful bidder(s) agree any pertinent State or Federal agency will have the right to examine and audit all records relevant to execution and performance of the resultant Contract.
- A.19.2.** The successful bidder(s) awarded the Contract(s) is required to retain records relative to the Contract for the duration of the Contract and for a period of seven (7) years following completion and/or termination of the Contract. If an audit, litigation, or other action involving such records is started before the end of the seven (7) year period, the records are required to be maintained for two (2) years from the date that all issues arising out of the action are resolved, or until the end of the seven (7) year retention period, whichever is later.

A.20. Non-Appropriation Clause

The terms of any Contract resulting from the solicitation and any Purchase Order issued for multiple years under the Contract are contingent upon sufficient appropriations being made by the Legislature or other appropriate government entity. Notwithstanding any language to the contrary in the solicitation, purchase order, or any other Contract document, the procuring agency may terminate its obligations under the Contract if sufficient appropriations are not made by the Legislature or other appropriate governing entity to pay amounts due for multiple year agreements. The Requesting (procuring) Agency's decisions as to whether sufficient appropriations are available shall be accepted by the supplier and shall be final and binding.

A.21. Choice of Law

Any claims, disputes, or litigation relating to the solicitation, or the execution, interpretation, performance, or enforcement of the Contract shall be governed by the laws of the State of Oklahoma.

A.22. Choice of Venue

Venue for any action, claim, dispute or litigation relating in any way to the Contract shall be in Oklahoma County, Oklahoma.

A.23. Termination for Cause

- A.23.1.** The supplier may terminate the Contract for default or other just cause with a 30-day written request and upon written approval from the Central Purchasing Division. The State may terminate the Contract for default or any other just cause upon a 30-day written notification to the supplier.
- A.23.2.** The State may terminate the Contract immediately, without a 30-day written notice to the supplier, when violations are found to be an impediment to the function of an agency and detrimental to its cause, when conditions preclude the 30-day notice, or when the State Purchasing Director determines that an administrative error occurred prior to Contract performance.
- A.23.3.** If the Contract is terminated, the State shall be liable only for payment for products and/or services delivered and accepted.

A.24. Termination for Convenience

- A.24.1.** The State may terminate the Contract, in whole or in part, for convenience if the State Purchasing Director determines that termination is in the State's best interest. The State Purchasing Director shall terminate the Contract by delivering to the supplier a Notice of Termination for Convenience specifying the terms and effective date of Contract termination. The Contract termination date shall be a minimum of 60 days from the date the Notice of Termination for Convenience is issued by the State Purchasing Director.
- A.24.2.** If the Contract is terminated, the State shall be liable only for products and/or services delivered and accepted, and for costs and expenses (exclusive of profit) reasonably incurred prior to the date upon which the Notice of Termination for Convenience was received by the supplier.

A.25. Insurance

The successful bidder(s) awarded the Contract shall obtain and retain insurance, including workers' compensation, automobile insurance, medical malpractice, and general liability, as applicable, or as required by State or Federal law, prior to commencement of any work in connection with the Contract. The supplier awarded the Contract shall timely renew the policies to be carried pursuant to this section throughout the term of the Contract and shall provide the Central Purchasing Division and the procuring agency with evidence of such insurance and renewals.

A.26. Employment Relationship

The Contract does not create an employment relationship. Individuals performing services required by this Contract are not employees of the State of Oklahoma or the procuring agency. The supplier's employees shall not be considered employees of the State of Oklahoma nor of the procuring agency for any purpose, and accordingly shall not be eligible for rights or benefits accruing to state employees.

A.27. Compliance with the Oklahoma Taxpayer and Citizen Protection Act of 2007

By submitting a bid for services, the bidder certifies that they, and any proposed subcontractors, are in compliance with 25 O.S. §1313 and participate in the Status Verification System. The Status Verification System is defined in 25 O.S. §1312 and includes but is not limited to the free Employment Verification Program (E-Verify) available at www.dhs.gov/E-Verify.

A.28. Compliance with Applicable Laws

The products and services supplied under the Contract shall comply with all applicable federal, state and local laws, and the supplier shall maintain all applicable licenses and permit requirements.

A.29. Special Provisions

Special Provisions set forth in SECTION B apply with the same force and effect as these General Provisions. However, conflicts or inconsistencies shall be resolved in favor of the Special Provisions.

B. SPECIAL PROVISIONS

B.1. Contract Period

- B.1.1.** This contract is for a twelve (12) month period, commencing on the Date of Award through one year, with option to renew for up to three (3) additional one year periods.

B.2. Agreement Period

- B.2.1.** The agreement period for this contract will be date of award through four (4) years.

B.3. Required Delivery

- B.3.1.** Delivery should be made within 120 calendar days after receipt of order by the successful vendor. If circumstances beyond the control of the vendor causes delivery to be longer than 120 calendar days, the vendor shall notify the ordering agency immediately. Vehicles with a build date longer than 120 days, should be noted in Solicitation Response.
- B.3.2.** The base price for a vehicle is to include delivery to the delivery address for the ordering end user. Vehicles are to be delivered to the end user with a full tank of gas. If end user elects to pick up their vehicle at the dealers location, that vehicle is to be turned over to the end user with a full tank of gas.

B.4. Type of Contract

- B.4.1.** This is a firm fixed price contract for indefinite delivery and indefinite quantity for the supplies/services specified.

B.5. Authorized Users

- B.5.1.** RFP's shall cover requirements during the specified period for all State Departments, Boards, Commissions, Agencies and Institutions. The Oklahoma Statutes state that Counties, School Districts and Municipalities may avail themselves of the contract subject to the approval of the successful offeror(s).

CHECK APPROPRIATE BLOCK

- B.5.1.1.** _____ Yes, permits usage by other than State Agencies

- B.5.1.2.** _____ No, permits usage by State Agencies only.

B.6. Notice of Award

- B.6.1.** Notice of award letter resulting from this RFP will be furnished to each successful vendor and shall result in a binding contract without further action by either party. It shall be the successful vendor's responsibility to reproduce and distribute copies to all authorized dealers listed in your RFP response. No additions, deletions or changes of any kind shall be made to this contract without prior approval of Central Purchasing.

B.7. Extension of Contract

- B.7.1.** The State may extend the term of this contract up to 90 days if mutually agreed upon by both parties in writing.

B.8. Contractor Invoices

- B.8.1.** The vendor shall be paid upon submission of proper certified invoices to the ordering agency at the prices stipulated on the contract. Invoices shall contain the contract number and purchase order number. Failure to follow these instructions may result in delay of processing invoices for payment. The Company or Corporation submitting a proposal shall be the only office authorized to receive orders, invoice and receive payment. If the Vendor wishes to ship or provide service from a point other than the address listed on the face of the RFP, the Vendor will furnish a list of these locations. No ordering or invoicing will be done at these locations.
- B.8.2.** Invoicing shall be made in accordance with instructions by agency or division issuing the purchase order.
- B.8.3.** If you are paid more than 45 days after submitting a proper invoice, you may be entitled to claim an interest penalty. Contact the Office of Management and Enterprise Services, Office of State Comptroller for a copy of the regulations.

- B.8.4.** In cases of partial delivery the state agency may make partial payment, dependent on the dollar value, or hold all invoices for final delivery to be completed.

B.9. Prompt Payment Discounts

- B.9.1.** Discounts for prompt payment will not be considered in the evaluation of offers. However, any discount offered will be annotated on the award and may be taken if payment is made within the discount period.

B.10. Gratuities

- B.10.1.** The right of the successful vendor to perform under this contract may be terminated by written notice if the Contracting Officer determines that the successful vendor, or its agent or another representative offered or gave a gratuity (e.g., an entertainment or gift) to an officer, official or employee of Central Purchasing.

B.11. RFP Proposal Conformity

- B.11.1.** By submitting a response to this solicitation, the vendor attests that the supplies or services conform to specified contract requirements.

B.12. Warranty

- B.12.1.** The Successful vendor agrees the products furnished under this contract shall be covered by the most favorable commercial warranties the contractor gives to any customer for such products; and rights and remedies provided herein are in addition to and do not limit any rights afforded to the State of Oklahoma by any other clause of this contract.

B.13. Contract Usage Reporting Requirements

- B.13.1.** Usage reports for this contract are to be submitted quarterly shall include but not limited to the following:

B.13.1.1. Order Information: contract number (if any), date, order or purchase order number.

B.13.1.2. Customer Information: agency name, location

B.13.1.3. Product or Service Information: category, detailed product or service description, manufacturer, manufacturer item number, vendor SKU, unit of measure, list price (current UOM).

B.13.1.4. Cost Specification: price paid (per contract), quantity purchased, extended price, shipping or other charges (if applicable), total invoice price per line.

- B.13.2.** Vendor shall submit reports quarterly. Reports shall be submitted quarterly regardless of quantity. Quarterly reports are to be received within 30 days following the reporting period described in Section B.12.3.

- B.13.3.** Usage reports shall be sent electronically to strategic.sourcing@omes.ok.gov and are to be submitted in Microsoft Excel format. Contract quarterly reporting periods shall be:

B.13.3.1. 1st Quarter: January 1 through March 31

B.13.3.2. 2nd Quarter: April 1 through June 30

B.13.3.3. 3rd Quarter: July 1 through September 30

B.13.3.4. 4th Quarter: October 1 through December 31

- B.13.4.** Failure to provide usage reports shall result in cancellation or suspension of contract.

- B.13.5.** A Quarterly Usage report template is posted as an Excel Spreadsheet with this solicitation.

B.14. Energy Conservation

- B.14.1.** Oklahoma is an energy conservation State and we welcome any comments on your RFP that would indicate energy savings.

B.15. Conflict of Interest

- B.15.1.** The Request for Proposal hereunder is subject to the provisions of the Oklahoma Statutes. All Vendors must disclose with the RFP the name of any officer, director or agent who is also an employee of the State of Oklahoma or any of its agencies. Further, all Vendors must disclose the name of any State Employee who owns, directly or indirectly, an interest of five percent (5%) or more in the suppliers firm or any of its branches.

B.16. Patents and Royalties

- B.16.1.** The Vendor, without exception, shall indemnify and save harmless the State of Oklahoma and its employees from liability of any nature or kind, including cost and expenses for or on account of any copyrighted, patented, or unpatented invention, process, or article manufactured or used in the performance of the contract including its use by the State of Oklahoma. If the vendor uses any design, device or materials covered by letters, patent or copyright, it is mutually agreed and understood without exception that the RFP prices shall include all royalties or cost arising from the use of such design, device, or materials in any way involved in the work.

B.17. Product Acceptability

- B.17.1.** Bids will only be considered on products, manufactured or produced for distribution and use in the United States and Canada.
- B.17.2.** Products shall be new and current. Factory reconditioned, refurbished or second equipment will not be accepted.

B.18. Product Availability

- B.18.1.** Vehicles must be a current product model and available for general marketing purposes at the opening of this solicitation. Bidders must use best effort to assure product availability through the duration of the contract period.
- B.18.2.** The awarded dealer will provide vehicles for length of the contract period without any price increases. The only exception will be if a model is discontinued or is replaced by a new model. Awarded vendors shall notify Central Purchasing of the new model and provide pricing sheets with vehicle information within 30 days of discontinuation. The new model will only be added if approved by Central Purchasing.

B.19. Authorized Representative & Documentation

- B.19.1.** Bidders may offer any brand for which they are an authorized representative, which meets or exceeds the specification. **Only Oklahoma licensed dealers may submit proposals for this contract.** Per Oklahoma State Statute, Title 74, Section 564, any person or firm engaged in the sale or distribution of motor vehicles within the State of Oklahoma must possess a current, valid Motor Vehicle Dealer License. Bidders should submit a copy of both their Oklahoma dealer's license and a copy of the Manufacturer's license for each manufacturer they are bidding.
- B.19.2.** At the request of any State Agency, County, City, Municipality, School District, bidders must provide written documentation that guarantees that purchased buses meet all Federal, State, and State Board of Education standards for the year it was manufactured.

B.20. Price Adjustments

- B.20.1.** Manufacturer's price increases, or other increases in the cost of doing business may not be passed on to the State of Oklahoma. Any price decrease effectuated during the contract period by reason of market change shall be passed onto the State of Oklahoma. No price reduction on a statewide contract may be offered to an agency unless that reduction is offered to all agencies. The only exception to price increases is listed in B.20.2.
- B.20.2.** If the base price of a vehicle increases due to change in equipment or emissions, the dealer can increase the base price of the vehicle by the amount of the price increase. A letter from the manufacturer documenting the change and the amount of the change must be provided to Central Purchasing for review/approval before the contract base price will be changed.

B.21. Mandatory Contract

- B.21.1.** This contract is mandatory for State of Oklahoma agencies.

B.22. Extension of Retail Price with Rebates over Contract Price

- B.22.1.** If the Retail Price is lower than the contract price due to promotions or discounts, the Vendor shall charge the State the Retail price.
- B.22.2.** Any other instance that causes the Retail price to be lower than the contract price, the Vendor shall charge the State the Retail price.

B.23. Negotiations

- B.23.1.** The State may elect to negotiate with selected vendors during the procurement process to get the best price and business terms for its citizens. Negotiations would be through the State Purchasing Director or his designee. The State will consider all cost and business terms to be negotiable and not artificially constrained by internal corporate policies. In short, firms that contend that they lack flexibility because of their corporate policy on a particular negotiation item will face a significant disadvantage and may not be considered.

B.24. State and Federal Taxes

- B.24.1.** Purchases by the State of Oklahoma are not subject to any sales tax or Federal Excise tax. Exemption certificates will be furnished upon request.

B.25. Contract Management Fee

- B.25.1.** As provided by Oklahoma State Statute §85.33A, the Department of Central Services assesses an Administrative Fee in the sum of one (1%) percent on all sales transacted by any entity under this contract.
- B.25.2.** Supplier agrees to annotate the resultant amount on the quarterly "Contract Usage Report" as listed in B.13 and make payment by company check to OMES – Central Purchasing Division within thirty (30) calendar days from the completion of the quarterly reporting period as listed in B.13.3. To ensure the payment is credited properly, the supplier must identify the check as a "Contract Management Fee" and include the following information with the payment: SW797 ADA Transit Vehicle Contract, the report amount and the reporting period covered. The Contract Management Fee shall be mailed to:

OMES
Agency Business Services
3812 N. Santa Fe, Suite 290
Oklahoma City, OK 73118-8500
- B.25.3.** Failure to remit the fee quarterly may result in the cancellation of the contract. The State Contract Management Fee is non-refundable when an item is rejected, returned or declined due to the Supplier's failure to perform or comply with specifications or requirements of the contract.

C. SOLICITATION SPECIFICATIONS

C.1. Vehicle Specifications

- C.1.1.** See individual specification packets beginning with Section I.

D. EVALUATION

D.1. Evaluation Criteria

- D.1.1.** This RFP will be evaluated on the following criteria: Cost, Compliance with Specifications, and References

E. INSTRUCTIONS TO SUPPLIER

E.1. Questions regarding Solicitation

- E.1.1.** Questions regarding this Solicitation should be submitted no later than Wednesday, February 4th, 2014. Questions are to be submitted via email to laura.bybee@omes.ok.gov. Answers will be posted via an addendum posted on the Central Purchasing website, www.omes.ok.gov.

E.2. Preparation of Proposal

- E.2.1.** The original proposal shall be submitted on 8 ½ x 11 (Letter) size paper. The specifications and FTA Special Provisions have also been provided in Microsoft Word format and are to be submitted back in the Word format

with the required information filled in. These files may be provided on either a jump drive or disc. A complete copy of the solicitation response is to be provided.

E.3. Response Sheets

- E.3.1.** A Response Sheet is provided for each type of vehicle on this contract. Suppliers are to provide responses to the listed items. Failure to provide these may be cause for your proposal to be considered non-responsive.

F. CHECKLIST

None

G. OTHER

G.1. FTA Special Provisions

- G.1.1.** These have been provided as a separate file on the Central Purchasing Solicitation System. These provisions should be completed and submitted for **EACH** type of Vehicle that is included in your response. For example, your response contains proposals for three (3) different vehicles, the FTA Special Provisions are to be completed and submitted three(3) times.

H. PRICE AND COST

H.1. Pricing Submission

- H.1.1.** Prices are to be listed at the end of each of the individual Specification Sections.

I. SPECIFICATIONS FOR 24', 12 PASSENGER FRONT LIFT METAL BUS

J. SPECIFICATIONS FOR 24', 12 PASSENGER REAR LIFT MFSAB

K. SPECIFICATIONS FOR 24', 15 PASSENGER REAR LIFT COMPOSITE BUS

L. SPECIFICATIONS FOR 24', 15 PASSENGER REAR LIFT METAL BUS

M. SPECIFICATIONS FOR 24', 20 PASSENGER FRONT LIFT COMPOSITE BUS

N. SPECIFICATIONS FOR 26', 20 PASSENGER FRONT LIFT METAL BUS

O. SPECIFICATIONS FOR 45', CNG MOTOR COACH

P. SPECIFICATIONS FOR ADA MINIVAN

Q. SPECIFICATIONS FOR ADA PURPOSE-BUILT LOW FLOOR VEHICLE

R. SPECIFICATIONS FOR LOW FLOOR KNEELING ADA CUTAWAY BUS

S. 2014 FTA SPECIAL PROVISIONS

**SECTION “T”
SPECIFICATIONS FOR
24’ 12 PASSENGER, FRONT LIFT METAL
TRANSIT VEHICLE**

GENERAL DESCRIPTION

It is the intent of these specifications to set forth minimum standards for the procurement of a light transit vehicle that complies with Title 49 Code of Federal Regulations, part 38, subpart B, entitled “Americans with Disabilities Act (ADA) Accessibility Specifications for Buses, Vans and Systems”. All dimensions and equipment shall comply with the standards as set forth within the 49 CFR. The vehicle shall be new, the most current production model available, and must be complete with manufacturer’s standard equipment and accessories, fully serviced and ready for operation. The vehicle shall be equipped to meet all Federal Motor Vehicle Safety Standards and Procedures (FMVSSP) that apply. If these specifications contradict any listed in the Federal Regulations, they are superseded by those of the Federal Regulations

To take advantage of administrative and cost savings and to ensure that all federal requirements are met, this procurement is assignable to other agencies, organizations and Tribal Governments funded by the Federal Transit Administration.

NOTE:

Any Brand names and specifications mentioned within this document are for reference only. Proposalss will only be considered when brochures/specifications are included for each component provided with Proposals for evaluation.

I. DELIVERY:

Vehicle must be delivered at a maximum of 120 calendar days from the date a Purchase order is issued. Pre-delivery servicing and adjustments: prior to acceptance by the purchaser, the vendor shall service and adjust each vehicle for operation. This process shall include but not be limited to the following:

1. The vehicle must have a full tank of fuel when delivered.
2. Each bus shall be designed to facilitate the disassembly, reassembly, servicing or maintenance thereof by use of tools and items that are normal and available as commercial standard items. The body and structure shall be designed for ease of maintenance and repair.

3. All parts added, as part of the modification process shall be new.
4. Headlights properly aligned
5. Engine Tuned
6. All accessories properly adjusted
7. Electrical, braking and suspension systems inspected
8. Both batteries Charged
9. Front-end alignment must be done after body is put on chassis. Chamber, caster and toe must be adjusted to the center of OEM specs. Ford chassis buses must have adjustable caster, camber bushings installed. Standard OEM bushings will not be accepted. Each bus must come with documentation stating before and after actual alignment readings of bus.
10. All wheels balanced, including spare
11. All lubricants checked, and greased if needed
12. Cooling system serviced with permanent type anti-freeze and summer coolant for minus 20 degrees F (-28.888C).
13. Warranty papers and owner's guide
14. Exterior and interior cleaned and washed.
15. Odometer cannot exceed 3,000 miles at the time of delivery of completed buses to the purchasing agency. There will be a charge of one dollar (\$1.00) per mile for each vehicle with an odometer reading in excess of 3,000 miles payable to the purchasing agency at the time of delivery.
16. Under no circumstances are tow vehicles to be attached to any buses.
17. Each vehicle must be delivered to the agency submitting the P.O.

Copies of the all Certificate of Origins and signed invoices must be sent to the organization named on the purchase order before delivery is made and must be delivered with the vehicle: receipt of these after delivery **is not acceptable**.

NOTE:

- If these specifications contradict any listed in the Federal Regulations, they are superseded by those of the Federal Regulations.

II. NO PROTOTYPES:

Must be a Current production Model, B Pillar type bus that has been in Production for a minimum of one year.

III. BODY STRUCTURE:

The vehicle shall have a purpose-built body, which will provide for a minimum floor to ceiling distance of 76" at the center aisle.

- The floor frame must be welded or bolted to the sidewall frame, and the sidewall frame must be welded or bolted to the roof frame.
- Steel roll cage must form a complete Unitized body and a steel support cage behind front and rear cap to prevent flexing. All steel joints must have gussets for additional strength. All steel parts shall either be galvanized, powder coated or primed to prevent rusting.
- Composite construction is **not acceptable**.
- Construction methods utilizing double-sided tape to secure sidewall skin will **not be accepted**.
- If utilizing aluminum for the roof or sidewall skin it must be a minimum of .060" thick **with AZDEL SuperLite backing or equivalent**.
- All surfaces and hardware having sharp edges, corners, or angles that could cause injury shall be covered and padded with heavy-duty vinyl-foam type material.
- The roof will be constructed of the same reinforced materials as the body of the vehicle and of sufficient strength to prevent vibration, drumming and flexing.
- If exterior roof or sidewall skin is made of Fiberglass it must be a Minimum of 3/16" thick this is not including any FRP, Luan, plywood or foam backings.

Fiberglass Roof must be a one piece molded unit that has molded sides to connect to side walls. Bending a flat sheet of fiberglass to connect to walls is **NOT ALLOWED**.

If exterior roof or sidewall skin is made of Galvanized steel it must be a minimum of .024" thick with **AZDEL SuperLight backing or equivalent**.

- Roof design shall prevent pooling of water on the roof.

IV. OEM CHASIS FRAME:

The rear overhang, measured from the center of the rear axle to the outer edge of the rear bumper, cannot exceed 1/3 of the overall vehicle length.

- Further, ODOT will not allow re-certification of the chassis OEM GVWR and GAWR.
- Any vehicle that exceeds the OEM GVWR and/or GAWR **will not be accepted**.

NOTE:

Supplier must provide detailed documentation if chassis modification must be made to accommodate length of wheelbase from OEM.

- This documentation shall include, but not limited to : (type of modification, frame supports, out sourcing of frame work, drive shafts, or quality control).

V. DOORS:

Passenger Entry Door:

Passenger entry door must have a Two (2)-panel door design providing a minimum 32" X 80" clear opening. **A&M door actuator, or equivalent.**

- Door is located in coach body and electrically power operated controlled by the driver.
- Each door panel shall be actuated together by a single electric powered overhead actuator.
- Actuator is equipped with an emergency manual release lever.
- Vertical door shafts shall be an integral part of the door panels.
- The top portion of the shaft shall be designed to prevent door panels from rotating out of alignment.
- Shafts shall pivot on a top-mounted, bronze thrust bushing and a lower stud-mounted alignment pivot, accommodated with a glass-filled molded bearing equal to **A&M door actuator, or equivalent.**
- Perimeter door edges shall be sealed with neoprene 2" leading edge seals.
- Seals shall overlap front and rear to provide an air and watershed.
- Upper and lower edges of doors shall be tightly sealed against entrance of air drafts and water, including spray from vehicle washing.
- Operating controls should be located within easy reach of the driver.

VI. PASSENGERS DOOR INTERLOCK:

Electric Passenger door in coach body will only work when transmission in Park.

VII. WHEELCHAIR LIFT DOORS:

A double door entrance shall be provided on the right (curb) side of the vehicle in front of the vehicle's rear wheels.

- The door opening shall be at minimum width of 48" and height of 70" to accommodate the wheelchair lift specified within this document.

- Clearance between the top of the door opening and the raised lift platform shall be a minimum of 68”.
- Each door shall be equipped with an **A.L. Hansen Type 23 Door Check or equivalent** which is a Top Mounted Spring Loaded Device that will securely hold the door in the open position while the wheelchair lift is in operation. (Sliding door is not acceptable).
- Each door must have a window which shall be the same height as the passenger windows.

VIII. COACH BODY DOOR LOCKS:

All doors shall be equipped with a lock.

IX. DRIVER’S DOOR AND CO-DRIVER’S DOOR:

- Must have Power windows, Power door locks

X. RUNNING BOARDS:

Extra Heavy-duty Running Boards that are bolted to Coach Body for added step strength

- Steps must be able to hold over 400lbs.

XI. HANDRAIL:

- Handrails (left and right) of the front passenger door shall be provided. Cross-sectional diameter of handrail shall be between 1 ¼” and 1½”.
- Entrance handrails shall not be padded.
- Must have at minimum a wall thickness of 18 gauge steel.
- Two overhead ceiling-mounted handrails with mounting brackets at 24” on centers placed over the aisle shall be provided for the full length of the vehicle’s passenger aisle way, except in wheelchair lift area and over passenger entry door.
- All handrails must be Powder coated Steel that will not rattle or Flex and mounting bolts shall be bolted into Structural steel.
- Color of Handrails shall be bright yellow (to assist the visually impaired),
- Wood mounting **is not allowed.**

XII. GRAB RAILS:

Must have grab rails with the following:

- Shall be installed in the entrance to the vehicle running parallel to the steps in a configuration which allows persons with disabilities to grasp while entering or exiting the vehicle.
- Cross-sectional diameter of grab rail shall be between 1 ¼” and 1½”
- Must be at minimum a wall thickness of 18 gauge steel.
- All Grab rails must be Powder Coated Steel that will not Rattle or Flex and mounting bolts shall be bolted into Structural steel.
- Color of grab rails shall be bright yellow_(to assist the visually impaired),
- Wood mounting **is not allowed**.

XIII. STANCHIONS:

- Must be at minimum a wall thickness of 18 gauge steel.
- All stanchions must be Powder Coated Steel that will not Rattle or Flex and mounting bolts shall be bolted into Structural steel.
- Wood mounting **is not allowed**.
- Color of stanchions shall be bright yellow_(to assist the visually impaired),
- A stanchion and vinyl padded modesty panel shall be provided at entrance door in front of first passenger seat.
- A stanchion from the floor to roof shall be installed on the interior left side of the front passenger door approximately 14 inches inside the vehicle.
- A horizontal handrail shall be installed between the stanchion and the right wall approximately 30 inches above the floor.
- A stanchion shall be located in the rear of the driver’s seat at the edge of the aisle and a handrail shall extend from the stanchion to the side wall of the vehicle behind the driver’s seat.
- The stanchion shall not interfere with a rearward travel of the driver’s power seat adjustment.

XIV. MODESTY PANEL:

- A modesty panel shall be positioned at the rear edge of the step well.
- This will be made up of a stanchion at the inner rear corner of the step well with a rail running from that stanchion to the wall at windowsill height and the modesty panel installed therein.

- Panel shall have no less than 1 ½” between the bottom of the panel and the floor to facilitate cleaning of the floor.
- Fastening of the panel shall be by bolts or rivets.

Screws **will not be acceptable.**

XV. STEPWELL:

Must be made of Galvanized, Primed or Powder Coated steel,

- Must have two steps covered with the same slip resistant floor covering as specified within this document.
- maximum 12” minimum 10” from ground to first step,
- 9” riser, Tread depth minimum 8½”.

All steps to get up to floor level must be in step well area.

XVI. INTERIOR:

All interior panels shall be vinyl coated with **AZDEL SuperLite backing, vinyl coated metal, FRP or equivalent** with same durability and cleaning ease.

Vendor shall provide a list of available colors at their quoted price and may also include a list of colors available at additional cost.

- Interior shall be trimmed with an attractive molding, covering all seams.
- All surfaces and items or hardware in passenger compartment having sharp edges, corners, or angles that could cause injury shall be padded with heavy-duty vinyl covered foam-type material.
- Door and instrument panel is to be painted or otherwise finished to match overall tones of interior panels

XVII. DRIVERS AREA:

The drivers area shall consist of an ergonomically designed molded dash console, located conveniently to the driver’s seated position and in full view of the driver.

- Supplemental control panels mounted above the driver’s head or above windshield **are not accepted.**
- All switches are to be properly labeled and illuminated.
- The instrument control panel shall be painted or otherwise finished with non-reflective, anti-glare black finish.

XVIII. STORAGE COMPARTMENT:

Vehicle must have a large overhead driver storage compartment.

- This compartment must have a lip on the inside to protect objects from opening compartment door. Also shall provide easy access to clearance lights connectors through top of Storage Compartment. And provide a door latch to hold door open.

XIX. FLOOR ASSEMBLY:

The floor shall consist of **3/4 inch Advantech Engineered flooring or equivalent with Undercoating.**

- Construction of sufficient strength and support to not allow flexing of the finished or surface floor. The chassis, body and flooring shall be attached in such a manner as to act as one unit without any movement or flexing at the joints.
- **Shall have Floor Coving material at wall.**

XX. SLIP-RESISTANT FLOOR COVERING:

Floor covering shall be slip resistant vinyl flooring, constructed with aluminum oxide, silicon carbide and optional PVC chip blended throughout a high quality vinyl wear surface.

- Top coating **is not acceptable.**
- Backing to be polyester/cellulose material with fiberglass fiber reinforced center scrim for additional durability.
- Bacteriostats will be incorporated providing all exposed surfaces with excellent anti-bacterial properties.
- Must be **Altro Chrome with a minimum thickness of 2.2 millimeters or equivalent**
- Color to be selected from current Altro color range by each agency.
- The whole floor will be a uniform thickness throughout the vehicle, eliminating the need for ribbed surfaces, while exceeding the ADA minimum slip resistance standard rating of .06 static coefficient of friction under dry or wet conditions.
- Coving material is to be installed to support floor when rolling floor covering up the sidewall of vehicle to the seat track.
- Seams must be heat welded to provide a permanent waterproof seal against water penetration leading to premature sub-floor failure or curling leading to possible tripping hazards.
- Landing area and step edgings are to be Altro yellow safety vinyl edging.

- Edging is to heat welded to the main floor and step tread to provide for a long lasting seam.
- The floor must be installed according to manufacturer's directions using proper tools, accessories and adhesives.

NOTE:

If the flooring is not installed according to the flooring manufacture (heat welded and adhesives) specifications the bus **will not be accepted**.

XXI. GAUGES:

Vehicles shall be equipped with the following needle-type gauges (lights in lieu of gauges are not acceptable): and all shall be in easy view of driver. If OEM gauges are not available then Stewart Warner gauges or equivalent shall be used.

1. OEM chassis Voltmeter Plus a Auxiliary Voltmeter Gauge
2. Oil pressure
3. Temperature
4. Fuel level
5. Speedometer
6. Odometer
7. Tachometer
8. Engine hour meter

XXII. BUMPERS:

Front and rear bumpers shall be securely fastened to the chassis frame to adequately absorb shock from impact. In no case are the bumpers to be fastened directly to the vehicle body.

- Rear bumper must be an energy absorbing Romeo Rim with Heavy Duty bumper mounting brackets that use four 7/16 grade 8 bolts per bracket or equivalent.
- Front bumper and grille shall be chrome plated.

XXIII. INSULATION:

Insulation shall be provided in both walls, roof, front cap, rear wall and roof side radius area where roof meets walls.

- Adequate insulating properties shall be provided to ensure minimum heat, cold and noise penetration into the vehicle interior.
- Insulation may be accomplished through the use of **fiberglass, vacuum design or equivalent**.
- Must have a minimum R-value of 6, and fire resistant.

XXIV. AIR CONDITIONING

- Air conditioning efficiency is of paramount concern to the purchaser. Air conditioning shall be adequate to cool both the passengers and driver areas. Only vehicles offering top of the line commercial transit type air conditioning systems will be considered.
- The vehicle's electrical system shall be designed and integrated such that ample electrical supply is provided to maintain optimum air conditioning performance without battery discharge.
- The air conditioning system offered shall have a proven transit performance record and shall be provided by a nationally recognized manufacturer of bus air conditioning.
- The OEM Dash unit and Rear Air Conditioning unit shall be two separate stand alone systems. Tying into the front OEM dash system **is not allowed**.
- Rear evaporator shall have an easy accessible return air filter; having to remove evaporator cover housing to gain access to filter **will not be accepted**.
 - The rear air conditioning system shall provide a minimum cooling capacity of 65,000 BTU/Hr.
 - **A Carrier model AC-833MAX System or equivalent.** The Combined Total cooling Capacity of the OEM dash unit and Rear Unit shall be a minimum of 78,000 BTU/hr.
 - Rear Evaporator shall have an easy accessible return air filter; having to remove the evaporator cover housing to gain access to filter will not be accepted.

The Rear A/C System must have the following specified components.

1. Carrier EM-3 Evaporator or equivalent
2. Carrier CM-3 Condenser or equivalent
3. Carrier TM-21 Compressor or equivalent
4. Carrier Flex CLICK SAE J-2064 Type E Color coded hoses or equivalent.
5. Service Ports for rear Air conditioning System must be easily accessible and located under the bus near the rear A/C Condenser.

A conventional dash mounted unit for the front of the driver's area of the vehicle. Both units shall be equipped with multi-speed fans (minimum 2 speeds).

- Evaporator fans shall produce a minimum of 1600 CFM.

The Rear system shall include a skirt mounted commercial condenser. Condenser fan(s) shall produce a minimum of 2400 CFM of airflow over the coils. All components of the condenser unit shall be coated or constructed with a corrosion resistant material to protect the unit from road salts other foreign substances that might be sprayed on the unit.

- Condenser unit shall be positioned so as not to draw air from under vehicle.

NOTE:

Air conditioning refrigerant lines, to include their foam covering, will not be exposed to road hazards or elements of the weather. All air conditioning refrigerant lines, which extend from the engine area to the rear evaporator, shall be protected from damage. And all drain lines, hoses and wiring from evaporator shall be covered from view.

XXV. VENTILATION:

Vents provided in driver area.

XXVI. HEATING:

- Front & rear heater core factory installed hot water type, of sufficient capacity to warm cabin area and clear windows of snow, ice and fog.
- An easily accessible clearly marked shut-off ¼ turn ball valves shall be installed in heater supply and return lines which will allow the water to be cut off to the rear heater core.
- The water lines for the rear heater core shall be protected from damage.

Rear heating unit shall provide a minimum of 65,000 BTU's/Hr. this is in addition to front dash unit. State BTU/HR of rear heating unit you are proposing.

XXVII. SAFETY EQUIPMENT:

All miscellaneous equipment must be secured to the vehicle and easily accessible.

1. First aid kit: (24M – National Standard School Bus Metal
 - Must be Certified Safety Mfg. Model S203-045 or equivalent.

2. Fire extinguisher – Multi-purpose Stored Pressure Dry Chemical Extinguisher.
 - Must be a **5 lb. type 3A:40B: C Pro Line, Kiddie Model # FXBND9 or equivalent.**
 - Must have a gauge to indicate state of charge and mounted to vehicle using a bracket and having a heavy duty vinyl cover.
3. Triangle warning devices (3), with storage container.
 - must meet FMVSSP # 125
4. Bloodborne Pathogens infection control kit.
 - Must be Certified Safety Mfg. Model #FK200-931, **or equivalent.**
5. Seat belt cutter

XXVIII. MIRRORS:

Exterior:

Heavy Duty Heated Power Mirrors by **Velvac Model 2020 Deluxe Head with Turn Signals or equivalent.**

- Mirrors are to be mounted to the driver and copilot doors in the same position as the OEM mirrors.

Interior:

Vehicle must have the two (2) following mirrors.

- Must be OEM Day/night, 10" rear view mirror, confirming to FMVSS No. 111. (This mirror will be deleted if purchaser chooses backup camera as an option).
- Passenger viewing and backup mirror shall be made of safety glass, having rounded corners and protective edges, and a 6" x 16". This mirror is in addition to the mirror mounted on windshield.

Fresnel Lens: 11" x 14" Lens on rear window.

XXIX. SEATS:

Driver's Seat and Co-Driver's Seat:

1. The driver seat must be a deluxe bucket, OEM high back 6-way power seat.
2. The Co-Driver's Seat must be adjustable fore and aft.
3. Seats must be padded with allergy-free material and upholstered with a durable transit quality level 5-cloth fabric.

4. Both seats must have adjustable lumbar
5. Both seats must have a certified seat belt and shoulder harness with retractor shall be attached to frame.
6. Both seats must have reclining backs and padded armrests.

NOTE:

Supplier must supply seating diagram reflecting all listed dimensions for approval.

Passenger Seats:

Seating shall be provided for twelve (12) ambulatory passengers.

- Wheelchair spaces will each be equipped with a wheelchair securement tie down and occupant restraint system, which meets the Americans with Disabilities Act requirements.
- All seats shall be “bucket” semi-contoured transit type.
- Seats are to be consistent with what is accepted as transit quality construction. School bus type seats **are not acceptable**.
- Seat frames are to be welded.
- Seats must be padded with allergy-free material and upholstered with a durable transit quality level 5-cloth fabric.

If the seating configuration being proposed is different than that shown in Figure 1, a diagram must be furnished.

- Aisle seats must have padded fold up armrests and Anti-Vandal grab handles on the seat backs.
- Seats must be **Freedman Seating Mid Back type bucket seat or equivalent**.
- Seat belts to be installed at each seat position, and must be a Retractable under Seat Retractor, type of seat belts.
- Must include Two (2) Seat Belt Extensions that will fit Passenger Seat Belts.
- A commercial quality seat belt knife fastened to bus in driver’s reach.
- All seats shall provide a minimum seat width of 17” per passenger, or 34” per two (2) -passenger seats.
- Minimum depth of seat (front to back contour) 18”
- All seats including any foldaway seats must be bolted to structural steel.

Bolting seats to plywood floor without bolting into structural steel under floor is **NOT ALLOWED**.

All seat tracks must be welded to steel sidewalls and steel floor sections. Riveting or bolting seat tracks to sidewalls is **NOT ALLOWED**.

- Seats shall be fully padded and shall be constructed with a no-sag spring bottom suspension. Plywood seat bottoms are unacceptable.
- Seats shall be covered with a durable transit quality level 5-cloth fabric.
- Seats shall be spaced on a minimum of 28 1/2" centers, allowing for a minimum of 10" between the front of the bottom cushion and the back of the next forward seat.
- Minimum aisle width shall be 16".
- All seats shall meet, as minimum, FMVSSP 302 207 requirements.

XXX. PRIORITY SEATING SIGNS:

Each vehicle shall contain sign(s), which indicate that, the row of forward – facing seats located in the front of the vehicle are priority seats for persons with disabilities, and that other passengers should make such seats available to those who wish to use them.

- The signs shall be located on the interior walls directly above the front row of forward-facing seats.
- Signs must follow FTA 49CFR38 Section 38.27 for the required lettering characters of the signs.

XXXI. LIGHTING:

All manufacturers' lighting added to the vehicle (both interior and exterior) shall be provided with light-emitting diode (LED) lights.

- Door activated 4 way flashers that are activated when passenger door is opened. This includes 2 additional amber LED flashing lights mounted high on each side of the rear wall.
- The location, type and hookup of all exterior lights and reflectors to conform to Federal Motor Vehicle Safety Standards and Procedures.
- The number of interior lights and their light output shall be determined by providing a minimum average of 7 foot-candles of illumination on a 1 square foot plane, at an angle of 45 degrees from horizontal, centered 33 inches above the floor and 24 inches in front of the seat back at each seat position.

- Floor surface in the aisles shall be a minimum of 10 foot-candles.
- Each vehicle shall be equipped with OEM daytime running lights.
- Must have Red LED lights over all emergency exits
- All interior lighting in the passenger area shall be mounted in the ceiling cove at the sidewall with a minimum of three (3) fixtures on each side of the vehicle. Lighting fixtures shall be installed on the interior walls and ceiling in a manner that does not present a head strike to the passengers.

NOTE:

All clearance lights front, rear and side shall have metal armored shields. This shall protect lights from tree limb damage.

- A.** Tail lights are to be recessed and shall not protrude more than 2 inches from the body; they shall include a pair of amber combinational hazard and signal lights. Rear tail-lamps shall also include a pair of red tail lights and red stop lights, which may be combinational. **(Ref: Dialight 46121RB-Red, 46121AB-Amber or equivalent)**
- B.** Side signal lamps, with marker, shall be provided independently or be incorporated into the center of the vehicle. Location must be above and in front of the rear wheel opening and provide visibility from behind the rear wheel opening. **(Ref.: Dialight 18001AB811 or equivalent)**
- C.** Clearance marker lights shall be installed surface-mounted, facing the front, rear, and each side at rear. **(Ref.: Dialight 15001RB, 15001AB or equivalent)**
- D.** The third brake light shall be center-mounted above the rear window, minimum 18" in length. **(Ref.: Dialight 87121RB or equivalent)**
- E.** Two back-up lights, one mounted on each side of the body rear cap. **(Ref.: Dialight 46001CB or equivalent)**
- F.** Step lighting shall be mounted to provide light for the entire step-well and an area a minimum of three (3) feet beyond the first step on the ground area outside the bus **(Ref.: Dialight 170-81CB or equal)**.
Note: The step lights shall be extinguished when the front door has closed.

G. Raised floor step lighting shall be provided by one strip light mounted in the step riser. Light strip shall be a minimum of 18 inches and recess-mounted to protect from accidental damage by passengers contacting light while using the step. **(Ref.: Dialight 87121CB or equivalent).**

H. Exterior step light shall be mounted away from wheel splash. **(Ref.: Dialight #VSW-CC-19B-35-801 or equivalent)**

I. Wheelchair lift area light shall be positioned in the manufacturer's standard location in order to illuminate the area in the immediate vicinity of the wheelchair lift platform for night operation. The light shall be automatically activated only when the wheelchair lift doors are open. **(Ref.: Dialight Light #46121CB or equivalent)**

XXXII. ELECTRICAL WIRING:

All wiring shall meet the requirements of SAE recommended practice J878a, Type SXL.

- Connections with 3 to 12 circuits shall be environmentally sealed high impact plastic connectors with pull apart locking tabs.
- All non-OEM connections containing one or two circuits shall be made with Posi-lick connectors.
- No butt connectors **will be allowed.**
- All added wiring shall be in a loom and securely clipped for maximum protection and routed in separate hangers from the heater hoses or air conditioning hoses.
- Clips shall be rubber or plastic coated to prevent them from cutting the wiring insulation.
- All electrical wiring shall be automotive stranded and sufficient size to carry the required current without excessive voltage drop and shall be color, number and function coded at a minimum of eighteen (18) inch intervals.
- No electrical, stationary or mechanical device may block the removal of the engine cover inside the bus.
- All wiring passing through the body metal shall have anti-chaffing grommets.
- Each vehicle shall contain a set of detailed system by system “as built” wiring schematics covering all electrical equipment and electrical circuits installed, complete with wiring codes for each vehicle ordered.

- Identification on the wiring diagram must tie the diagram to the bus.

XXXIII. WINDOWS:

- All windows to be of tempered safety glass and water and airtight.
- Window in driver's door, windshield and entrance door glass are all to be tinted.
- All the windows in the passenger area are to be factory-installed smoked glass with at minimum 30 percent tint. **No Add on Film**
- Windows must be a top horizontal sliding T- transit type that the ventilation openings are located at the top of the window.
- Must be constructed of corrosion resistant aluminum frames.

NOTE:

All windows and emergency exits must meet the performance and operational requirements as outlined in the Federal Motor Vehicle Safety Standards and Procedures.

XXXIV. EMERGENCY EXITS:

- At least one (1) window on each side at or near the rear of the vehicle shall be equipped with emergency release latches to provide emergency exits.
- Release instructions shall be provided at or near the release handles and an audible alarm shall be installed near the driver, which will be activated when the window is released.

XXXV. BACK-UP ALARM:

Alarm shall be waterproof **ECCO #530 or equivalent**.

- Must be mounted in the rear of the vehicle
- Must be readily audible outside the vehicle when the transmission is in reverse.

XXXVI. WHEELCHAIR LIFT:

An electric powered hydraulic wheelchair lift shall be installed inside the vehicle at the side door.

- Bus must meet FMVSS 403-404 lift installation requirements.
- Wheelchair lift shall meet the following MINIMUM requirements.

1. **A Braun wheel chair Lift NL919FIB-2 (Millennium-2 Series) or equivalent.** Ground cable from lift must be connected to vehicle frame.

Connecting ground cable to lifts mounting bolts **is NOT ALLOWED.**

- (a) 800 pound load capacity lifts assembly.
- (b) An electric hydraulic pump, powered by vehicle's electrical system.
- (c) Platform dimensions 34" wide by 51" long.
- (d) Platform to be constructed of 11 gauge expanded metal.
- (e) Platform shall be stored in an upright position within the vehicle.
- (f) Powered operation for (1) unfolding and folding the platforms and (2) raising and lowering the platform.
- (g) Emergency platforms release to permit the platform to be unfolded manually and lowered by gravity.
- (h) To prevent the wheelchair from rolling off, a barrier 1 ½" at minimum shall be provided on the outer edges of the platform and have an outboard roll stop that engages and locks before the platform leaves the ground to form a safety barrier when platform is raised or lowered
- (i) A free floating bridge plate will be replaced between the lift platform and the vehicle. This bridge plate will be hinged in a manner to permit upward movement should a person's foot become entangled.
- (j) Lift shall be securely bolted to the floor and floor reinforced as necessary to support the load.
- (k) To permit the lift platform to be raised without electrical power, a hand pump that allows the operator to raise the platform shall be installed.
- (l) An interior light shall be provided to illuminate the lift area;
- (m) All moving parts likely to cause personal injury shall be shielded.
- (n) Working parts, such as cables, pulleys, and shafts, which can be expected to wear, and upon which the lift depends for support of the load, shall have a safety factor of at least six, based on the ultimate strength of the material. Nonworking parts, such as platform, frame, and attachment hardware, which would not be expected to wear, shall have a safety factor of a least three, based on the ultimate strength of the material.
- (o) Lift shall be installed as specified by the manufacturer and shall be thoroughly tested prior to delivery.
- (p) Repair manual, parts list and instructions for adjusting hydraulic valves and electrical equipment shall be provided.
- (q) Lift controls shall be interlocked with the vehicle brakes, transmission, or door, or shall provide other appropriate mechanisms or systems to ensure that the vehicle cannot be moved when the lift is not stowed and so the lift cannot be deployed unless the interlocks or systems are engaged.

- (r) The left control cord must be secured in a manner not to interfere with the door being closed.

XXXVII. USE BY STANDEES:

Lift shall accommodate persons using walkers, crutches, canes or braces or who otherwise have difficulty using steps. The platform may be marked to indicate a preferred standing position.

XXXVIII. HANDRAILS

Platform on lift shall be equipped with handrails on two sides, which move in tandem with the lift, and which shall be graspable and provide support to standees throughout the entire lift operation.

- Handrails shall have a usable component at least 8" long with the lowest portion a minimum 30" above the platform and the highest portion a maximum 38" above the platform.
- Capability of withstanding a force of 100 pounds concentrated at any point on the handrail without permanent deformation of the rail or its supporting structure required.
- Cross-sectional diameter of handrail shall be between 1 ¼" and 1½", and shall have eased edges with corner radii of not less than 1/8".
- Handrails shall not interfere with wheelchair or mobility aid maneuverability when entering or leaving the vehicle.

XXXIX. WHEELCHAIR SECUREMENT:

- Wheelchair parking space shall have clear floor area of 30" wide by 52" long and be equipped with a four-point wheelchair securement tie-down.
- Occupant restraint system must be **Q'Straint Q-8306-SC or equivalent**. Shall have a Retractable lap/shoulder belt combo with a Retractable height adjuster that are anchored to floor and wall with L Tracks that meet SAE J2249 and ADA requirements.
- Tracks shall be recessed into the floor and not shift position under anticipated loads. Any tracks overlapping the access path must be flush with the floor to prevent passengers from tripping.

The L tracks and Slide N Click anchors must be bolted to structural steel.

- Bolting to plywood floor without bolting into structural steel under floor **IS NOT ALLOWED**.

- Wheel Chair Securement system must be **Q'Straint QRT MAX Automatic Retractor System Q-8306-SC with Slide N Click anchorage system and J-Hooks, or equivalent.**
- There must be 52" at minimum and 54" maximum measured from center to center between front and rear Slide N Click anchor points. And be fully assembled and ready to use.
- Must have securement pouches attached to wall to store wheelchair securement tie-downs.
- Must include eight (8) **Q'Straint Q5-7580 Webbing Loops or equivalent** for Securing Scooters. Wheelchair location must be in the rear of bus, one beside the other.

NOTE:

Each wheelchair securement location shall have sign designating it as such. Lettering size and type on these signs shall comply with the Americans with disabilities Act Regulations,

XL. WHEELCHAIR ACCESSIBILITY SYMBOL:

The vehicle will display the international wheelchair accessibility symbol of a person in a wheelchair that is outlined in white on blue background.

- This symbol will be placed on all four sides of the bus.

XLI. VEHICLE COLORS:

Body: Vendor to supply list of colors and prices available.

XLII. WINDOW BLACKOUT PAINT:

Bus must have window blackout paint.

NOTE: See Figure 2

XLIII. COLOR OF SEATS:

Proposals must include all colors available

- Successful vendor shall coordinate with the agency issuing this purchase order in the selection of material and color of the seats.
- Seats shall be fully padded.

XLIV. VEHICLE FLOOR PLAN:

A proposed floor plan including all pertinent interior dimensions such as overall length, width, distance between seats, etc.,

- Shall be submitted with the proposal.

XLV. CHASSIS SPECIFICATIONS:

Supplier must list chassis specs must be listed the spaces provided in the attached response sheet.

Overall vehicle length:		282" minimum 307" maximum
Width:	Exterior	95" minimum
	Interior	91" minimum
Height	Exterior	105" minimum 124" maximum
	Interior	76" minimum
Wheelbase		176" minimum 190" maximum

GVWR, axle, spring and tire:

14,500 lb. GVWR minimum

Front axle- 5,000 lb. GAWR minimum

Rear axle – 9,500 lb. GAWR minimum

(Dual wheel are required on rear axle.)

Front springs – heavy duty, 5,000 lb minimum

Rating combined at ground.

Rear springs – heavy duty, 9,500 lb minimum

Ratings each, at ground.

NOTE:

It is the Supplier's responsibility to calculate the actual loaded weight, spring and axle ratings so that the vehicle is engineered for safety.

XLVI. TIRES:

Tire size must meet 14,500 GVWR minimum and must be steel radial with "E" load rating.

- Steel or brass valve stems 1.5" in length shall be used on all wheels with elbow extensions on the inside rear dual for access.
- Stainless steel or brass valve caps with an inner air seal shall be used.

- One mounted spare tire and wheel to match existing tires/wheels to be shipped loose.

XLVII. ENGINE: GASOLINE:

Minimum – (6.8 liter) displacement.

- Must Have a CNG Capable Engine with hardened intake and exhaust valves with hardened intake and exhaust valve seats Ford Option # 91G.

XLVIII. RADIATOR:

Heavy Duty, with factory installed recovery system.

- The cooling system must be winterized with ethylene glycol for temperatures to –20 degrees F (-28.8889 C).

XLIX. TRANSMISSION:

At minimum, heavy-duty 5-speed automatic with overdrive, lock-up converter, lock in park and a heavy-duty auxiliary transmission cooler.

L. WHEEL WELLS:

The wheel housing shall be of sturdy heavy-duty construction of a minimum 14 gauge galvanized steel or stainless steel and provide ample tire clearance during all operating conditions.

- Fender and splash aprons (underskirt) of durable construction shall be provided so as to provide maximum deflection of the wheel splash.
- There shall be sufficient clearance to enable easy removal of wheels mounted with inflated tires.

LI. REAR FENDER FLARES:

Must have Rubber or Fiberglass Fender Flares.

LII. DRIVE SHAFT:

Drive shaft must be properly supported, balanced and guaranteed not to vibrate. Each drive shaft shall be equipped with a protective metal guard or guards to prevent whipping through the floor or dropping to the ground in the event of a tube or universal joint failure, or if the drive shaft breaks.

LIII. WHEEL COVERS:

Bright Metal Stainless Steel Wheel inserts.

LIV. BRAKES:

Two (2) braking systems are required. Service brakes shall be dual hydraulic, disc front and disc rear.

- The parking brake system shall be operated by a cable to the rear wheels, or Drive Shaft Drum Brake.
- The braking system shall be adequate for the GVWR of the vehicle.

LV. GEAR RATIO:

Must be a 4:56 gear ratio

LVI. FUEL CAPACITY:

Must be at minimum of 55 gallons

LVII. FUEL PUMP ACCESS DOOR:

An aluminum diamond plate access door shall be provided in the floor of the vehicle above the fuel tank to allow the fuel pump to be serviced without removal of the tank.

NOTE: Door must be Large enough and centered over fuel pump to allow easy removal of pump.

LVIII. SHOCK ABSORBERS:

Must have heavy duty, front and rear shock absorbers.

- Rear Shock Absorbers upper mounting brackets **shall not be covered** by any Body Braces that would prevent easy access to Upper Shock Mounting Bolts and Nuts.

LIX. SUSPENSION

Rear shall have Leaf Springs.

- Right rear shall have an extra leaf to compensate for weight of wheelchair lift.

LX. STEERING:

- Must have power-assisted steering
- Must have tilt wheel,
- Must have factory installed cruise control.

LXI. AIR CLEANER:

Must have a heavy duty, dry type air cleaner

LXII. OIL FILTER:

Must have a heavy duty, throw away type oil filter.

LXIII. ALTERNATOR:

Vehicle shall have Ford OEM 225-amp Alternator or equivalent.

LXIV. BATTERIES:

Two (2) heavy duty, maintenance free, minimum 650 CCA at 0 degrees F (-17.778 C) Batteries must be wired together in a parallel circuit to increase total battery capacity.

- Front OEM battery must have OEM type battery hold down brackets to securely hold battery in place.
- Instep Battery Box that is bolted down securely and must be sealed to keep mud and debris from getting on Rear Coach Battery.
- Battery must be bolted within this instep box. Cloth holds down straps are **not ALLOWED**.
- Battery box must be sealed to keep mud from getting on batteries.

SEE FIGURE 4 & 5

LXV. GROUNDS:

A ground of the battery cable size, shall be installed between the engine and chassis frame.

- The vehicle body shall be properly grounded to the chassis frame at least 2 (two) places.
- Engine and body grounds shall be installed to handle subsystem electrical capacity.
- Grounding wires fastened to the frame shall use a bolt with a nut installed in a proper sized hole with dielectric compound applied to the cleaned surfaces, bolt, and cable end.
- Lift pump motor shall be grounded directly to chassis frame using a cable of the same size as the pump motor feed wire.
- All exterior lights and accessories added by the body manufacture shall be grounded by an in harness ground attached at a fuse panel common grounding point.
- For all ground wire connections paint shall be removed at the grounding point to provide a surface, cable end, bolt, and nut where each positive or grounding cable is attached.

LXVI. STABILIZER BAR:

Heavy Duty Front and rear

- LXVII. HORN:**
Must have a dual, electric horn.
- LXVIII. SIGNAL:**
Directional and self-canceling with hazard warning flashers.
- LXIX. TOW HOOKS**
Shall have 2 tow hooks on Rear.
- LXX. WINDSHIELD WIPERS:**
Minimum two speeds with intermittent feature and washer.
- LXXI. KEYS**
Vehicle must include three (3) sets of keys for the entire bus.
- LXXII. RADIO:**
Must have an AM & FM CD radio
- Radio must be of same manufacture as chassis. Radio must be mounted in the Chassis OEM Location in dash.
 - Must have a minimum of six speakers two (2) OEM speakers in front chassis doors. The coach body's four (4) speakers shall be a **3-way Kicker KS Series Model KS6930 or equivalent.**
- LXXIII. PAINTING, DECALS AND MONOGRAMS:**
All signs required by State and federal law shall be affixed to each vehicle exterior and interior.
- It is up to the bus dealer/manufacture to add such signs and decals upon delivery of vehicle.
 - No decals, name plates, or painted identification of the bus dealer/manufacture are to be added to the vehicle.
- LXXIV. UNDERCOATING:**
Floor and wheel housing, anti-rust factory installed.
- LXXV. WARRANTY REQUIREMENTS:**
The contractor warrants and guarantees to the original Procuring Agency each complete bus and specific subsystem and components for 100% parts and labor as follows:
- OEM standard factory warranties for chassis and engine.

- Complete bus body and body structure, exterior, wiring, flooring installation, and paint are warranted to be free from defects, related defects and to maintain structural integrity for a period of Five (5) year or 100,000 miles.
- Add-on components shall have component manufacture's standard warranty.
- Warranty shall begin on the date that the vehicle delivery is accepted by the agency issuing the purchase order.
- The wheelchair lift shall have a five (5) year unlimited mileage and unlimited cycles.
- The air-conditioning system shall have a minimum 2 years unlimited mileage.
- The Chassis powertrain should be warrantied for a five (5) years or 100,000 miles.

Any parts under warranty must be available and delivered to the purchasing transportation provider or their repair shop within 5 days of the time they requested/ordered them. The bus vendor/manufacture shall bear all reasonable financial costs of shipment of parts.

The warranty, as well as any recall notifications, shall cover each vehicle of the ultimate purchaser or recipient agency. The vendor shall provide a copy of any recall notice to the purchasing agency.

LXXVI. BUS TESTING:

Certification shall be provided that in accordance with 49 CFR Part 665,

- Bus Testing, the vehicle either does not need to be tested (with justification specified for exemption) or has been tested at the bus testing facility and a test report is included.

LXXVII. BUS WATER TESTING:

The roofs, windows, windshield and all doors of all coaches shall be water tested, as follows:

- The waster test shall consist of a series of nozzles that are strategically located around the perimeter of the vehicle so as to the nozzles spray water over the entire surface of the vehicle.
- The nozzles shall eject a volume of water no less than 2.6 gallons per minute under a pressure of no less than twenty-two (22) pounds per square inch measured at the nozzle tip.
- There shall be no less than twenty (20) nozzles installed in the water test area, each capable of directing a force of water as indicated above.

- The Vendor/Manufacture shall be required to water test each vehicle, under the conditions set forth above, for no less than five (5) minutes, in order to determine whether or not there are any body leaks at the window areas, door areas, roof panels, etc.
- The Vendor/Manufacture shall take the necessary corrective action when body leaks are found to exist as a result of the above test, and conduct a second water test to recheck for body leaks following corrective action.

LXXVIII. ALTOONA TESTING:

Vehicle must be tested in the 7-year/200,000 mile category at the Altoona Bus Testing Facility in Duncansville, PA. And a copy of the full report **must be submitted with the Proposals.**

LXXIX. GENERAL:

All equipment cataloged as standard for the basic vehicle, unless superseded by these specifications, must be furnished and included in the purchase price of each vehicle. Complete printed specifications, published literature, and photos, or illustrations of the basic units that the Supplier proposes to furnish with this Proposal must accompany each Proposal.

LXXX. QUALITY OF MATERIALS:

Welding procedures and materials shall be in accordance with standards of the American Society of Testing Materials and the American Welding Society. All visible welds shall be grounded smooth. Where metal is welded, the contact surface shall be free of scale, spatter, and grease and shall be treated to preclude rusting.

LXXXI. PUBLICATIONS AND PRINTED MATERIALS:

Each vehicle shall have a complete set of operation, quality assurance, and warranty publications.

The information shall be organized in a three ring binder format with each sections clearly identified.

1. As built wiring diagram and as built parts manuals for body and all auxiliary equipment.
2. Maintenance and inspection schedule incorporating the required maintenance and inspection of the basic vehicle and its sub-systems.
3. Operator's manual: A complete operations manual and troubleshooting guide with a detailed manufacturer's parts list that covers the conversion features on the vehicle as listed in this specification. The manual will

provide complete, comprehensive instructions for the wheelchair accessories, wheelchair list deployment, air conditioning system, tie downs, heater, deployment of seats, wiring diagram and related equipment.

4. Warranty papers for chassis, body, and additional equipment.
5. Warranty Information: Each vehicle must have a published listing of contractor warranty repair locations, including address, telephone number, and contact names for the State of Oklahoma.

LXXXII. PRE-AWARD AUDIT:

The vehicles are not considered delivered to the purchasing agency until the required FTA documents are completed by a Government Official.

A Pre-Award Audit shall be conducted to determine if the bid proposal specifications. The Supplier shall submit documents, which include certification of the manufacturer's compliance with the Federal Transit Administration (FTA) Pre-Award Buy America Audit Requirements. The document submitted shall include the following information for each major component used on vehicle :

1. Name and address of each supplier.
2. Cost of each major component and subcomponent. In order to protect proprietary information, the document may reflect the percentage of total cost each item represents instead of the actual cost.
3. Country of origin of each major component and subcomponent.
4. Name and address of company where final assembly occurs.
5. Cost of final assembly
6. Signature of authorized representative of vehicle manufacturer.

LXXXIII. POST- DELIVERY AUDIT:

A Post Delivery Audit of the vehicle(s) shall be conducted at the purchaser's facility, to determine that the completed vehicle(s) meets specifications.

Once this process has been satisfactorily completed, the vehicle(s) shall be considered acceptable.

LXXXIV. ACCESSIBILITY REQUIREMENTS:

When submitting a Proposal for an accessible vehicle for the disabled, the vendor shall provide a list of the vehicle related equipment illustrating the component cost and related installation charges. The purpose of this list is to reflect an accurate cost for those vehicle related items, which are required to make the vehicle accessible to the disabled.

LXXXV. ACCEPTANCE OF VEHICLES:

Upon delivery at the designed location specified within this document the final acceptance will occur after the vehicles have been inspected, road tested and all FTA required post audit delivery requirements have been meet.

- All vehicles shall be insured by the Supplier until the post audit delivery has been conducted at minimum.

SPECIFICATIONS FOR OPTIONAL ITEMS:

1. CNG CONVERSION FORD CHASSIS

OEM engine shall be converted to operate on dedicated CNG. A WESTPORT/BAF Cal Comp System or approved equal shall be provided. System shall be CARB and EPA certified, OBDII compliant, and fully integrated into the OEM powertrain control system. No additional control module will be accepted. Dual fuel systems will not be accepted. System must comply with the following:

- a. Closed-loop fuel control
- b. Sequential fuel injection (SFI)
- c. Optimized ignition timing
- d. Must maintain original fault codes (DTCs)
- e. Diagnostics accessed through DLC using original scan tool or any generic OBD-II scanner
- f. CNG system shall be covered by 3 year/50,000 mile warranty and cannot void the OEM powertrain warranty.
- g. The minimum CNG tank capacity on the mini-buses should be 39 Gasoline Gallon Equivalent
- h. CNG interlock – Engine will not run when filling CNG tanks.
- i. Must provide a detailed floor plan of the placement of the CNG tanks.
- j. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

2. CNG BIFUEL CONVERSION FORD CHASSIS

OEM engine shall be converted to operate on CNG and Gasoline. System shall be CARB and EPA certified, OBDII compliant, and fully integrated into the OEM powertrain control system. No additional module will be accepted. System shall be capable of switching between CNG and

Gasoline. The Gasoline fuel tank will be installed as per OEM specifications. The system must comply with the following:

- a. Closed-loop fuel control
- b. Sequential fuel injection (SFI)
- c. Optimized ignition timing
- d. Must maintain original fault codes (DTCs)
- e. Diagnostics accessed through DLC using original scan tool or any generic OBD-II scanner
- f. CNG system shall be covered by 3 year/50,000 mile warranty and cannot void the OEM powertrain warranty.
- g. The minimum CNG tank capacity on the mini-buses should be 29 Gasoline Gallon Equivalent
- h. Must provide a detailed floor plan of the placement of the CNG tanks.
- i. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

3. DEDICATED PROPANE AUTOGAS INJECTION

The system shall be a Roush CleanTech System or approved equal. The system must be CARB, EPA certified, and OBDII Compliant. The system shall have the following system components:

- a. PCM Calibration
- b. Billet aluminum high-pressure fuel rail.
- c. Appropriate fuel injectors
- d. Appropriate fuel lines
- e. Appropriate OEM engine prep package
- f. Coverage of Five (5) year/ 60,000 mile warranty.
- g. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

4. DUAL FUEL VEHICLE PROPANE AUTOGAS INJECTION

System shall be a Roush CleanTech System or approved equal. The system shall be a Roush CleanTech System or approved equal. The system must be CARB, EPA certified, and OBDII Compliant. The system shall have the following system components:

- a. PCM Calibration
- b. Billet aluminum high-pressure fuel rail.
- c. Appropriate fuel injectors
- d. Appropriate fuel lines

- e. Appropriate OEM engine prep package
- f. Coverage of Five (5) year/ 60,000 mile warranty.
- g. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

5. BACK-UP MONITOR SYSTEM:

ASA Voyager AOM562A or approved equal with a 5.6" color LCD screen mounted on rear view mirror OEM Bracket. With a rear mounted outside backup camera and a second inside front mounted camera to view passengers.

6. TWO-WAY RADIO SYSTEM: UHF:

ICOM F221 UHF two-way Radio System with a PCTEL MUF4505 UHF antenna and coax or approved equal.

- Antenna shall be mounted on an L bracket on fender opposite of OEM AM/FM radio antenna.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for the agency issuing this purchase.

7. TWO-WAY RADIO SYSTEM:

ICOM F121 VHF two-way Radio System with a PCTEL MHB5800 VHF antenna and coax or approved equal.

- Antenna shall be mounted on an L bracket on fender opposite of OEM AM/FM radio antenna.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for the agency issuing this purchase.

8. TWO-WAY RADIO SYSTEM: 800 MHZ

Kenwood TK-980 800 mhz two-way Radio System with a PCTEL MUF8003 antenna and coax or approved equal.

- Antenna shall be mounted on an L bracket on fender opposite of OEM AM/FM radio antenna.
- Radio must be mounted in an easy accessible location for the driver.

- Radio must be programmed with the correct Frequencies and the antenna tuned for agency issuing this purchase.

9. DRIVER'S SHIELD:

A clear Plexiglas barrier shall be erected behind the driver and extend from the stanchion crossbar behind the driver up to the ceiling.

- This shield start at the wall on the driver's left side (close enough to prevent a passenger from reaching through to the driver) and should extend 3 inches past the right side of the driver's seat, but shall not obstruct the view from the rear view mirror.
- This barrier shall consist of clear Plexiglas and shall be at least ¼ inch thick.
- A 1 ½ inch clearance between the stanchion and barrier should be provided to allow a hand hold on the right side.

10. PAINTED LOWER SKIRTS

Paint to purchaser's color specs.

NOTE:

See Figure 2.

11. OUTSIDE PASSENGER DOOR SWITCH:

Outside keyed electric passenger door switch outside. Switch must be water proof.

12. BUS CAMERA SYSTEM:

- **REI Bus-Watch R4001 with 500GB Hard drive and four cameras or approved equal.** Successful vendor shall coordinate with the agency issuing this purchase for location of Camera's.

NOTE:

See Figure 3 for camera type and location of cameras.

13. FABRIC INSERT ON CEILING

Must match seat fabric and pattern.

14. STREET SIDE EXHAUST

Exhaust to be turned out opposite side of Wheel Chair lift

15. INTEGRATED CHILD SEAT:

Integrated Child Restraint Seat must be a **Freedman Seating ICS-10 or equivalent**

- Must have an integrated 4-point safety harness. for children 22-78 Lbs with under seat retractor seat belts for adults

16. VINYL SEATS:

This will be a price deduction from the durable transit style level 5 cloth fabrics.

- Vinyl deduction is for passenger seats only
- Pilot and co-pilot seats shall be durable transit quality level 5-cloth fabric

17. PUBLIC ADDRESS SYSTEM:

A public address system shall be installed with a hand held microphone.

- The system shall include a solid-state amplifier of sufficient power and quality that the operator's voice can be clearly heard without distortion.
- The amplifier shall be firmly secured in a protective area.
- The PA system shall use the vehicles 6 speakers for sound.
- A power switch for the PA system shall be mounted on the dash to provide operation for the inside and amplifier off.
- Any noise suppression due to alternator, lighting, engine or other source is required of the contractor.

18. PASSENGER SIGNAL SYSTEM PULL CORD:

The Stop Request system shall have the following features:

- Separate provisions for W/C passengers and ambulatory passengers to signal a Stop request.
- Must use a yellow pull cord run below the windows for the ambulatory request and a large yellow push pad mounted at least 15" above the floor, but not more than 48". There must be a touch pad per W/C space for the passengers to signal a stop request.
- The driver should have a means of telling if a W/C passenger has signaled. There must be a Blue dash light to signal a W/C passenger request and a RED light to signal an ambulatory passenger request.
- The "Stop Request" lighted sign should show if a W/C passenger has signaled; the sign shall be a universal W/C symbol which lights in blue.
- There shall be an audible signal when a stop is requested and must be able to be heard by the driver.

- Once the pull cord is pulled, the sign will light, the driver's red light goes on, and a chime sounds. The sign will stay lit until the bus is stopped and the entry door is opened. The system automatically re sets itself
- When the W/C passenger signals a stop request, the W/C portion of the sign lights, the chime sounds, and the blue light on the dash goes on. The sign will stay lit until the W/C lift is deployed and then stowed and the W/C door is closed again.

19. PASSENGER STOP REQUEST SIGNS:

Passenger stop request sign must be **Transign, or equivalent**.

- The signs must be back-lighted stop requests and shall be mounted overhead on the front ceiling end closure.
- The sign shall be so designated as to remain illuminated when activated (by the passenger signal system) until it is extinguished by opening the door.

20. FARE COLLECTION BOX:

Fare collection box must be **GFI Genfare "Cents a bill" farebox or compatible**.

- With this option, the mounted fare box will eliminate the front passenger seat and make the bus a 14 passenger.
- Also must have the OEM Co-Driver seat covered with same fabric as the other passenger seats shipped loose with the bus. Co-Driver door shall have the same type of running board as driver's door.

21. DESTINATION SIGNS:

Destination signs must be **Twinvision, or equivalent**. The automatic electronic destination sign system shall be furnished on the front and on the right side near the front door of the vehicle. Display areas of destination signs shall be clearly visible in direct sunlight and/or at night. The sign system shall provide optimum visibility of the message display units for passengers and shall meet applicable ADA requirements defined in 49 CFR, Part 38.39. Destination signs shall be installed in such a manner as to facilitate easy access for replacement of the entire sign assembly, or components such as fluorescent lamps/LED's and electronic control modules, from inside the bus within 30 minutes by a mechanic. Lamps and associated parts shall be commercially available.

Destination messages, route designations, and public relations messages shall be independently selectable via a single Operator's

Control Panel (OCP) which shall include a display monitor. The OCP display monitor readout shall show the exact information displayed on the destination signs. The OCP shall be conveniently located for the bus operator and mounted in such a manner that will not pose any safety hazard. The OCP shall utilize a durable weatherproof keypad with tactile feel for destination message control functions.

The destination sign system shall be capable of programming 10,000 message lines. The number of public relations messages shall be limited only by the remaining number of message lines not used for destination purposes. Sign displays shall have alternating message capability with programmable blanking time between message lines as may be required. Variable blanking times shall be programmable between 0.5 to 25 seconds in duration. Each line message or blanking time for each message shall be individually programmable. The message display units shall incorporate an automatic blanking feature that will cause the display area to blank within 30 seconds of the bus master power switch being turned off.

An emergency message shall be initiated by the closure, or opening, of a dry contact switch or relay. The emergency message shall be displayed on the exterior of the bus only. The OCP shall not display the emergency message. The destination sign shall automatically resume normal operation when the remote emergency switch is returned to its normal position.

Destination Sign Programming: The electronic sign system shall be programmable via an integral connector located in the front destination sign area. Software shall be furnished for programming the sign system via an IBM-compatible, laptop computer. Software shall be capable of providing a high degree of flexibility to create, or select preprogrammed, fonts and graphic displays. The sign shall have the capability of being programmed in the field using a PC or field programmer. Message program information shall be transferable to and/or from the field programmer device as specified by the transit system in attachments to Part 5: Technical Specifications.

The destination sign compartments shall be designed to prevent condensation and entry of moisture and dirt. Additional provisions shall be included, if necessary, to prevent fogging of both destination sign compartment window and glazing on unit itself. Access shall be

provided to allow cleaning of inside of destination sign compartment window and unit glazing.

A complete listing of destination sign readings for initial sign programming by the manufacturer are provided in attachments to Part 5: Technical Specifications.

Front Signs:

Sign Size:

A 16 Row by 148 Column Spectrum Route Multi-Color Sign that shall have no less than 3,264 LEDs with a message display area of not less than 8.0 inches high by not less than 64.6 inches wide. The LEDs displays shall consist of red-blue-green LEDs and amber colored LEDs. The color LEDs shall be rated by their manufacturers for a life expectancy of 50,000 hours to 100,000 hours and shall support up to 27 colors.

Sign Readability:

The destination message shall be readable by a person with 20/20 vision from a distance of 250 feet. The sign shall have an equal readability at 65 degrees on either side of the line perpendicular to the center of the mean plane of the display. The entire display area of all signs shall be clearly visible and readable both in direct sunlight and at night.

Side Signs:

Sign Size:

An 8 Row by 96 Column Spectrum Route Multi-Color Sign that shall have no less than 768 LEDs with a message display area of not less than 2.8 inches high by not less than 36.3 inches wide. The LEDs shall be rated by their manufacturers for a 100,000-hour life expectancy.

Sign Readability:

The destination message shall be easily read from the sidewalk level. The entire display area of all signs shall be clearly visible and readable both in direct sunlight and at night.

System Control Console – Operator Display and Keyboard:

The system control console shall be used to view and update display messages. The system control console shall utilize a 28-key

conductive rubber pad keyboard with tactile feel, designed especially for the harsh transit environment or approved equal.

The system control console shall contain a 16 x 128 pixel vacuum fluorescent display. The system control console shall contain an audio annunciator that beeps to alert the operator to view the display for a message, or beeps indicating that a key is depressed. The system control console shall continuously display the complete message associated with the selected destination code.

Memory Transfer:

The sign system shall be reprogrammable through the system control console by either a PCMCIA flash card or a Memory Transfer Unit.

Emergency Message Display:

If required, a special emergency message can be activated by a switch. This message shall be displayed on signs, facing outside the vehicle, while the signs inside the vehicle, including the system control console, remain unchanged. The emergency message shall be canceled by entering a new destination code or by removing the emergency signal.

Programming:

A programming software package shall be furnished to generate message lists for the destination sign system. A PCMCIA flash memory card having a minimum of 8 megabytes of memory shall be provided to facilitate bus system programming. The software must be compatible with Windows NT, Windows 2000, Windows XP, Windows Vista and Windows 7

The programming software shall use techniques that require minimal operator training and that are intended for use by operators that are not trained in complex computer operations. All operator screens shall utilize pull down and pop-up menus.

22. BICYCLE RACKS:

Manufacturer/model should be **Sportworks Veloporter 2 or equivalent.**

- Racks must have a 2 (two) bike capacity, and follow the specs noted below.

1. The bike rack must meet OSHA requirements for lifting by a single individual and be capable of being raised or lowered with one hand
2. The bike rack must accommodate all bicycles with wheels 16" (for example, the Dahon folding bicycle series) or larger diameter, excluding tandems and recumbent type bicycles. The rack must accommodate all bicycles 80" and longer.
3. The bike rack frame must be manufactured with 304 stainless steel tubing with a minimum wall thickness of 0.125 in., outside corners to be rounded, pinch joints minimized and welds smoothed.
4. All nuts, bolts and washers shall be either AISI Type 304 stainless steel or Grade 8 yellow zinc plated steel
5. The bike rack must be mounted to the front of the bus and accommodate two (2) bicycles. In the stowed position, folded up against the front of the bus, it shall protrude no more than 8" from the front bumper. The protrusion shall be no more than 36" when deployed.
6. The latching mechanism must automatically lock the bike rack in the stowed and deployed positions.
7. The bike rack, when stowed, shall not interfere with any access panels/doors, windshield wipers or driver vents.
8. The bike rack shall be designed for loading and unloading from the front, curbside, of the bus. The securement can only contact the bicycle's tires as to not do any damage to the bicycle's frame. The bike rack shall have a positive securement with a four (4) point locking system, contacting the wheel in such a way that greater than half the circumference of the wheel is captured. Straps, cords, and/or springs shall not be required to secure a bicycle.
9. The carrier shall not interfere with the ability of the driver to safely operate the vehicle. This includes, but is not limited to, the obstruction of the windshield view and the operation of the windshield wipers, turn signals, and headlights.
10. The carrier shall be compatible with automated bus washing systems and shall be capable of repeated use with automated washing equipment without sustaining damage to the carrier, vehicle, or the

washing equipment. The carrier shall be designed as not to accumulate water internally.

11. The use of this rack shall not affect route scheduling. The bike rack shall have a design capability of being loaded or unloaded in 20 seconds or less.

12. The mounting bracket/ pivot plate assembly must be designed to fit all urban transit buses, both standard floor and low floor.

13. The bicycle rack shall be warranted against defects in materials and workmanship for a period of one (1) year from date of installation.

14. The bicycle rack manufacture is required to furnish all the complete parts and service (maintenance) books.

15. The bicycle rack should have a latching system in both positions, stowed and deployed; this will need to be explained in detail

16. The racks should be in a friendly design and a tire only mount.

17. The mounting brackets should be detailed at to what bus needs with brackets.

Product Standards:

Only first quality materials, workmanship and finish shall be acceptable.

All general materials and workmanship shall be guaranteed to be free of defects for a minimum of at least one (1) year from date of installation except as noted below. Any defects shall be rectified or replaced to meet specifications at the expense of the manufacturer, including freight, parts and labor.

Any exposed fasteners shall be colored to match the finish of the framework components.

Spare Parts:

The contractor will provide pricing and the delivery time on the available spare parts for each bicycle rack and maintain adequate stock levels.

23. DELETE COPILOT DOOR, SEAT AND B PILLAR :

This Moves the Passenger door from the coach Body to the chassis cab section. This delete's the Copilot door; seat and B pillar section of the cab. This will add 2 seats positions in Coach Body.

24. DELETE ALTRO CHROMA FLOORING:

This delete's the Altro Chroma Floor covering to install the Gray RCA Rubber Transit-Flor. The step well, entrance area, and center aisle floor area shall be overlaid with ribbed, slip resistant, oil resistant commercial 3/16" step tread thickness. The 1/8" thickness flooring under the seats and in the wheelchair area shall be smooth, slip resistant, and oil resistant. The flooring shall extend up the sidewall and rear wall to the seat rail line and shall be coved at the floor/wall joint to form a smooth water-tight transition. Flooring adhesive shall be oil resistant.

25. DELETE YELLOW POWDER COAT ON HANDRAILS:

This delete's the yellow powder coating on the stainless steel handrails, grab handles and stanchions. They will be the natural brushed Stainless steel Color.

26. 100% NIDA-CORE[®] STRUCTURE OR APPROVED EQUAL:

Resin Hardened Nida-Core[®] or approved equal Polypropylene Copolymer honeycomb (1" thickness, minimum) Throughout 100% of the entire body structure, walls, roof, front and rear caps must be used instead of Honeycomb Paper Vertical. This is to eliminate any possibility of rotting in any area of the body structure.

27. COMPOSITE FLOOR:

Composite Space-age Synthetics Thermo-Lite Board-Tough Series or approved equal Floor that will not rot and is lighter than the standard marine grade plywood floor.

28. SIDE DOOR SLIDE OUT BATTERY TRAY:

Must have an Extra Heavy Duty Stainless Steel slide out Battery Tray for all auxiliary batteries mounted under Bus. Battery Box must have OEM type battery hold down brackets to securely hold batteries in place. Cloth hold down straps is not ALLOWED. Battery box must be sealed to keep mud from getting on batteries.

29. DIESEL ENGINE:

Current Power plant for the make and model of chassis

30. REAR SPARE TIRE HOLDER:

A rear spare tire holder that shall be affixed to the vehicle in a way to allow easy removal of spare tire.

31. ADJUSTABLE REAR SUPENSION SYSTEM:

System shall be a MOR/ryde suspension system or equal shall be used with the following:

- a. Installed as per the manufactures recommendations.
- b. Fully adjusted for each bus installed on.
- c. Warranty to be a 5 year 100,000 mile.

FIGURE 1:

Figure 1

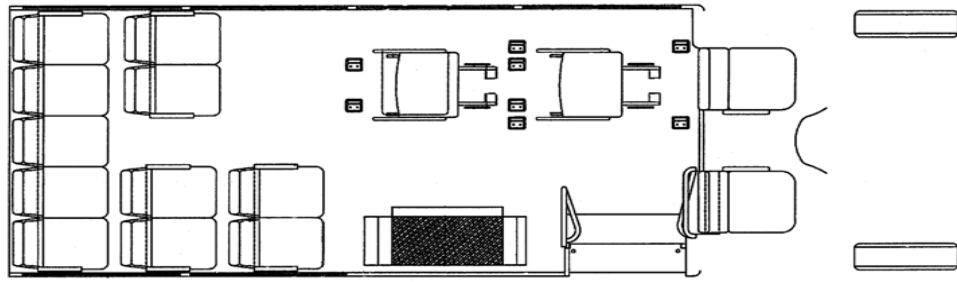


FIGURE 2:



FIGURE 3: (Cam reference location only)

Figure 1

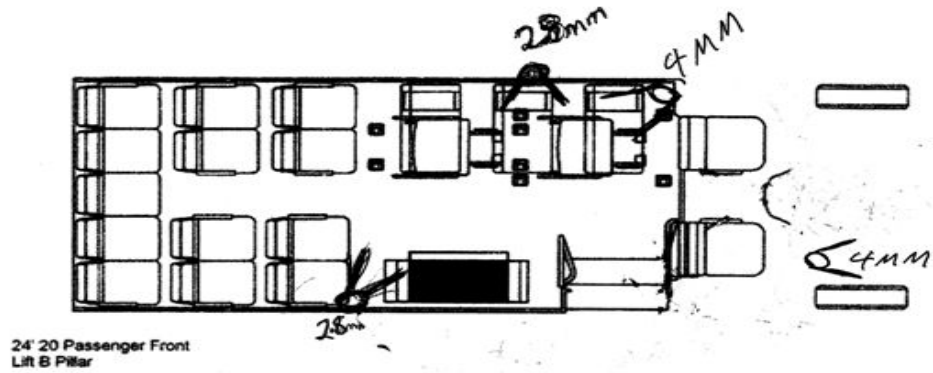


FIGURE 4:



FIGURE 5:



SECTION "T"
24' 12 Passenger Metal Bus
RESPONSE SHEET

BASE
VEHICLE

COST PER
UNIT

Transit Bus (gas engine)

\$_____ / ea.

CHASSIS SPECIFICATIONS

Specify Overall Vehicle Length (outside of front bumper to outside of Rear bumper):_____

Overall vehicle length: 282" minimum _____
307" maximum _____

Width: Exterior 95" minimum _____
Interior 91" minimum _____

Height Exterior 105" minimum _____
124" maximum _____
Interior 76" minimum _____

Wheelbase: 176" minimum _____
190" maximum _____

AIR CONDITIONING

Make and Model of Rear A/C Unit and Cooling Capacity of rear Unit BTU's/Hr.
Include literature on unit being proposed.

MAKE/MODEL _____

BTU/HR of Rear Unit only _____

HEATING

BTU/HR of Rear Unit only _____

OPTIONAL ITEMS**COST**

1. CNG Conversion Ford Chassis \$_____/ea.
1. CNG Bifuel Conversion Ford Chassis \$_____/ea.
2. Propane Dedicated Conversion \$_____/ea.
3. Propane Dual Fuel Conversion \$_____/ea.
5. Back-Up Monitor System \$_____/ea.
6. Two-way radio (UHF) \$_____/ea.
7. Two-way radio (VHF) \$_____/ea.
8. Two-way radio (800 MHZ) \$_____/ea.
9. Driver's Shield \$_____/ea.
10. Painted lower skirts \$_____/ea.
11. Outside Passenger Door Switch \$_____/ea.
12. Bus Camera System: \$_____/ea.
13. Fabric Insert on Ceiling \$_____/ea.
14. Street Side Exhaust \$_____/ea.
15. Integrated Child Seats \$_____/ea.
16. Vinyl Seats (Price Deduction) \$_____/ea.
17. Public Address System \$_____/ea.
18. Passenger Signal System Pull Cord \$_____/ea.
19. Passenger Stop request Signs \$_____/ea.
20. Fare Collection Box \$_____/ea.

21. Destination Signs \$_____/ea.
22. Bicycle Racks \$_____/ea.
23. Delete B pillar and copilot seat
(Price Deduction) \$_____/ea.
24. Delete Altro Chroma Flooring
(Price Deduction) \$_____/ea.
25. Delete Yellow Powder Coating on
Handrails, Grab Rails and Stanchions.
(Price Deduction) \$_____/ea.
1. 100% Nida-Core[®] structure \$_____/ea.
27. Composite floor \$_____/ea.
28. Side Door Slide Out Battery Box \$_____/ea.
29. Diesel Engine: \$_____/ea.
30. Rear Spare Tire Holder: \$_____/ea.
31. Adjustable Rear Suspension System: \$_____/ea.

A list of optional equipment and/or accessories shall be provided. The list must contain:

- Item
- Description and functionality detail
- Cost of item installed in final delivery of vehicle
- Any changes to listed specifications as outlined above to accommodate options

PROPOSAL EXECPTIONS:

Supplier must list any exceptions here to be used as a part of the Proposal evaluation and analysis. Please list the roman numerical on the standard specs or the number for the options when listing any Proposal exceptions.

**SECTION “J”
SPECIFICATIONS FOR
24’ 12 PASSENGER, REAR LIFT MFSAB
TRANSIT VEHICLES**

GENERAL DESCRIPTION

It is the intent of these specifications to set forth minimum standards for the procurement of a light transit vehicle that complies with Title 49 Code of Federal Regulations, part 38, subpart B, entitled “Americans with Disabilities Act (ADA) Accessibility Specifications for Buses, Vans and Systems”. All dimensions and equipment shall comply with the standards as set forth within the 49 CFR. The vehicle shall be new, the most current production model available, and must be complete with manufacturer’s standard equipment and accessories, fully serviced and ready for operation. The vehicle shall be equipped to meet all Federal Motor Vehicle Safety Standards and Procedures (FMVSSP) that apply. If these specifications contradict any listed in the Federal Regulations, they are superseded by those of the Federal Regulations

To take advantage of administrative and cost savings and to ensure that all federal requirements are met, this procurement is assignable to other agencies, organizations and Tribal Governments funded by the Federal Transit Administration.

NOTE:

Any Brand names and specifications mentioned within this document are for reference only. Proposals will only be considered when brochures/specifications are included for each component provided with Proposal for evaluation.

I. DELIVERY:

Vehicle must be delivered at a maximum of 120 calendar days from the date a Purchase order is issued. Pre-delivery servicing and adjustments: prior to acceptance by the purchaser, the vendor shall service and adjust each vehicle for operation. This process shall include but not be limited to the following:

1. The vehicle must have a full tank of fuel when delivered.
2. Each bus shall be designed to facilitate the disassembly, reassembly, servicing or maintenance thereof by use of tools and items that are normal and available as commercial standard items. The body and structure shall be designed for ease of maintenance and repair.

3. All parts added, as part of the modification process shall be new.
4. Headlights properly aligned
5. Engine Tuned
6. All accessories properly adjusted
7. Electrical, braking and suspension systems inspected
8. Both batteries Charged
9. Front-end alignment must be done after body is put on chassis. Chamber, caster and toe must be adjusted to the center of OEM specs. Ford chassis buses must have adjustable caster, camber bushings installed. Standard OEM bushings will not be accepted. Each bus must come with documentation stating before and after actual alignment readings of bus.
10. All wheels balanced, including spare
11. All lubricants checked, and greased if needed
12. Cooling system serviced with permanent type anti-freeze and summer coolant for minus 20 degrees F (-28.888C).
13. Warranty papers and owner's guide
14. Exterior and interior cleaned and washed.
15. Odometer cannot exceed 3,000 miles at the time of delivery of completed buses to the purchasing agency. There will be a charge of one dollar (\$1.00) per mile for each vehicle with an odometer reading in excess of 3,000 miles payable to the purchasing agency at the time of delivery.
16. Under no circumstances are tow vehicles to be attached to any buses.
17. Each vehicle must be delivered to the agency submitting the P.O.

Copies of the all Certificate of Origins and signed invoices must be sent to the organization named on the purchase order before delivery is made and must be delivered with the vehicle: receipt of these after delivery **is not acceptable**.

NOTE:

- If these specifications contradict any listed in the Federal Regulations, they are superseded by those of the Federal Regulations.

II. NO PROTOTYPES:

Must be a Current production bus that has been in Production for a minimum of one year.

III. BODY STRUCTURE:

The vehicle shall have a purpose-built body, which will provide for a minimum floor to ceiling distance of 76" at the center aisle.

- The floor frame must be welded or bolted to the sidewall frame, and the sidewall frame must be welded or bolted to the roof frame.
- Steel roll cage must form a complete Unitized body and a steel support cage behind front and rear cap to prevent flexing. All steel joints must have gussets for additional strength. All steel parts shall either be galvanized, powder coated or primed to prevent rusting.
- Composite construction is **not acceptable**.
- Construction methods utilizing double-sided tape to secure sidewall skin will **not be accepted**.
- If utilizing aluminum for the roof or sidewall skin it must be a minimum of .060" thick **with AZDEL SuperLite backing or equivalent**.
- All surfaces and hardware having sharp edges, corners, or angles that could cause injury shall be covered and padded with heavy-duty vinyl-foam type material.
- The roof will be constructed of the same reinforced materials as the body of the vehicle and of sufficient strength to prevent vibration, drumming and flexing.
- If exterior roof or sidewall skin is made of Fiberglass it must be a Minimum of 3/16" thick this is not including any FRP, Luan, plywood or foam backings.

Fiberglass Roof must be a one piece molded unit that has molded sides to connect to side walls. Bending a flat sheet of fiberglass to connect to walls is **NOT ALLOWED**.

If exterior roof or sidewall skin is made of Galvanized steel it must be a minimum of .024" thick with **AZDEL SuperLight backing or equivalent**.

- Roof design shall prevent pooling of water on the roof.
- The completed body shall meet the requirements of FMVSS-220 School bus rollover protection. Sidewalls shall meet the specification of FMVSS 221, joint strength testing.

IV. OEM CHASIS FRAME:

The rear overhang, measured from the center of the rear axle to the outer edge of the rear bumper, cannot exceed 1/3 of the overall vehicle length.

- Further, ODOT will not allow re-certification of the chassis OEM GVWR and GAWR.
- Any vehicle that exceeds the OEM GVWR and/or GAWR **will not be accepted.**

NOTE:

Supplier must provide detailed documentation if chassis modification must be made to accommodate length of wheelbase from OEM.

- This documentation shall include, but not limited to : (type of modification, frame supports, out sourcing of frame work, drive shafts, or quality control).

V. DOORS:

Passenger Entry Door:

Passenger entry door must have a Two (2)-panel door design providing a minimum 32" X 80" clear opening. **A&M door actuator, or equivalent.**

- Door is located directly opposite driver and electrically power operated controlled by the driver.
- Each door panel shall be actuated together by a single electric powered overhead actuator.
- Actuator is equipped with an emergency manual release lever.
- Vertical door shafts shall be an integral part of the door panels.
- The top portion of the shaft shall be designed to prevent door panels from rotating out of alignment.
- Shafts shall pivot on a top-mounted, bronze thrust bushing and a lower stud-mounted alignment pivot, accommodated with a glass-filled molded bearing equal to **A&M door actuator, or equivalent.**
- Perimeter door edges shall be sealed with neoprene 2" leading edge seals.
- Seals shall overlap front and rear to provide an air and watershed.
- Upper and lower edges of doors shall be tightly sealed against entrance of air drafts and water, including spray from vehicle washing.
- Operating controls should be located within easy reach of the driver.

VI. PASSENGERS DOOR INTERLOCK:

Electric Passenger door in coach body will only work when transmission in Park.

VII. WHEELCHAIR LIFT DOORS:

A double door entrance shall be provided on the right (curb) side of the vehicle behind the vehicle's rear wheels.

- The door opening shall be at minimum width of 48" and height of 70" to accommodate the wheelchair lift specified within this document.
- Clearance between the top of the door opening and the raised lift platform shall be a minimum of 68".
- Each door shall be equipped with an **A.L. Hansen Type 23 Door Check or equivalent** which is a Top Mounted Spring Loaded Device that will securely hold the door in the open position while the wheelchair lift is in operation. (Sliding door is not acceptable).
- Each door must have a window which shall be the same height as the passenger windows.

VIII. COACH BODY DOOR LOCKS:

All doors shall be equipped with a lock.

IX. DRIVER'S DOOR:

- Must have Power windows and Power door locks

X. RUNNING BOARDS:

Extra Heavy-duty Running Boards that are bolted to Coach Body for added step strength

- Steps must be able to hold over 400lbs.

XI. HANDRAIL:

- Handrails (left and right) of the front passenger door shall be provided. Cross-sectional diameter of handrail shall be between 1 1/4" and 1 1/2".
- Entrance handrails shall not be padded.
- Must have at minimum a wall thickness of 18 gauge steel.
- Two overhead ceiling-mounted handrails with mounting brackets at 24" on centers placed over the aisle shall be provided for the full length of the vehicle's passenger aisle way, except in wheelchair lift area and over passenger entry door.

- All handrails must be Powder coated Steel that will not rattle or Flex and mounting bolts shall be bolted into Structural steel.
- Color of Handrails shall be bright yellow (to assist the visually impaired),
- Wood mounting **is not allowed.**

XII. GRAB RAILS:

Must have grab rails with the following:

- Shall be installed in the entrance to the vehicle running parallel to the steps in a configuration which allows persons with disabilities to grasp while entering or exiting the vehicle.
- Cross-sectional diameter of grab rail shall be between 1 ¼” and 1½”
- Must be at minimum a wall thickness of 18 gauge steel.
- All Grab rails must be Powder Coated Steel that will not Rattle or Flex and mounting bolts shall be bolted into Structural steel.
- Color of grab rails shall be bright yellow (to assist the visually impaired),
- Wood mounting **is not allowed.**

XIII. STANCHIONS:

- Must be at minimum a wall thickness of 18 gauge steel.
- All stanchions must be Powder Coated Steel that will not Rattle or Flex and mounting bolts shall be bolted into Structural steel.
- Wood mounting **is not allowed.**
- Color of stanchions shall be bright yellow (to assist the visually impaired),
- A stanchion and vinyl padded modestly panel shall be provided at entrance door in front of first passenger seat.
- A stanchion from the floor to roof shall be installed on the interior left side of the front passenger door approximately 14 inches inside the vehicle.
- A horizontal handrail shall be installed between the stanchion and the right wall approximately 30 inches above the floor.
- A stanchion shall be located in the rear of the driver’s seat at the edge of the aisle and a handrail shall extend from the stanchion to the side wall of the vehicle behind the driver’s seat.
- The stanchion shall not interfere with a rearward travel of the driver’s power seat adjustment.

XIV. MODESTY PANEL:

- A modesty panel shall be positioned at the rear edge of the step well.
- This will be made up of a stanchion at the inner rear corner of the step well with a rail running from that stanchion to the wall at windowsill height and the modesty panel installed therein.
- Panel shall have no less than 1 ½” between the bottom of the panel and the floor to facilitate cleaning of the floor.
- Fastening of the panel shall be by bolts or rivets.

Screws **will not be acceptable.**

XV. STEPWELL:

Must be made of Galvanized, Primed or Powder Coated steel,

- Must have two steps covered with the same slip resistant floor covering as specified within this document.
- maximum 12” minimum 10” from ground to first step,
- 9” riser, Tread depth minimum 8½”.

All steps to get up to floor level must be in step well area.

XVI. INTERIOR:

All interior panels shall be vinyl coated with **AZDEL SuperLite backing, vinyl coated metal, FRP or equivalent** with same durability and cleaning ease.

Vendor shall provide a list of available colors at their quoted price and may also include a list of colors available at additional cost.

- Interior shall be trimmed with an attractive molding, covering all seams.
- All surfaces and items or hardware in passenger compartment having sharp edges, corners, or angles that could cause injury shall be padded with heavy-duty vinyl covered foam-type material.
- Door and instrument panel is to be painted or otherwise finished to match overall tones of interior panels

XVII. DRIVERS AREA:

The drivers area shall consist of an ergonomically designed molded dash console, located conveniently to the driver's seated position and in full view of the driver.

- Supplemental control panels mounted above the driver's head or above windshield **are not accepted.**

- All switches are to be properly labeled and illuminated.
- The instrument control panel shall be painted or otherwise finished with non-reflective, anti-glare black finish.

XVIII. STORAGE COMPARTMENT:

Vehicle must have a large overhead driver storage compartment.

- This compartment must have a lip on the inside to protect objects from opening compartment door. Also shall provide easy access to clearance lights connectors through top of Storage Compartment. And provide a door latch to hold door open.

XIX. FLOOR ASSEMBLY:

The floor shall consist of **3/4 inch Advantech Engineered flooring or equivalent with Undercoating.**

- Construction of sufficient strength and support to not allow flexing of the finished or surface floor. The chassis, body and flooring shall be attached in such a manner as to act as one unit without any movement or flexing at the joints.
- **Shall have Floor Coving material at wall.**

XX. SLIP-RESISTANT FLOOR COVERING:

Floor covering shall be slip resistant vinyl flooring, constructed with aluminum oxide, silicon carbide and optional PVC chip blended throughout a high quality vinyl wear surface.

- Top coating **is not acceptable.**
- Backing to be polyester/cellulose material with fiberglass fiber reinforced center scrim for additional durability.
- Bacteriostats will be incorporated providing all exposed surfaces with excellent anti-bacterial properties.
- Must be **Altro Chrome with a minimum thickness of 2.2 millimeters or equivalent**
- Color to be selected from current Altro color range by each agency.
- The whole floor will be a uniform thickness throughout the vehicle, eliminating the need for ribbed surfaces, while exceeding the ADA minimum slip resistance standard rating of .06 static coefficient of friction under dry or wet conditions.
- Coving material is to be installed to support floor when rolling floor covering up the sidewall of vehicle to the seat track.

- Seams must be heat welded to provide a permanent waterproof seal against water penetration leading to premature sub-floor failure or curling leading to possible tripping hazards.
- Landing area and step edgings are to be Altro yellow safety vinyl edging.
- Edging is to heat welded to the main floor and step tread to provide for a long lasting seam.
- The floor must be installed according to manufacturer's directions using proper tools, accessories and adhesives.

NOTE:

If the flooring is not installed according to the flooring manufacture (heat welded and adhesives) specifications the bus **will not be accepted**.

XXI. GAUGES:

Vehicles shall be equipped with the following needle-type gauges (lights in lieu of gauges are not acceptable): and all shall be in easy view of driver. If OEM gauges are not available then Stewart Warner gauges or equivalent shall be used.

1. OEM chassis Voltmeter Plus a Auxiliary Voltmeter Gauge
2. Oil pressure
3. Temperature
4. Fuel level
5. Speedometer
6. Odometer
7. Tachometer
8. Engine hour meter

XXII. BUMPERS:

Front and rear bumpers shall be securely fastened to the chassis frame to adequately absorb shock from impact. In no case are the bumpers to be fastened directly to the vehicle body.

- Rear bumper must be an energy absorbing Romeo Rim with Heavy Duty bumper mounting brackets that use four 7/16 grade 8 bolts per bracket or equivalent.
- Front bumper and grille shall be chrome plated.

XXIII. INSULATION:

Insulation shall be provided in both walls, roof, front cap, rear wall and roof side radius area where roof meets walls.

- Adequate insulating properties shall be provided to ensure minimum heat, cold and noise penetration into the vehicle interior.
- Insulation may be accomplished through the use of **fiberglass, vacuum design or equivalent**.
- Must have a minimum R-value of 6, and fire resistant.

XXIV. AIR CONDITIONING

- Air conditioning efficiency is of paramount concern to the purchaser. Air conditioning shall be adequate to cool both the passengers and driver areas. Only vehicles offering top of the line commercial transit type air conditioning systems will be considered.
- The vehicle's electrical system shall be designed and integrated such that ample electrical supply is provided to maintain optimum air conditioning performance without battery discharge.
- The air conditioning system offered shall have a proven transit performance record and shall be provided by a nationally recognized manufacturer of bus air conditioning.
- The OEM Dash unit and Rear Air Conditioning unit shall be two separate stand alone systems. Tying into the front OEM dash system **is not allowed**.
- Rear evaporator shall have an easy accessible return air filter; having to remove evaporator cover housing to gain access to filter **will not be accepted**.
 - The rear air conditioning system shall provide a minimum cooling capacity of 65,000 BTU/Hr.
 - **A Carrier model AC-833MAX System or equivalent.** The Combined Total cooling Capacity of the OEM dash unit and Rear Unit shall be a minimum of 78,000 BTU/hr.
 - Rear Evaporator shall have an easy accessible return air filter; having to remove the evaporator cover housing to gain access to filter will not be accepted.

The Rear A/C System must have the following specified components.

1. Carrier EM-3 Evaporator or equivalent
2. Carrier CM-3 Condenser or equivalent

3. Carrier TM-21 Compressor or equivalent
4. Carrier Flex CLICK SAE J-2064 Type E Color coded hoses or equivalent.
5. Service Ports for rear Air conditioning System must be easily accessible and located under the bus near the rear A/C Condenser.

A conventional dash mounted unit for the front of the driver's area of the vehicle. Both units shall be equipped with multi-speed fans (minimum 2 speeds).

- Evaporator fans shall produce a minimum of 1600 CFM.

The Rear system shall include a skirt mounted commercial condenser. Condenser fan(s) shall produce a minimum of 2400 CFM of airflow over the coils. All components of the condenser unit shall be coated or constructed with a corrosion resistant material to protect the unit from road salts other foreign substances that might be sprayed on the unit.

- Condenser unit shall be positioned so as not to draw air from under vehicle.

NOTE:

Air conditioning refrigerant lines, to include their foam covering, will not be exposed to road hazards or elements of the weather. All air conditioning refrigerant lines, which extend from the engine area to the rear evaporator, shall be protected from damage. And all drain lines, hoses and wiring from evaporator shall be covered from view.

XXV. VENTILATION:

Vents provided in driver area.

XXVI. HEATING:

- Front & rear heater core factory installed hot water type, of sufficient capacity to warm cabin area and clear windows of snow, ice and fog.
- An easily accessible clearly marked shut-off ¼ turn ball valves shall be installed in heater supply and return lines which will allow the water to be cut off to the rear heater core.
- The water lines for the rear heater core shall be protected from damage.

Rear heating unit shall provide a minimum of 65,000 BTU's/Hr. this is in addition to front dash unit. State BTU/HR of rear heating unit you are proposing.

XXVII. SAFETY EQUIPMENT:

All miscellaneous equipment must be secured to the vehicle and easily accessible.

1. First aid kit: (24M – National Standard School Bus Metal
 - Must be Certified Safety Mfg. Model S203-045 or equivalent.
2. Fire extinguisher – Multi-purpose Stored Pressure Dry Chemical Extinguisher.
 - Must be a **5 lb. type 3A:40B: C Pro Line, Kiddie Model # FXBND9 or equivalent.**
 - Must have a gauge to indicate state of charge and mounted to vehicle using a bracket and having a heavy duty vinyl cover.
3. Triangle warning devices (3), with storage container.
 - must meet FMVSSP # 125
4. Bloodborne Pathogens infection control kit.
 - Must be Certified Safety Mfg. Model #FK200-931, **or equivalent.**
5. Seat belt cutter

XXVIII. MIRRORS:

Exterior:

Heavy Duty Heated Power Mirrors by **Velvac Model 2020 Deluxe Head with Turn Signals or equivalent.**

- Mirrors are to be mounted to the driver and copilot doors in the same position as the OEM mirrors.

Interior:

Vehicle must have the two (2) following mirrors.

- Must be OEM Day/night, 10” rear view mirror, confirming to FMVSS No. 111. (This mirror will be deleted if purchaser chooses backup camera as an option).
- Passenger viewing and backup mirror shall be made of safety glass, having rounded corners and protective edges, and a 6” x 16”. This mirror is in addition to the mirror mounted on windshield.

Fresnel Lens: 11” x 14” Lens on rear window.

XXIX. SEATS:

Driver's Seat:

1. The driver seat must be a deluxe bucket, OEM high back 6-way power seat.
2. Seat must be padded with allergy-free material and upholstered with a durable transit quality level 5-cloth fabric.
3. Seat must have adjustable lumbar
4. Seat must have a certified seat belt and shoulder harness with retractor shall be attached to frame.
5. Seat must have reclining backs and padded armrests.

NOTE:

Supplier must supply seating diagram reflecting all listed dimensions for approval.

Passenger Seats:

Seating shall be provided for a minimum of Twelve (12) ambulatory passengers.

- Wheelchair spaces will each be equipped with a wheelchair securement tie down and occupant restraint system, which meets the Americans with Disabilities Act requirements.
- All seats shall be IMMI Safeguard Vinyl Contoured Seats or approved equivalent, With Integrated Child Restraint Seats and Integrated Retractable three-point Lap and Shoulder Belts.
- All passenger seats shall be covered with a durable transit quality Vinyl and must meet all MFSAB requirements.

If the seating configuration being proposed is different than that shown in Figure 1, a diagram must be furnished.

- Must include Two (2) Seat Belt Extensions that will fit Passenger Seat Belts.
- A commercial quality seat belt knife fastened to bus in driver's reach.
- All seats including any foldaway seats must be bolted to structural steel.

Bolting seats to plywood floor without bolting into structural steel under floor is **NOT ALLOWED**.

All seat tracks must be welded to steel sidewalls and steel floor sections. Riveting or bolting seat tracks to sidewalls **is NOT ALLOWED.**

XXX. PRIORITY SEATING SIGNS:

Each vehicle shall contain sign(s), which indicate that, the row of forward – facing seats located in the front of the vehicle are priority seats for persons with disabilities, and that other passengers should make such seats available to those who wish to use them.

- The signs shall be located on the interior walls directly above the front row of forward-facing seats.
- Signs must follow FTA 49CFR38 Section 38.27 for the required lettering characters of the signs.

XXXI. LIGHTING:

All manufacturers' lighting added to the vehicle (both interior and exterior) shall be provided with light-emitting diode (LED) lights.

- Door activated 4 way flashers that are activated when passenger door is opened. This includes 2 additional amber LED flashing lights mounted high on each side of the rear wall.
- The location, type and hookup of all exterior lights and reflectors to conform to Federal Motor Vehicle Safety Standards and Procedures.
- The number of interior lights and their light output shall be determined by providing a minimum average of 7 foot-candles of illumination on a 1 square foot plane, at an angle of 45 degrees from horizontal, centered 33 inches above the floor and 24 inches in front of the seat back at each seat position.
- Floor surface in the aisles shall be a minimum of 10 foot-candles.
- Each vehicle shall be equipped with OEM daytime running lights.
- Must have Red LED lights over all emergency exits
- All interior lighting in the passenger area shall be mounted in the ceiling cove at the sidewall with a minimum of three (3) fixtures on each side of the vehicle. Lighting fixtures shall be installed on the interior walls and ceiling in a manner that does not present a head strike to the passengers.

NOTE:

All clearance lights front, rear and side shall have metal armored shields. This shall protect lights from tree limb damage.

- A.** Tail lights are to be recessed and shall not protrude more than 2 inches from the body; they shall include a pair of amber

combinational hazard and signal lights. Rear tail-lamps shall also include a pair of red tail lights and red stop lights, which may be combinational. **(Ref.: Dialight 46121RB-Red, 46121AB-Amber or equivalent)**

- B.** Side signal lamps, with marker, shall be provided independently or be incorporated into the center of the vehicle. Location must be above and in front of the rear wheel opening and provide visibility from behind the rear wheel opening. **(Ref.: Dialight 18001AB811 or equivalent)**
- C.** Clearance marker lights shall be installed surface-mounted, facing the front, rear, and each side at rear. **(Ref.: Dialight 15001RB, 15001AB or equivalent)**
- D.** The third brake light shall be center-mounted above the rear window, minimum 18" in length. **(Ref.: Dialight 87121RB or equivalent)**
- E.** Two back-up lights, one mounted on each side of the body rear cap. **(Ref.: Dialight 46001CB or equivalent)**
- F.** Step lighting shall be mounted to provide light for the entire step-well and an area a minimum of three (3) feet beyond the first step on the ground area outside the bus **(Ref.: Dialight 170-81CB or equal)**.
Note: The step lights shall be extinguished when the front door has closed.
- G.** Raised floor step lighting shall be provided by one strip light mounted in the step riser. Light strip shall be a minimum of 18 inches and recess-mounted to protect from accidental damage by passengers contacting light while using the step. **(Ref.: Dialight 87121CB or equivalent)**.
- H.** Exterior step light shall be mounted away from wheel splash. **(Ref.: Dialight #VSW-CC-19B-35-801 or equivalent)**
- I.** Wheelchair lift area light shall be positioned in the manufacturer's standard location in order to illuminate the area in the immediate vicinity of the wheelchair lift platform for night operation. The light shall be automatically activated only when the wheelchair lift doors are open. **(Ref.: Dialight Light #46121CB or equivalent)**

XXXII. ELECTRICAL WIRING:

All wiring shall meet the requirements of SAE recommended practice J878a, Type SXL.

- Connections with 3 to 12 circuits shall be environmentally sealed high impact plastic connectors with pull apart locking tabs.
- All non-OEM connections containing one or two circuits shall be made with Posi-lick connectors.
- No butt connectors **will be allowed.**
- All added wiring shall be in a loom and securely clipped for maximum protection and routed in separate hangers from the heater hoses or air conditioning hoses.
- Clips shall be rubber or plastic coated to prevent them from cutting the wiring insulation.
- All electrical wiring shall be automotive stranded and sufficient size to carry the required current without excessive voltage drop and shall be color, number and function coded at a minimum of eighteen (18) inch intervals.
- No electrical, stationary or mechanical device may block the removal of the engine cover inside the bus.
- All wiring passing through the body metal shall have anti-chaffing grommets.
- Each vehicle shall contain a set of detailed system by system “as built” wiring schematics covering all electrical equipment and electrical circuits installed, complete with wiring codes for each vehicle ordered.
- Identification on the wiring diagram must tie the diagram to the bus.

XXXIII. WINDOWS:

- All windows to be of tempered safety glass and water and airtight.
- Window in driver’s door, windshield and entrance door glass are all to be tinted.
- All the windows in the passenger area are to be factory-installed smoked glass with at minimum 30 percent tint. **No Add on Film**
- Windows must be a MFSAB approved windows.
- Must be constructed of corrosion resistant aluminum frames.

NOTE:

All windows and emergency exits must meet the performance and operational requirements as outlined in the Federal Motor Vehicle Safety Standards and Procedures.

XXXIV. EMERGENCY EXITS:

- At least one (1) window on each side at or near the rear of the vehicle shall be equipped with emergency release latches to provide emergency exits.
- Release instructions shall be provided at or near the release handles and an audible alarm shall be installed near the driver, which will be activated when the window is released.

XXXV. BACK-UP ALARM:

Alarm shall be waterproof **ECCO #530 or equivalent.**

- Must be mounted in the rear of the vehicle
- Must be readily audible outside the vehicle when the transmission is in reverse.

XXXVI. WHEELCHAIR LIFT:

An electric powered hydraulic wheelchair lift shall be installed inside the vehicle at the side door.

- Bus must meet FMVSS 403-404 lift installation requirements.
- Wheelchair lift shall meet the following MINIMUM requirements.

1. **A Braun wheel chair Lift NL919FIB-2 (Millennium-2 Series) or equivalent.** Ground cable from lift must be connected to vehicle frame.

Connecting ground cable to lifts mounting bolts **is NOT ALLOWED.**

- (a) 800 pound load capacity lifts assembly.
- (b) An electric hydraulic pump, powered by vehicle's electrical system.
- (c) Platform dimensions 34" wide by 51" long.
- (d) Platform to be constructed of 11 gauge expanded metal.
- (e) Platform shall be stored in an upright position within the vehicle.
- (f) Powered operation for (1) unfolding and folding the platforms and (2) raising and lowering the platform.
- (g) Emergency platforms release to permit the platform to be unfolded manually and lowered by gravity.
- (h) To prevent the wheelchair from rolling off, a barrier 1 ½" at minimum shall be provided on the outer edges of the platform and have an outboard roll stop that engages and locks before the platform leaves the ground to form a safety barrier when platform is raised or lowered

- (i) A free floating bridge plate will be replaced between the lift platform and the vehicle. This bridge plate will be hinged in a manner to permit upward movement should a person's foot become entangled.
- (j) Lift shall be securely bolted to the floor and floor reinforced as necessary to support the load.
- (k) To permit the lift platform to be raised without electrical power, a hand pump that allows the operator to raise the platform shall be installed.
- (l) An interior light shall be provided to illuminate the lift area;
- (m) All moving parts likely to cause personal injury shall be shielded.
- (n) Working parts, such as cables, pulleys, and shafts, which can be expected to wear, and upon which the lift depends for support of the load, shall have a safety factor of at least six, based on the ultimate strength of the material. Nonworking parts, such as platform, frame, and attachment hardware, which would not be expected to wear, shall have a safety factor of at least three, based on the ultimate strength of the material.
- (o) Lift shall be installed as specified by the manufacturer and shall be thoroughly tested prior to delivery.
- (p) Repair manual, parts list and instructions for adjusting hydraulic valves and electrical equipment shall be provided.
- (q) Lift controls shall be interlocked with the vehicle brakes, transmission, or door, or shall provide other appropriate mechanisms or systems to ensure that the vehicle cannot be moved when the lift is not stowed and so the lift cannot be deployed unless the interlocks or systems are engaged.
- (r) The left control cord must be secured in a manner not to interfere with the door being closed.

XXXVII. USE BY STANDEES:

Lift shall accommodate persons using walkers, crutches, canes or braces or who otherwise have difficulty using steps. The platform may be marked to indicate a preferred standing position.

XXXVIII. HANDRAILS

Platform on lift shall be equipped with handrails on two sides, which move in tandem with the lift, and which shall be graspable and provide support to standees throughout the entire lift operation.

- Handrails shall have a usable component at least 8" long with the lowest portion a minimum 30" above the platform and the highest portion a maximum 38" above the platform.

- Capability of withstanding a force of 100 pounds concentrated at any point on the handrail without permanent deformation of the rail or its supporting structure required.
- Cross-sectional diameter of handrail shall be between 1 ¼” and 1½”, and shall have eased edges with corner radii of not less than 1/8”.
- Handrails shall not interfere with wheelchair or mobility aid maneuverability when entering or leaving the vehicle.

XXXIX. WHEELCHAIR SECUREMENT:

- Wheelchair parking space shall have clear floor area of 30” wide by 52” long and be equipped with a four-point wheelchair securement tie-down.
- Occupant restraint system must be **Q’Straint Q-8306-SC or equivalent**. Shall have a Retractable lap/shoulder belt combo with a Retractable height adjuster that are anchored to floor and wall with L Tracks that meet SAE J2249 and ADA requirements.
- Tracks shall be recessed into the floor and not shift position under anticipated loads. Any tracks overlapping the access path must be flush with the floor to prevent passengers from tripping.

The L tracks and Slide N Click anchors must be bolted to structural steel.

- Bolting to plywood floor without bolting into structural steel under floor **IS NOT ALLOWED**.
- Wheel Chair Securement system must be **Q’Straint QRT MAX Automatic Retractor System Q-8306-SC with Slide N Click anchorage system and J-Hooks, or equivalent**.
- There must be 52” at minimum and 54” maximum measured from center to center between front and rear Slide N Click anchor points. And be fully assembled and ready to use.
- Must have securement pouches attached to wall to store wheelchair securement tie-downs.
- Must include eight (8) **Q’Straint Q5-7580 Webbing Loops or equivalent** for Securing Scooters. Wheelchair location must be in the rear of bus, one beside the other.

NOTE:

Each wheelchair securement location shall have sign designating it as such. Lettering size and type on these signs shall comply with the Americans with disabilities Act Regulations,

XL. WHEELCHAIR ACCESSIBILITY SYMBOL:

The vehicle will display the international wheelchair accessibility symbol of a person in a wheelchair that is outlined in white on blue background.

- This symbol will be placed on all four sides of the bus.

XLI. VEHICLE COLORS:

Body: Vendor to supply list of colors and prices available.

XLII. WINDOW BLACKOUT PAINT:

Bus must have window blackout paint.

NOTE: See Figure 2

XLIII. COLOR OF SEATS:

Proposal must include all colors available

- Successful vendor shall coordinate with the agency issuing this purchase order in the selection of material and color of the seats.
- Seats shall be fully padded.

XLIV. VEHICLE FLOOR PLAN:

A proposed floor plan including all pertinent interior dimensions such as overall length, width, distance between seats, etc.,

- Shall be submitted with the proposal.

XLV. CHASSIS SPECIFICATIONS:

Supplier must list chassis specs must be listed on the Section “J” Response Sheet.

Overall vehicle length: 276” minimum
307” maximum

Width:	Exterior	95” minimum
	Interior	91” minimum

Height	Exterior	105” minimum 124” maximum
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	Interior	74” minimum
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Wheelbase:	158” minimum 176” maximum
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GVWR, axle, spring and tire:

14,500 lb. GVWR minimum

Front axle- 5,000 lb. GAWR minimum

Rear axle – 9,500 lb. GAWR minimum

(Dual wheel are required on rear axle.)

Front springs – heavy duty, 5,000 lb minimum

Rating combined at ground.

Rear springs – heavy duty, 9,500 lb minimum

Ratings each, at ground.

NOTE:

It is the Supplier's responsibility to calculate the actual loaded weight, spring and axle ratings so that the vehicle is engineered for safety.

XLVI. TIRES:

Tire size must meet 14,500 GVWR minimum and must be steel radial with "E" load rating.

- Steel or brass valve stems 1.5" in length shall be used on all wheels with elbow extensions on the inside rear dual for access.
- Stainless steel or brass valve caps with an inner air seal shall be used.
- One mounted spare tire and wheel to match existing tires/wheels to be shipped loose.

XLVII. ENGINE: GASOLINE:

Minimum – (6.8 liter) displacement.

- Must Have a CNG Capable Engine with hardened intake and exhaust valves with hardened intake and exhaust valve seats Ford Option # 91G.

XLVIII. RADIATOR:

Heavy Duty, with factory installed recovery system.

- The cooling system must be winterized with ethylene glycol for temperatures to –20 degrees F (-28.8889 C).

XLIX. TRANSMISSION:

At minimum, heavy-duty 5-speed automatic with overdrive, lock-up converter, lock in park and a heavy-duty auxiliary transmission cooler.

L. WHEEL WELLS:

The wheel housing shall be of sturdy heavy-duty construction of a minimum 14 gauge galvanized steel or stainless steel and provide ample tire clearance during all operating conditions.

- Fender and splash aprons (underskirt) of durable construction shall be provided so as to provide maximum deflection of the wheel splash.
- There shall be sufficient clearance to enable easy removal of wheels mounted with inflated tires.

LI. REAR FENDER FLARES:

Must have Rubber or Fiberglass Fender Flares.

LII. DRIVE SHAFT:

Drive shaft must be properly supported, balanced and guaranteed not to vibrate. Each drive shaft shall be equipped with a protective metal guard or guards to prevent whipping through the floor or dropping to the ground in the event of a tube or universal joint failure, or if the drive shaft breaks.

LIII. WHEEL COVERS:

Bright Metal Stainless Steel Wheel inserts.

LIV. BRAKES:

Two (2) braking systems are required. Service brakes shall be dual hydraulic, disc front and disc rear.

- The parking brake system shall be operated by a cable to the rear wheels, or Drive Shaft Drum Brake.
- The braking system shall be adequate for the GVWR of the vehicle.

LV. GEAR RATIO:

Must be a 4:56 gear ratio

LVI. FUEL CAPACITY:

Must be at minimum of 55 gallons

LVII. FUEL PUMP ACCESS DOOR:

An aluminum diamond plate access door shall be provided in the floor of the vehicle above the fuel tank to allow the fuel pump to be serviced without removal of the tank.

NOTE: Door must be Large enough and centered over fuel pump to allow easy removal of pump.

LVIII. SHOCK ABSORBERS:

Must have heavy duty, front and rear shock absorbers.

- Rear Shock Absorbers upper mounting brackets **shall not be covered** by any Body Braces that would prevent easy access to Upper Shock Mounting Bolts and Nuts.

LIX. SUSPENSION

Rear shall have Leaf Springs.

- Right rear shall have an extra leaf to compensate for weight of wheelchair lift.

LX. STEERING:

- Must have power-assisted steering
- Must have tilt wheel,
- Must have factory installed cruise control.

LXI. AIR CLEANER:

Must have a heavy duty, dry type air cleaner

LXII. OIL FILTER:

Must have a heavy duty, throw away type oil filter.

LXIII. ALTERNATOR:

Vehicle shall have Ford OEM 225-amp Alternator or equivalent.

LXIV. BATTERIES:

Two (2) heavy duty, maintenance free, minimum 650 CCA at 0 degrees F (-17.778 C) Batteries must be wired together in a parallel circuit to increase total battery capacity.

- Front OEM battery must have OEM type battery hold down brackets to securely hold battery in place.

- Instep Battery Box that is bolted down securely and must be sealed to keep mud and debris from getting on Rear Coach Battery.
- Battery must be bolted within this instep box. Cloth holds down straps are **not ALLOWED**.
- Battery box must be sealed to keep mud from getting on batteries.
SEE FIGURE 4 & 5

LXV. GROUNDS:

A ground of the battery cable size, shall be installed between the engine and chassis frame.

- The vehicle body shall be properly grounded to the chassis frame at least 2 (two) places.
- Engine and body grounds shall be installed to handle subsystem electrical capacity.
- Grounding wires fastened to the frame shall use a bolt with a nut installed in a proper sized hole with dielectric compound applied to the cleaned surfaces, bolt, and cable end.
- Lift pump motor shall be grounded directly to chassis frame using a cable of the same size as the pump motor feed wire.
- All exterior lights and accessories added by the body manufacture shall be grounded by an in harness ground attached at a fuse panel common grounding point.
- For all ground wire connections paint shall be removed at the grounding point to provide a surface, cable end, bolt, and nut where each positive or grounding cable is attached.

LXVI. STABILIZER BAR:

Heavy Duty Front and rear

LXVII. HORN:

Must have a dual, electric horn.

LXVIII. SIGNAL:

Directional and self-canceling with hazard warning flashers.

LXIX. TOW HOOKS

Shall have 2 tow hooks on Rear.

LXX. WINDSHIELD WIPERS:

Minimum two speeds with intermittent feature and washer.

LXXI. KEYS

Vehicle must include three (3) sets of keys for the entire bus.

LXXII. RADIO:

Must have an AM & FM CD radio

- Radio must be of same manufacture as chassis. Radio must be mounted in the Chassis OEM Location in dash.
- Must have a minimum of six speakers two (2) OEM speakers in front chassis doors. The coach body's four (4) speakers shall be a **3-way Kicker KS Series Model KS6930 or equivalent.**

LXXIII. PAINTING, DECALS AND MONOGRAMS:

All signs required by State and federal law shall be affixed to each vehicle exterior and interior.

- It is up to the bus dealer/manufacture to add such signs and decals upon delivery of vehicle.
- No decals, name plates, or painted identification of the bus dealer/manufacture are to be added to the vehicle.

LXXIV. UNDERCOATING:

Floor and wheel housing, anti-rust factory installed.

LXXV. WARRANTY REQUIREMENTS:

The contractor warrants and guarantees to the original Procuring Agency each complete bus and specific subsystem and components for 100% parts and labor as follows:

- OEM standard factory warranties for chassis and engine.
- Complete bus body and body structure, exterior, wiring, flooring installation, and paint are warranted to be free from defects, related defects and to maintain structural integrity for a period of Five (5) year or 100,000 miles.
- Add-on components shall have component manufacture's standard warranty.
- Warranty shall begin on the date that the vehicle delivery is accepted by the agency issuing the purchase order.
- The wheelchair lift shall have a five (5) year unlimited mileage and unlimited cycles.
- The air-conditioning system shall have a minimum 2 years unlimited mileage.

- The Chassis powertrain should be warrantied for a five (5) years or 100,000 miles.

Any parts under warranty must be available and delivered to the purchasing transportation provider or their repair shop within 5 days of the time they requested/ordered them. The bus vendor/manufacture shall bear all reasonable financial costs of shipment of parts.

The warranty, as well as any recall notifications, shall cover each vehicle of the ultimate purchaser or recipient agency. The vendor shall provide a copy of any recall notice to the purchasing agency.

LXXVI. BUS TESTING:

Certification shall be provided that in accordance with 49 CFR Part 665,

- Bus Testing, the vehicle either does not need to be tested (with justification specified for exemption) or has been tested at the bus testing facility and a test report is included.

LXXVII. BUS WATER TESTING:

The roofs, windows, windshield and all doors of all coaches shall be water tested, as follows:

- The waster test shall consist of a series of nozzles that are strategically located around the perimeter of the vehicle so as to the nozzles spray water over the entire surface of the vehicle.
- The nozzles shall eject a volume of water no less than 2.6 gallons per minute under a pressure of no less than twenty-two (22) pounds per square inch measured at the nozzle tip.
- There shall be no less than twenty (20) nozzles installed in the water test area, each capable of directing a force of water as indicated above.
- The Vendor/Manufacture shall be required to water test each vehicle, under the conditions set forth above, for no less than five (5) minutes, in order to determine whether or not there are any body leaks at the window areas, door areas, roof panels, etc.
- The Vendor/Manufacture shall take the necessary corrective action when body leaks are found to exist as a result of the above test, and conduct a second water test to recheck for body leaks following corrective action.

LXXVIII. ALTOONA TESTING:

Vehicle must be tested in the 7-year/200,000 mile category at the Altoona Bus Testing Facility in Duncansville, PA. And a copy of the full report **must be submitted with the Proposal.**

LXXIX. GENERAL:

All equipment cataloged as standard for the basic vehicle, unless superseded by these specifications, must be furnished and included in the purchase price of each vehicle. Complete printed specifications, published literature, and photos, or illustrations of the basic units that the Supplier proposes to furnish with this Proposal must accompany each Proposal.

LXXX. QUALITY OF MATERIALS:

Welding procedures and materials shall be in accordance with standards of the American Society of Testing Materials and the American Welding Society. All visible welds shall be grounded smooth. Where metal is welded, the contact surface shall be free of scale, spatter, and grease and shall be treated to preclude rusting.

LXXXI. PUBLICATIONS AND PRINTED MATERIALS:

Each vehicle shall have a complete set of operation, quality assurance, and warranty publications.

The information shall be organized in a three ring binder format with each sections clearly identified.

1. As built wiring diagram and as built parts manuals for body and all auxiliary equipment.
2. Maintenance and inspection schedule incorporating the required maintenance and inspection of the basic vehicle and its sub-systems.
3. Operator's manual: A complete operations manual and troubleshooting guide with a detailed manufacturer's parts list that covers the conversion features on the vehicle as listed in this specification. The manual will provide complete, comprehensive instructions for the wheelchair accessories, wheelchair list deployment, air conditioning system, tie downs, heater, deployment of seats, wiring diagram and related equipment.
4. Warranty papers for chassis, body, and additional equipment.
5. Warranty Information: Each vehicle must have a published listing of contractor warranty repair locations, including address, telephone number, and contact names for the State of Oklahoma.

LXXXII. PRE-AWARD AUDIT:

The vehicles are not considered delivered to the purchasing agency until the required FTA documents are completed by a Government Official.

A Pre-Award Audit shall be conducted to determine if the proposal meets specifications. The Supplier shall submit documents, which include certification of the manufacturer's compliance with the Federal Transit Administration (FTA) Pre-Award Buy America Audit Requirements. The document submitted shall include the following information for each major component used on vehicle:

1. Name and address of each supplier.
2. Cost of each major component and subcomponent. In order to protect proprietary information, the document may reflect the percentage of total cost each item represents instead of the actual cost.
3. Country of origin of each major component and subcomponent.
4. Name and address of company where final assembly occurs.
5. Cost of final assembly
6. Signature of authorized representative of vehicle manufacturer.

LXXXIII. POST- DELIVERY AUDIT:

A Post Delivery Audit of the vehicle(s) shall be conducted at the purchaser's facility, to determine that the completed vehicle(s) meets specifications.

Once this process has been satisfactorily completed, the vehicle(s) shall be considered acceptable.

LXXXIV. ACCESSIBILITY REQUIREMENTS:

When submitting a Proposal for an accessible vehicle for the disabled, the vendor shall provide a list of the vehicle related equipment illustrating the component cost and related installation charges. The purpose of this list is to reflect an accurate cost for those vehicle related items, which are required to make the vehicle accessible to the disabled.

LXXXV. ACCEPTANCE OF VEHICLES:

Upon delivery at the designed location specified within this document the final acceptance will occur after the vehicles have been inspected, road tested and all FTA required post audit delivery requirements have been meet.

- All vehicles shall be insured by the Supplier until the post audit delivery has been conducted at minimum

SPECIFICATIONS FOR OPTIONAL ITEMS:

1. CNG CONVERSION CHASSIS

OEM engine shall be converted to operate on dedicated CNG. A WESTPORT/BAF Cal Comp System or approved equal shall be provided. System shall be CARB and EPA certified, OBDII compliant, and fully integrated into the OEM powertrain control system. No additional control module will be accepted. Dual fuel systems will not be accepted. System must comply with the following:

- a. Closed-loop fuel control
- b. Sequential fuel injection (SFI)
- c. Optimized ignition timing
- d. Must maintain original fault codes (DTCs)
- e. Diagnostics accessed through DLC using original scan tool or any generic OBD-II scanner
- f. CNG system shall be covered by 3 year/50,000 mile warranty and cannot void the OEM powertrain warranty.
- g. The minimum CNG tank capacity on the mini-buses should be 39 Gasoline Gallon Equivalent
- h. CNG interlock – Engine will not run when filling CNG tanks.
- i. Must provide a detailed floor plan of the placement of the CNG tanks.
- j. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

2. CNG BIFUEL CONVERSION CHASSIS

OEM engine shall be converted to operate on CNG and Gasoline. System shall be CARB and EPA certified, OBDII compliant, and fully integrated into the OEM powertrain control system. No additional module will be accepted. System shall be capable of switching between CNG and Gasoline. The Gasoline fuel tank will be installed as per OEM specifications. The system must comply with the following:

- a. Closed-loop fuel control
- b. Sequential fuel injection (SFI)
- c. Optimized ignition timing
- d. Must maintain original fault codes (DTCs)
- e. Diagnostics accessed through DLC using original scan tool or any generic OBD-II scanner

- f. CNG system shall be covered by 3 year/50,000 mile warranty and cannot void the OEM powertrain warranty.
- g. The minimum CNG tank capacity on the mini-buses should be 29 Gasoline Gallon Equivalent
- h. Must provide a detailed floor plan of the placement of the CNG tanks.
- i. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

3. DEDICATED PROPANE AUTOGAS INJECTION

The system shall be a Roush CleanTech System or approved equal. The system must be CARB, EPA certified, and OBDII Compliant. The system shall have the following system components:

- a. PCM Calibration
- b. Billet aluminum high-pressure fuel rail.
- c. Appropriate fuel injectors
- d. Appropriate fuel lines
- e. Appropriate OEM engine prep package
- f. Coverage of Five (5) year/ 60,000 mile warranty.
- g. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

4. DUAL FUEL VEHICLE PROPANE AUTOGAS INJECTION

System shall be a Roush CleanTech System or approved equal. The system shall be a Roush CleanTech System or approved equal. The system must be CARB, EPA certified, and OBDII Compliant. The system shall have the following system components:

- a. PCM Calibration
- b. Billet aluminum high-pressure fuel rail.
- c. Appropriate fuel injectors
- d. Appropriate fuel lines
- e. Appropriate OEM engine prep package
- f. Coverage of Five (5) year/ 60,000 mile warranty.
- g. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

5. BACK-UP MONITOR SYSTEM:

ASA Voyager AOM562A or approved equal with a 5.6" color LCD screen mounted on rear view mirror OEM Bracket. With a rear mounted outside

backup camera and a second inside front mounted camera to view passengers.

6. TWO-WAY RADIO SYSTEM: UHF:

ICOM F221 UHF two-way Radio System with a PCTEL MUF4505 UHF antenna and coax or approved equal.

- Antenna shall be mounted on an L bracket on fender opposite of OEM AM/FM radio antenna.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for the agency issuing this purchase.

7. TWO-WAY RADIO SYSTEM:

ICOM F121 VHF two-way Radio System with a PCTEL MHB5800 VHF antenna and coax or approved equal.

- Antenna shall be mounted on an L bracket on fender opposite of OEM AM/FM radio antenna.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for the agency issuing this purchase.

8. TWO-WAY RADIO SYSTEM: 800 MHZ

Kenwood TK-980 800 MHz two-way Radio System with a PCTEL MUF8003 antenna and coax or approved equal.

- Antenna shall be mounted on an L bracket on fender opposite of OEM AM/FM radio antenna.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for agency issuing this purchase.

9. DRIVER'S SHIELD:

A clear Plexiglas barrier shall be erected behind the driver and extend from the stanchion crossbar behind the driver up to the ceiling.

- This shield start at the wall on the driver's left side (close enough to prevent a passenger from reaching through to the driver) and should extend 3 inches past the right side of the driver's seat, but shall not obstruct the view from the rear view mirror.

- This barrier shall consist of clear Plexiglas and shall be at least ¼ inch thick.
- A 1 ½ inch clearance between the stanchion and barrier should be provided to allow a hand hold on the right side.

10. PAINTED LOWER SKIRTS

Paint to purchaser's color specs.

NOTE: See Figure 2.

11. OUTSIDE PASSENGER DOOR SWITCH:

Outside keyed electric passenger door switch outside. Switch must be water proof.

12. BUS CAMERA SYSTEM:

- **REI Bus-Watch R4001 with 500GB Hard drive and four cameras or approved equal.** Successful vendor shall coordinate with the agency issuing this purchase for location of Camera's.

NOTE: See Figure 3 for camera type and location of cameras.

13. FABRIC INSERT ON CEILING

Must match seat fabric and pattern.

14. STREET SIDE EXHAUST

Exhaust to be turned out opposite side of Wheel Chair lift

15. INTEGRATED CHILD SEAT:

Integrated Child Restraint Seat must be a **Freedman Seating ICS-10 or equivalent**

- Must have an integrated 4-point safety harness. for children 22-78 Lbs with under seat retractor seat belts for adults

16. VINYL SEATS:

This will be a price deduction from the durable transit style level 5 cloth fabrics.

- Vinyl deduction is for passenger seats only
- Pilot and co-pilot seats shall be durable transit quality level 5-cloth fabric

17. PUBLIC ADDRESS SYSTEM:

A public address system shall be installed with a hand held microphone.

- The system shall include a solid-state amplifier of sufficient power and quality that the operator's voice can be clearly heard without distortion.
- The amplifier shall be firmly secured in a protective area.
- The PA system shall use the vehicles 6 speakers for sound.
- A power switch for the PA system shall be mounted on the dash to provide operation for the inside and amplifier off.
- Any noise suppression due to alternator, lighting, engine or other source is required of the contractor.

18. PASSENGER SIGNAL SYSTEM PULL CORD:

The Stop Request system shall have the following features:

- Separate provisions for W/C passengers and ambulatory passengers to signal a Stop request.
- Must use a yellow pull cord run below the windows for the ambulatory request and a large yellow push pad mounted at least 15" above the floor, but not more than 48". There must be a touch pad per W/C space for the passengers to signal a stop request.
- The driver should have a means of telling if a W/C passenger has signaled. There must be a Blue dash light to signal a W/C passenger request and a RED light to signal an ambulatory passenger request.
- The "Stop Request" lighted sign should show if a W/C passenger has signaled; the sign shall be a universal W/C symbol which lights in blue.
- There shall be an audible signal when a stop is requested and must be able to be heard by the driver.
- Once the pull cord is pulled, the sign will light, the driver's red light goes on, and a chime sounds. The sign will stay lit until the bus is stopped and the entry door is opened. The system automatically re sets itself
- When the W/C passenger signals a stop request, the W/C portion of the sign lights, the chime sounds, and the blue light on the dash goes on. The sign will stay lit until the W/C lift is deployed and then stowed and the W/C door is closed again.

19. PASSENGER STOP REQUEST SIGNS:

Passenger stop request sign must be **Transign, or equivalent**.

- The signs must be back-lighted stop requests and shall be mounted overhead on the front ceiling end closure.
- The sign shall be so designated as to remain illuminated when activated (by the passenger signal system) until it is extinguished by opening the door.

20. FARE COLLECTION BOX:

Fare collection box must be **GFI Genfare "Cents a bill" farebox or compatible.**

- With this option, the mounted fare box will eliminate the front passenger seat and make the bus a 14 passenger.
- Also must have the OEM Co-Driver seat covered with same fabric as the other passenger seats shipped loose with the bus. Co-Driver door shall have the same type of running board as driver's door.

21. DESTINATION SIGNS:

Destination signs must be **Twinvision, or equivalent.** The automatic electronic destination sign system shall be furnished on the front and on the right side near the front door of the vehicle. Display areas of destination signs shall be clearly visible in direct sunlight and/or at night. The sign system shall provide optimum visibility of the message display units for passengers and shall meet applicable ADA requirements defined in 49 CFR, Part 38.39. Destination signs shall be installed in such a manner as to facilitate easy access for replacement of the entire sign assembly, or components such as fluorescent lamps/LED's and electronic control modules, from inside the bus within 30 minutes by a mechanic. Lamps and associated parts shall be commercially available.

Destination messages, route designations, and public relations messages shall be independently selectable via a single Operator's Control Panel (OCP) which shall include a display monitor. The OCP display monitor readout shall show the exact information displayed on the destination signs. The OCP shall be conveniently located for the bus operator and mounted in such a manner that will not pose any safety hazard. The OCP shall utilize a durable weatherproof keypad with tactile feel for destination message control functions.

The destination sign system shall be capable of programming 10,000 message lines. The number of public relations messages shall be limited only by the remaining number of message lines not used for destination purposes. Sign displays shall have alternating message capability with programmable blanking time between message lines as may be required. Variable blanking times shall be programmable between 0.5 to 25 seconds in duration. Each line message or blanking

time for each message shall be individually programmable. The message display units shall incorporate an automatic blanking feature that will cause the display area to blank within 30 seconds of the bus master power switch being turned off.

An emergency message shall be initiated by the closure, or opening, of a dry contact switch or relay. The emergency message shall be displayed on the exterior of the bus only. The OCP shall not display the emergency message. The destination sign shall automatically resume normal operation when the remote emergency switch is returned to its normal position.

Destination Sign Programming: The electronic sign system shall be programmable via an integral connector located in the front destination sign area. Software shall be furnished for programming the sign system via an IBM-compatible, laptop computer. Software shall be capable of providing a high degree of flexibility to create, or select preprogrammed, fonts and graphic displays. The sign shall have the capability of being programmed in the field using a PC or field programmer. Message program information shall be transferable to and/or from the field programmer device as specified by the transit system in attachments to Part 5: Technical Specifications.

The destination sign compartments shall be designed to prevent condensation and entry of moisture and dirt. Additional provisions shall be included, if necessary, to prevent fogging of both destination sign compartment window and glazing on unit itself. Access shall be provided to allow cleaning of inside of destination sign compartment window and unit glazing.

A complete listing of destination sign readings for initial sign programming by the manufacturer are provided in attachments to Part 5: Technical Specifications.

Front Signs:

Sign Size:

A 16 Row by 148 Column Spectrum Route Multi-Color Sign that shall have no less than 3,264 LEDs with a message display area of not less than 8.0 inches high by not less than 64.6 inches wide. The LEDs displays shall consist of red-blue-green LEDs and amber colored LEDs. The color LEDs shall be rated by their manufacturers for a life

expectancy of 50,000 hours to 100,000 hours and shall support up to 27 colors.

Sign Readability:

The destination message shall be readable by a person with 20/20 vision from a distance of 250 feet. The sign shall have an equal readability at 65 degrees on either side of the line perpendicular to the center of the mean plane of the display. The entire display area of all signs shall be clearly visible and readable both in direct sunlight and at night.

Side Signs:

Sign Size:

An 8 Row by 96 Column Spectrum Route Multi-Color Sign that shall have no less than 768 LEDs with a message display area of not less than 2.8 inches high by not less than 36.3 inches wide. The LEDs shall be rated by their manufacturers for a 100,000-hour life expectancy.

Sign Readability:

The destination message shall be easily read from the sidewalk level. The entire display area of all signs shall be clearly visible and readable both in direct sunlight and at night.

System Control Console – Operator Display and Keyboard:

The system control console shall be used to view and update display messages. The system control console shall utilize a 28-key conductive rubber pad keyboard with tactile feel, designed especially for the harsh transit environment or approved equal.

The system control console shall contain a 16 x 128 pixel vacuum fluorescent display. The system control console shall contain an audio annunciator that beeps to alert the operator to view the display for a message, or beeps indicating that a key is depressed. The system control console shall continuously display the complete message associated with the selected destination code.

Memory Transfer:

The sign system shall be reprogrammable through the system control console by either a PCMCIA flash card or a Memory Transfer Unit.

Emergency Message Display:

If required, a special emergency message can be activated by a switch. This message shall be displayed on signs, facing outside the vehicle, while the signs inside the vehicle, including the system control console, remain unchanged. The emergency message shall be canceled by entering a new destination code or by removing the emergency signal.

Programming:

A programming software package shall be furnished to generate message lists for the destination sign system. A PCMCIA flash memory card having a minimum of 8 megabytes of memory shall be provided to facilitate bus system programming. The software must be compatible with Windows NT, Windows 2000, Windows XP, Windows Vista and Windows 7

The programming software shall use techniques that require minimal operator training and that are intended for use by operators that are not trained in complex computer operations. All operator screens shall utilize pull down and pop-up menus.

22. BICYCLE RACKS:

Manufacturer/model should be **Sportworks Veloporter 2 or equivalent.**

- Racks must have a 2 (two) bike capacity, and follow the specs noted below.
 1. The bike rack must meet OSHA requirements for lifting by a single individual and be capable of being raised or lowered with one hand
 2. The bike rack must accommodate all bicycles with wheels 16" (for example, the Dahon folding bicycle series) or larger diameter, excluding tandems and recumbent type bicycles. The rack must accommodate all bicycles 80" and longer.
 3. The bike rack frame must be manufactured with 304 stainless steel tubing with a minimum wall thickness of 0.125 in., outside corners to be rounded, pinch joints minimized and welds smoothed.
 4. All nuts, bolts and washers shall be either AISI Type 304 stainless steel or Grade 8 yellow zinc plated steel

- 5.** The bike rack must be mounted to the front of the bus and accommodate two (2) bicycles. In the stowed position, folded up against the front of the bus, it shall protrude no more than 8” from the front bumper. The protrusion shall be no more than 36” when deployed.
- 6.** The latching mechanism must automatically lock the bike rack in the stowed and deployed positions.
- 7.** The bike rack, when stowed, shall not interfere with any access panels/doors, windshield wipers or driver vents.
- 8.** The bike rack shall be designed for loading and unloading from the front, curbside, of the bus. The securement can only contact the bicycle’s tires as to not do any damage to the bicycle’s frame. The bike rack shall have a positive securement with a four (4) point locking system, contacting the wheel in such a way that greater than half the circumference of the wheel is captured. Straps, cords, and/or springs shall not be required to secure a bicycle.
- 9.** The carrier shall not interfere with the ability of the driver to safely operate the vehicle. This includes, but is not limited to, the obstruction of the windshield view and the operation of the windshield wipers, turn signals, and headlights.
- 10.** The carrier shall be compatible with automated bus washing systems and shall be capable of repeated use with automated washing equipment without sustaining damage to the carrier, vehicle, or the washing equipment. The carrier shall be designed as not to accumulate water internally.
- 11.** The use of this rack shall not affect route scheduling. The bike rack shall have a design capability of being loaded or unloaded in 20 seconds or less.
- 12.** The mounting bracket/ pivot plate assembly must be designed to fit all urban transit buses, both standard floor and low floor.
- 13.** The bicycle rack shall be warranted against defects in materials and workmanship for a period of one (1) year from date of installation.
- 14.** The bicycle rack manufacturer is required to furnish all the complete parts and service (maintenance) books.
- 15.** The bicycle rack should have a latching system in both positions, stowed and deployed; this will need to be explained in detail
- 16.** The racks should be in a friendly design and a tire only mount.
- 17.** The mounting brackets should be detailed to what bus needs with brackets.

Product Standards:

Only first quality materials, workmanship and finish shall be acceptable.

All general materials and workmanship shall be guaranteed to be free of defects for a minimum of at least one (1) year from date of installation except as noted below. Any defects shall be rectified or replaced to meet specifications at the expense of the manufacturer, including freight, parts and labor.

Any exposed fasteners shall be colored to match the finish of the framework components.

Spare Parts:

The contractor will provide pricing and the delivery time on the available spare parts for each bicycle rack and maintain adequate stock levels.

23. DELETE ALTRO CHROMA FLOORING:

This delete's the Altro Chroma Floor covering to install the Gray RCA Rubber Transit-Flor. The step well, entrance area, and center aisle floor area shall be overlaid with ribbed, slip resistant, oil resistant commercial 3/16" step tread thickness. The 1/8" thickness flooring under the seats and in the wheelchair area shall be smooth, slip resistant, and oil resistant. The flooring shall extend up the sidewall and rear wall to the seat rail line and shall be coved at the floor/wall joint to form a smooth water-tight transition. Flooring adhesive shall be oil resistant.

24. DELETE YELLOW POWDER COAT ON HANDRAILS:

This delete's the yellow powder coating on the stainless steel handrails, grab handles and stanchions. They will be the natural brushed Stainless steel Color.

25. 100% NIDA-CORE[®] STRUCTURE OR APPROVED EQUAL:

Resin Hardened Nida-Core[®] or approved equal Polypropylene Copolymer honeycomb (1" thickness, minimum) Throughout 100% of the entire body structure, walls, roof, front and rear caps must be used instead of Honeycomb Paper Vertical. This is to eliminate any possibility of rotting in any area of the body structure.

26. COMPOSITE FLOOR:

Composite Space-age Synthetics Thermo-Lite Board-Tough Series or approved equal Floor that will not rot and is lighter than the standard marine grade plywood floor.

27. SIDE DOOR SLIDE OUT BATTERY TRAY:

Must have an Extra Heavy Duty Stainless Steel slide out Battery Tray for all auxiliary batteries mounted under Bus. Battery Box must have OEM type battery hold down brackets to securely hold batteries in place. Cloth hold down straps is not ALLOWED. Battery box must be sealed to keep mud from getting on batteries.

28. DIESEL ENGINE:

Current Power plant for the make and model of chassis

29. REAR SPARE TIRE HOLDER:

A rear spare tire holder that shall be affixed to the vehicle in a way to allow easy removal of spare tire.

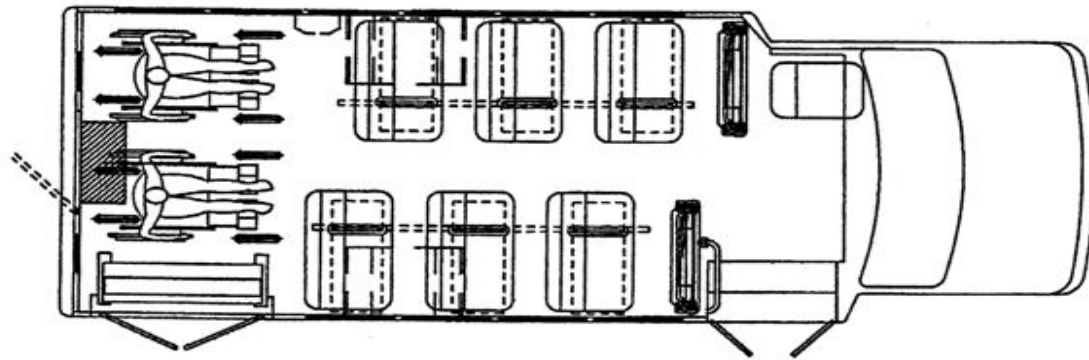
30. ADJUSTABLE REAR SUPSENIION SYSTEM:

System shall be a MOR/ryde suspension system or equal shall be used with the following:

- a. Installed as per the manufactures recommendations.
- b. Fully adjusted for each bus installed on.
- c. Warranty to be a 5 year 100,000 mile.

FIGURE 1:

Figure 1



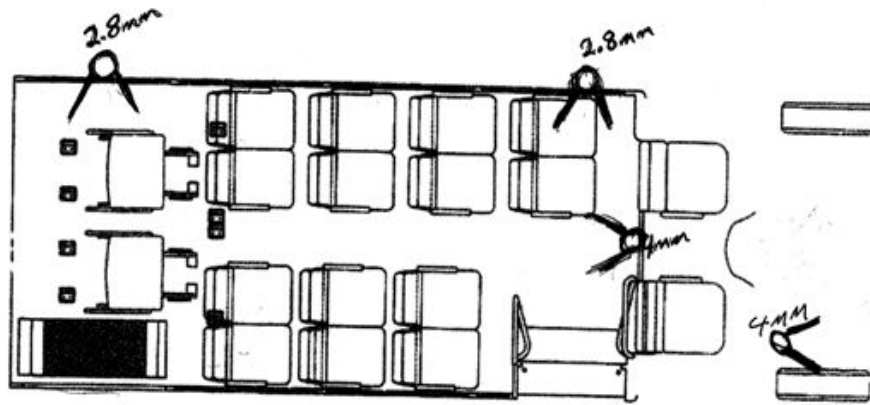
24' 12 Passenger
Rear Lift MFSAB

FIGURE 2:



FIGURE 3:

Figure 1



24' 15 Passenger Rear
Lift B Pillar

FIGURE 4:



FIGURE 5:



**SECTION “J”
RESPONSE SHEET
24’ 12 Passenger MFSAB Bus**

**BASE
VEHICLE**

**COST PER
UNIT**

Transit Bus (gas engine)

\$ _____ / ea.

CHASSIS SPECIFICATIONS

Specify Overall Vehicle Length (outside of front bumper to outside of Rear bumper): _____

Overall vehicle length: 276” minimum
307” maximum

Width: Exterior 95” minimum
Interior 91” minimum

Height Exterior 105” minimum
124” maximum

Interior 74” minimum

Wheelbase: 158” minimum
176” maximum

AIR CONDITIONING

Make and Model of Rear A/C Unit and Cooling Capacity of rear Unit BTU’s/Hr.
Include literature on unit being proposed.

MAKE/MODEL _____

BTU/HR of Rear Unit only _____

HEATING

BTU/HR of rear heating unit you are proposing.

BTU/HR of Rear Unit only _____

OPTIONAL ITEMS**COST**

- | | | |
|-----|-----------------------------------|--------------|
| 1. | CNG Conversion Chassis | \$_____ /ea. |
| 1. | CNG Bifuel Conversion Chassis | \$_____ /ea. |
| 2. | Propane Dedicated Conversion | \$_____ /ea. |
| 3. | Propane Dual Fuel Conversion | \$_____ /ea. |
| 5. | Back-Up Monitor System | \$_____ /ea. |
| 6. | Two-way radio (UHF) | \$_____ /ea. |
| 7. | Two-way radio (VHF) | \$_____ /ea. |
| 8. | Two-way radio (800 MHZ) | \$_____ /ea. |
| 9. | Driver's Shield | \$_____ /ea. |
| 10. | Painted lower skirts | \$_____ /ea. |
| 11. | Outside Passenger Door Switch | \$_____ /ea. |
| 12. | Bus Camera System: | \$_____ /ea. |
| 13. | Fabric Insert on Ceiling | \$_____ /ea. |
| 14. | Street Side Exhaust | \$_____ /ea. |
| 15. | Integrated Child Seats | \$_____ /ea. |
| 16. | Vinyl Seats (Price Deduction) | \$_____ /ea. |
| 17. | Public Address System | \$_____ /ea. |
| 18. | Passenger Signal System Pull Cord | \$_____ /ea. |
| 19. | Passenger Stop request Signs | \$_____ /ea. |
| 20. | Fare Collection Box | \$_____ /ea. |

21. Destination Signs \$_____/ea.
22. Bicycle Racks \$_____/ea.
23. Delete Altro Chroma Flooring (Price Deduction) \$_____/ea.
24. Delete Yellow Powder Coating on Handrails, Grab Rails and Stanchions. (Price Deduction) \$_____/ea.
1. 100% Nida-Core[®] structure \$_____/ea.
26. Composite floor \$_____/ea.
27. Side Door Slide Out Battery Box \$_____/ea.
28. Diesel Engine: \$_____/ea.
29. Rear Spare Tire Holder: \$_____/ea.
30. Adjustable Rear Suspension System: \$_____/ea.

A list of optional equipment and/or accessories shall be provided. The list must contain:

- Item
- Description and functionality detail
- Cost of item installed in final delivery of vehicle
- Any changes to listed specifications as outlined above to accommodate options

RFP EXECPTIONS:

Supplier must list any exceptions here to be used as a part of the RFP evaluation and analysis. Please list the roman numerical on the standard specs or the number for the options when listing any exceptions.

**SECTION “K”
SPECIFICATIONS FOR
24’ 15 PASSENGER, REAR LIFT COMPOSITE
TRANSIT BUS**

GENERAL DESCRIPTION

It is the intent of these specifications to set forth minimum standards for the procurement of a light transit vehicle that complies with Title 49 Code of Federal Regulations, part 38, subpart B, entitled “Americans with Disabilities Act (ADA) Accessibility Specifications for Buses, Vans and Systems”. All dimensions and equipment shall comply with the standards as set forth within the 49 CFR. The vehicle shall be new, the most current production model available, and must be complete with manufacturer’s standard equipment and accessories, fully serviced and ready for operation. The vehicle shall be equipped to meet all Federal Motor Vehicle Safety Standards and Procedures (FMVSSP) that apply. If these specifications contradict any listed in the Federal Regulations, they are superseded by those of the Federal Regulations

To take advantage of administrative and cost savings and to ensure that all federal requirements are met, this procurement is assignable to other agencies, organizations and Tribal Governments funded by the Federal Transit Administration.

NOTE:

Any Brand names and specifications mentioned within this document are for reference only. Proposals will only be considered when brochures/specifications are included for each component provided with Proposal for evaluation.

I. DELIVERY:

Vehicle must be delivered at a maximum of 120 calendar days from the date a Purchase order is issued. Pre-delivery servicing and adjustments: prior to acceptance by the purchaser, the vendor shall service and adjust each vehicle for operation. This process shall include but not be limited to the following:

1. The vehicle must have a full tank of fuel when delivered.
2. Each bus shall be designed to facilitate the disassembly, reassembly, servicing or maintenance thereof by use of tools and items that are normal and available as commercial standard items. The body and structure shall be designed for ease of maintenance and repair.
3. All parts added, as part of the modification process shall be new.

4. Headlights properly aligned
5. Engine Tuned
6. All accessories properly adjusted
7. Electrical, braking and suspension systems inspected
8. Both batteries Charged
9. Front-end alignment must be done after body is put on chassis. Chamber, caster and toe must be adjusted to the center of OEM specs. Ford chassis buses must have adjustable caster, camber bushings installed. Standard OEM bushings will not be accepted. Each bus must come with documentation stating before and after actual alignment readings of bus.
10. All wheels balanced, including spare
11. All lubricants checked, and greased if needed
12. Cooling system serviced with permanent type anti-freeze and summer coolant for minus 20 degrees F (-28.888C).
13. Warranty papers and owner's guide
14. Exterior and interior cleaned and washed.
15. Odometer cannot exceed 3,000 miles at the time of delivery of completed buses to the purchasing agency. There will be a charge of one dollar (\$1.00) per mile for each vehicle with an odometer reading in excess of 3,000 miles payable to the purchasing agency at the time of delivery.
16. Under no circumstances are tow vehicles to be attached to any buses.
17. Each vehicle must be delivered to the agency submitting the P.O.

Copies of the all Certificate of Origins and signed invoices must be sent to the organization named on the purchase order before delivery is made and must be delivered with the vehicle: receipt of these after delivery **is not acceptable**.

NOTE:

- If these specifications contradict any listed in the Federal Regulations, they are superseded by those of the Federal Regulations.

II. NO PROTOTYPES:

Must be a Current production Model, B Pillar type bus that has been in Production for a minimum of one year.

III. BODY STRUCTURE:

Fiberglass Reinforced Plastic (FRP) Composite Unitized-type Body

The bus body shall have a heavy-duty unitized structure and shall be of durable fiberglass reinforced plastic (FRP) composite construction. All the body panels shall consist of an exterior high gloss gel coat (.020" thickness, minimum) on a

resin-hardened FRP (.125" thickness, minimum) attached to a center layer of Resin Hardened Nida-Core[®] or approved equal Polypropylene Copolymer honeycomb (1" thickness, minimum) must be used in all high moisture areas around the fuel fill cutout, fender flare cutout, front to back of the bus at floor level to keep any road splash from degrading the structure on both driver and pass sides, roof hatch cutout, rear window cutout and lift door area. Resin Hardened Paper Vertical Honeycomb (1" thickness, minimum) can be used in all other non high moisture locations.

Steel perimeter and transverse supports, completely fiber glassed to adjoining body parts. It shall use proper adhesive materials to adequately bond and mechanically fasten all joints and points of stress with sufficient strength to comply with the FMVSS 220 rollover protection test. Each supplier shall provide certification with the Proposal that the bus as proposed meets or exceeds FMVSS 220 and FMVSS 221 requirements.

All exterior side and roof panels when completed shall be at a minimum 1 1/8" thick. Bond lines at the side walls, rear end cap, roof, and front cap shall be interlocked by adhesives, resin saturated fiberglass matting, and mechanical fasteners, forming a unibody design without exposed fasteners or protruding moldings. Imbedded reinforcements equal to the structural members of the body shall be installed at all door openings in order to support door mounting hardware and door operating mechanisms. All door openings shall have full structural framing to maintain integrity of the body structure. **All door frame structure's including wheel chair door frame shall be made of 304 Grade stainless steel powder coated OEM white.**

Interior panels may be an integral part of the FRP composite panel or may be made of scuff-resistant laminate/FRP finished material. Molded ABS may be used as trim but not for interior panels. Where threaded fasteners are in the trim/interior panel only, an imbedded reinforcing nut or a reinforcing steel panel shall be integrated into the FRP composite for added strength and fastener retention.

Where self-tapping fasteners are used in body panels, the body panels shall have an imbedded reinforcing nut or a steel reinforcing panel shall be integrated into the FRP composite for added strength and fastener retention.

Window openings cut into body panels shall have a maximum frame clearance of 1/8" on each side, to minimize the need for caulking. All openings cut into body exterior panels must have the exposed edges of the cutout properly coated to prevent moisture intrusion before further assembly or painting occurs. **Steel**

window frames in the body shall be Zinc Dipped to prevent corrosion and windows shall be properly caulked/sealed to prevent intrusion of moisture and dust.

Fiberglass Roof must be a one piece molded unit that has molded sides to connect to side walls. Bending a flat sheet of fiberglass to connect to walls **is NOT ALLOWED.**

V. OEM CHASIS FRAME

The rear overhang, measured from the center of the rear axle to the outer edge of the rear bumper, cannot exceed 1/3 of the overall vehicle length.

- Further, ODOT will not allow re-certification of the chassis OEM GVWR and GAWR.
- Any vehicle that exceeds the OEM GVWR and/or GAWR **will not be accepted.**

NOTE:

Supplier must provide detailed documentation if chassis modification must be made to accommodate length of wheelbase from OEM.

- This documentation shall include, but not limited to (type of modification, frame supports, out sourcing of frame work, drive shafts, or quality control).

VI. DOORS:

Passenger Entry Door:

Passenger entry door must have a Two (2)-panel door design providing a minimum 32" X 80" clear opening. **A&M door actuator, or equivalent.**

- Door is located in coach body and electrically power operated controlled by the driver.
- Each door panel shall be actuated together by a single electric powered overhead actuator.
- Actuator is equipped with an emergency manual release lever.
- Vertical door shafts shall be an integral part of the door panels.
- The top portion of the shaft shall be designed to prevent door panels from rotating out of alignment.
- Shafts shall pivot on a top-mounted, bronze thrust bushing and a lower stud-mounted alignment pivot, accommodated with a glass-filled molded bearing equal to **A&M door actuator, or equivalent.**
- Perimeter door edges shall be sealed with neoprene 2" leading edge seals.

- Seals shall overlap front and rear to provide an air and watershed.
- Upper and lower edges of doors shall be tightly sealed against entrance of air drafts and water, including spray from vehicle washing.
- Operating controls should be located within easy reach of the driver.

VII. PASSENGERS DOOR INTERLOCK:

Electric Passenger door in coach body will only work when transmission in Park.

VIII. WHEELCHAIR LIFT DOORS:

A double door entrance shall be provided on the right (curb) side of the vehicle behind the vehicle's rear wheels.

- The door opening shall be at minimum width of 48" and height of 70" to accommodate the wheelchair lift specified within this document.
- Clearance between the top of the door opening and the raised lift platform shall be a minimum of 68".
- Each door shall be equipped with an **A.L. Hansen Type 23 Door Check or equivalent** which is a Top Mounted Spring Loaded Device that will securely hold the door in the open position while the wheelchair lift is in operation. (Sliding door is not acceptable).
- Each door must have a window which shall be the same height as the passenger windows.

IX. COACH BODY DOOR LOCKS:

All doors shall be equipped with a lock.

X. DRIVER'S DOOR AND CO-DRIVER'S DOOR:

- Must have Power windows, Power door locks

XI. RUNNING BOARDS:

Extra Heavy-duty Running Boards that are bolted to Coach Body for added step strength

- Steps must be able to hold over 400lbs.

XII. HANDRAIL:

- Handrails (left and right) of the front passenger door shall be provided. Cross-sectional diameter of handrail shall be between 1 ¼" and 1½".
- Entrance handrails shall not be padded.

- Must have at minimum a wall thickness of 18 gauge Stainless steel.
- Two overhead ceiling-mounted handrails with mounting brackets at 24" on centers placed over the aisle shall be provided for the full length of the vehicle's passenger aisle way, except in wheelchair lift area and over passenger entry door.
- All handrails must be Powder coated Stainless Steel that will not rattle or Flex and mounting bolts shall be bolted into Structural steel.
- Color of Handrails shall be bright yellow (to assist the visually impaired),
- Wood mounting **is not allowed**.

XIII. GRAB RAILS:

Must have grab rails with the following:

- Shall be installed in the entrance to the vehicle running parallel to the steps in a configuration which allows persons with disabilities to grasp while entering or exiting the vehicle.
- Cross-sectional diameter of grab rail shall be between 1 ¼" and 1½"
- Must be at minimum a wall thickness of 18 gauge Stainless steel.
- All Grab rails must be Powder Coated Stainless Steel that will not Rattle or Flex and mounting bolts shall be bolted into Structural steel.
- Color of grab rails shall be bright yellow (to assist the visually impaired).
- Wood mounting **is not allowed**.

XIV. STANCHIONS:

- Must be at minimum a wall thickness of 18 gauge Stainless steel.
- All stanchions must be Powder Coated Stainless Steel that will not Rattle or Flex and mounting bolts shall be bolted into Structural steel.
- Wood mounting **is not allowed**.
- Color of stanchions shall be bright yellow. (to assist the visually impaired),
- A stanchion and vinyl padded modestly panel shall be provided at entrance door in front of first passenger seat.
- A stanchion from the floor to roof shall be installed on the interior left side of the front passenger door approximately 14 inches inside the vehicle.
- A horizontal handrail shall be installed between the stanchion and the right wall approximately 30 inches above the floor.

- A stanchion shall be located in the rear of the driver's seat at the edge of the aisle and a handrail shall extend from the stanchion to the side wall of the vehicle behind the driver's seat.
- The stanchion shall not interfere with a rearward travel of the driver's power seat adjustment.

XV. MODESTY PANEL:

- A modesty panel shall be positioned at the rear edge of the step well.
- This will be made up of a stanchion at the inner rear corner of the step well with a rail running from that stanchion to the wall at windowsill height and the modesty panel installed therein.
- Panel shall have no less than 1 ½" between the bottom of the panel and the floor to facilitate cleaning of the floor.
- Fastening of the panel shall be by bolt and nut type system.

Sheet metal Screws **will not be accepted.**

XVI. STEPWELL:

Must be made of minimum 14 gauge 304 Stainless steel to prevent rusting and powder coated white.

- Must have two steps covered with the same slip resistant floor covering as specified within this document.
- maximum 12" minimum 10" from ground to first step,
- 9" riser, Tread depth minimum 8½".
- All steps to get up to floor level must be in step well area.

XVII. INTERIOR:

XVIII. All interior panels shall be vinyl coated with **AZDEL SuperLite backing, vinyl coated metal, FRP or equivalent** with same durability and cleaning ease.

Vendor shall provide a list of available colors at their quoted price and may also include a list of colors available at additional cost.

- Interior shall be trimmed with an attractive molding, covering all seams.
- All surfaces and items or hardware in passenger compartment having sharp edges, corners, or angles that could cause injury shall be passed with heavy-duty vinyl covered foam-type material.
- Door and instrument panel is to be painted or otherwise finished to match overall tones of interior panels

XIX. DRIVERS AREA:

The drivers area shall consist of an ergonomically designed molded dash console, located conveniently to the driver's seated position and in full view of the driver.

- Supplemental control panels mounted above the driver's head or above windshield **are not accepted**.
- All switches are to be properly labeled and illuminated.
- The instrument control panel shall be painted or otherwise finished with non-reflective, anti-glare black finish.

XX. STORAGE COMPARTMENT:

Vehicle must have a large overhead driver storage compartment.

- This compartment must have a lip on the inside to protect objects from opening compartment door. Also shall provide easy access to clearance lights connectors through top of Storage Compartment. And provide a door latch to hold door open.

XXI. FLOOR ASSEMBLY:

The floor shall consist of **3/4 inch Marine Grade Plywood with edge undercoating**.

- Construction of sufficient strength and support to not allow flexing of the finished or surface floor. The chassis, body and flooring shall be attached in such a manner as to act as one unit without any movement or flexing at the joints.
- **Shall have Floor Coving material at wall.**

XXII. SLIP-RESISTANT FLOOR COVERING:

Floor covering shall be slip resistant vinyl flooring, constructed with aluminum oxide, silicon carbide and optional PVC chip blended throughout a high quality vinyl wear surface.

- Top coating **is not acceptable**.
- Backing to be polyester/cellulose material with fiberglass fiber reinforced center scrim for additional durability.
- Bacteriostats will be incorporated providing all exposed surfaces with excellent anti-bacterial properties.
- Must be **Altro Chroma with a minimum thickness of 2.2 millimeters or equivalent**
- Color to be selected from current Altro color range by each agency.
- The whole floor will be a uniform thickness throughout the vehicle, eliminating the need for ribbed surfaces, while exceeding the ADA

minimum slip resistance standard rating of .06 static coefficient of friction under dry or wet conditions.

- Coving material is to be installed to support floor when rolling floor covering up the sidewall of vehicle to the seat track.
- Seams must be heat welded to provide a permanent waterproof seal against water penetration leading to premature sub-floor failure or curling leading to possible tripping hazards.
- Landing area and step edgings are to be Altro yellow safety vinyl edging.
- Edging is to heat welded to the main floor and step tread to provide for a long lasting seam.
- The floor must be installed according to manufacturer's directions using proper tools, accessories and adhesives.

NOTE:

If the flooring is not installed according to the flooring manufacture (heat welded and adhesives) specifications the bus **will not be accepted**.

XXIII. GAUGES:

Vehicles shall be equipped with the following needle-type gauges (lights in lieu of gauges are not acceptable): and all shall be in easy view of driver. If OEM gauges are not available then Stewart Warner gauges or equivalent shall be used.

1. OEM chassis Voltmeter Plus a Auxiliary Voltmeter Gauge
2. Oil pressure
3. Temperature
4. Fuel level
5. Speedometer
6. Odometer
7. Tachometer
8. Engine hour meter

XXIV. BUMPERS:

Front and rear bumpers shall be securely fastened to the chassis frame to adequately absorb shock from impact. In no case are the bumpers to be fastened directly to the vehicle body.

- Rear bumper must be an energy absorbing Romeo Rim with Heavy Duty bumper mounting brackets that use four 7/16 grade 8 bolts per bracket or equivalent.
- Front bumper and grille shall be chrome plated.

XXV. INSULATION:

Insulation shall be provided in both walls, roof, front cap, rear wall and roof side radius area where roof meets walls.

- Adequate insulating properties shall be provided to ensure minimum heat, cold and noise penetration into the vehicle interior.
- Insulation may be accomplished through the use of **fiberglass, vacuum design or equivalent**.
- Must have a minimum R-value of 6, and fire resistant.

XXVI. AIR CONDITIONING

- Air conditioning efficiency is of paramount concern to the purchaser. Air conditioning shall be adequate to cool both the passengers and driver areas. Only vehicles offering top of the line commercial transit type air conditioning systems will be considered.
- The vehicle's electrical system shall be designed and integrated such that ample electrical supply is provided to maintain optimum air conditioning performance without battery discharge.
- The air conditioning system offered shall have a proven transit performance record and shall be provided by a nationally recognized manufacturer of bus air conditioning.
- The OEM Dash unit and Rear Air Conditioning unit shall be two separate stand alone systems. Tying into the front OEM dash system **is not allowed**.
- Rear evaporator shall have an easy accessible return air filter; having to remove evaporator cover housing to gain access to filter **will not be accepted**.
 - The rear air conditioning system shall provide a minimum cooling capacity of 65,000 BTU/Hr.
 - **A Carrier model AC-833MAX System or equivalent.** The Combined Total cooling Capacity of the OEM dash unit and Rear Unit shall be a minimum of 78,000 BTU/hr.
 - Rear Evaporator shall have an easy accessible return air filter; having to remove the evaporator cover housing to gain access to filter will not be accepted.

The Rear A/C System must have the following specified components.

1. Carrier EM-3 Evaporator or equivalent

2. Carrier CM-3 Condenser or equivalent
3. Carrier TM-21 Compressor or equivalent
4. Carrier Flex CLICK SAE J-2064 Type E Color coded hoses or equivalent to.
5. Service Ports for rear Air conditioning System must be easily accessible and located under the bus near the rear A/C Condenser.

A conventional dash mounted unit for the front of the driver's area of the vehicle. Both units shall be equipped with multi-speed fans (minimum 2 speeds).

- Evaporator fans shall produce a minimum of 1600 CFM.

The Rear system shall include a skirt mounted commercial condenser. Condenser fan(s) shall produce a minimum of 2400 CFM of airflow over the coils. All components of the condenser unit shall be coated or constructed with a corrosion resistant material to protect the unit from road salts other foreign substances that might be sprayed on the unit.

- Condenser unit shall be positioned so as not to draw air from under vehicle.

NOTE:

Air conditioning refrigerant lines, to include their foam covering, will not be exposed to road hazards or elements of the weather. All air conditioning refrigerant lines, which extend from the engine area to the rear evaporator, shall be protected from damage. And all drain lines, hoses and wiring from evaporator shall be covered from view.

XXVII. VENTILATION:

Vents provided in driver area.

XXVIII. HEATING:

- Front & rear heater core factory installed hot water type, of sufficient capacity to warm cabin area and clear windows of snow, ice and fog.
- An easily accessible clearly marked shut-off ¼ turn ball valves shall be installed in heater supply and return lines which will allow the water to be cut off to the rear heater core.
- The water lines for the rear heater core shall be protected from damage.

Rear heating unit shall provide a minimum of 65,000 BTU's/Hr. this is in addition to front dash unit.

XXIX. SAFETY EQUIPMENT:

All miscellaneous equipment must be secured to the vehicle and easily accessible.

1. First aid kit: (24M – National Standard School Bus Metal
 - Must be Certified Safety Mfg. Model S203-045 or equivalent.
2. Fire extinguisher – Multi-purpose Stored Pressure Dry Chemical Extinguisher.
 - Must be a **5 lb. type 3A:40B: C Pro Line, Kiddie Model # FXBND9 or equivalent.**
 - Must have a gauge to indicate state of charge and mounted to vehicle using a bracket and having a heavy duty vinyl cover.
3. Triangle warning devices (3), with storage container.
 - must meet FMVSSP # 125
4. Bloodborne Pathogens infection control kit.
 - Must be Certified Safety Mfg. Model #FK200-931, **or equivalent.**
5. Seat belt cutter

XXX. MIRRORS:

Exterior:

Heavy Duty Heated Power Mirrors by **Velvac Model 2020 Deluxe Head with Turn Signals or equivalent.**

- Mirrors are to be mounted to the driver and copilot doors in the same position as the OEM mirrors.

Interior:

Vehicle must have the two (2) following mirrors.

- Must be OEM Day/night, 10" rear view mirror, confirming to FMVSS No. 111. (This mirror will be deleted if purchaser chooses backup camera as an option).
- Passenger viewing and backup mirror shall be made of safety glass, having rounded corners and protective edges, and a 6" x 16". This mirror is in addition to the mirror mounted on windshield.

Fresnel Lens: 11" x 14" Lens on rear window.

XXXI. SEATS:

Driver's Seat and Co-Driver's Seat:

1. The driver seat must be a deluxe bucket, OEM high back 6-way power seat.
2. The Co-Driver's Seat must be adjustable fore and aft.
3. Seats must be padded with allergy-free material and upholstered with a durable transit quality level 5-cloth fabric.
4. Both seats must have adjustable lumbar
5. Both seats must have a certified seat belt and shoulder harness with retractor shall be attached to frame.
6. Both seats must have reclining backs and padded armrests.

NOTE:

Supplier must supply seating diagram reflecting all listed dimensions for approval.

Passenger Seats:

Seating shall be provided for fifteen (15) ambulatory passengers and 2 non-ambulatory passengers.

- Wheelchair spaces will each be equipped with a wheelchair securement tie down and occupant restraint system, which meets the Americans with Disabilities Act requirements.
- All seats shall be "bucket" semi-contoured transit type.
- Seats are to be consistent with what is accepted as transit quality construction. School bus type seats **are not acceptable**.
- Seat frames are to be welded.
- Seats must be padded with allergy-free material and upholstered with a durable transit quality level 5-cloth fabric.
- Aisle seats must have padded fold up armrests and Anti-Vandal grab handles on the seat backs.
- Seats must be **Freedman Seating Mid Back type bucket seat or equivalent**.
- Seat belts to be installed at each seat position, and must be a Retractable under Seat Retractor, type of seat belts.
- Must include Two (2) Seat Belt Extensions that will fit Passenger Seat Belts.

- A commercial quality seat belt knife fastened to bus in driver's reach.
- All seats shall provide a minimum seat width of 17" per passenger, or 34" per two (2) -passenger seats.
- Minimum depth of seat (front to back contour) 18"
- All seats including any foldaway seats must be bolted to structural steel.

Bolting seats to plywood floor without bolting into structural steel under floor is **NOT ALLOWED**.

All seat tracks must be welded to steel sidewalls and steel floor sections. Riveting or bolting seat tracks to sidewalls is **NOT ALLOWED**.

- Seats shall be fully padded and shall be constructed with a no-sag spring bottom suspension. Plywood seat bottoms are unacceptable.
- Seats shall be covered with a durable transit quality level 5-cloth fabric.
- Seats shall be spaced on a minimum of 28 1/2" centers, allowing for a minimum of 10" between the front of the bottom cushion and the back of the next forward seat.
- Minimum aisle width shall be 16".
- All seats shall meet, as minimum, FMVSSP 302 207 requirements.

XXXII. PRIORITY SEATING SIGNS:

Each vehicle shall contain sign(s), which indicate that, the row of forward – facing seats located in the front of the vehicle are priority seats for persons with disabilities, and that other passengers should make such seats available to those who wish to use them.

- The signs shall be located on the interior walls directly above the front row of forward-facing seats.
- Signs must follow FTA 49CFR38 Section 38.27 for the required lettering characters of the signs.

XXXIII. LIGHTING:

All manufacturers' lighting added to the vehicle (both interior and exterior) shall be provided with light-emitting diode (LED) lights.

- Door activated 4 way flashers that are activated when passenger door is opened. This includes 2 additional amber LED flashing lights mounted high on each side of the rear wall.
- The location, type and hookup of all exterior lights and reflectors to conform to Federal Motor Vehicle Safety Standards and Procedures.

- The number of interior lights and their light output shall be determined by providing a minimum average of 7 foot-candles of illumination on a 1 square foot plane, at an angle of 45 degrees from horizontal, centered 33 inches above the floor and 24 inches in front of the seat back at each seat position.
- Floor surface in the aisles shall be a minimum of 10 foot-candles.
- Each vehicle shall be equipped with OEM daytime running lights.
- Must have Red LED lights over all emergency exits
- All interior lighting in the passenger area shall be mounted in the ceiling cove at the sidewall with a minimum of three (3) fixtures on each side of the vehicle. Lighting fixtures shall be installed on the interior walls and ceiling in a manner that does not present a head strike to the passengers.

NOTE: All clearance lights front, rear and side shall have metal armored shields. This shall protect lights from tree limb damage.

- A.** Tail lights are to be recessed and shall not protrude more than 2 inches from the body; they shall include a pair of amber combinational hazard and signal lights. Rear tail-lamps shall also include a pair of red tail lights and red stop lights, which may be combinational. **(Ref: Dialight 46121RB-Red, 46121AB-Amber or equivalent)**
- B.** Side signal lamps, with marker, shall be provided independently or be incorporated into the center of the vehicle. Location must be above and in front of the rear wheel opening and provide visibility from behind the rear wheel opening. **(Ref.: Dialight 18001AB811 or equivalent)**
- C.** Clearance marker lights shall be installed surface-mounted, facing the front, rear, and each side at rear. **(Ref.: Dialight 15001RB, 15001AB or equivalent)**
- D.** The third brake light shall be center-mounted above the rear window, minimum 18" in length. **(Ref.: Dialight 87121RB or equivalent)**
- E.** Two back-up lights, one mounted on each side of the body rear cap. **(Ref.: Dialight 46001CB or equivalent)**

- F.** Step lighting shall be mounted to provide light for the entire step-well and an area a minimum of three (3) feet beyond the first step on the ground area outside the bus (**Ref.: Dialight 170-81CB or equal**).
Note: The step lights shall be extinguished when the front door has closed.
- G.** Raised floor step lighting shall be provided by one strip light mounted in the step riser. Light strip shall be a minimum of 18 inches and recess-mounted to protect from accidental damage by passengers contacting light while using the step. (**Ref.: Dialight 87121CB or equivalent**).
- H.** Exterior step light shall be mounted away from wheel splash. (**Ref.: Dialight #VSW-CC-19B-35-801 or equivalent**)
- I.** Wheelchair lift area light shall be positioned in the manufacturer's standard location in order to illuminate the area in the immediate vicinity of the wheelchair lift platform for night operation. The light shall be automatically activated only when the wheelchair lift doors are open. (**Ref.: Dialight Light #46121CB or equivalent**)

XXXIV. ELECTRICAL WIRING:

All wiring shall meet the requirements of SAE recommended practice J878a, Type SXL.

- Connections with 3 to 12 circuits shall be environmentally sealed high impact plastic connectors with pull apart locking tabs.
- All non-OEM connections containing one or two circuits shall be made with Posi-lick connectors.
- No butt connectors **will be allowed**.
- All added wiring shall be in a loom and securely clipped for maximum protection and routed in separate hangers from the heater hoses or air conditioning hoses.
- Clips shall be rubber or plastic coated to prevent them from cutting the wiring insulation.
- All electrical wiring shall be automotive stranded and sufficient size to carry the required current without excessive voltage drop and shall be color, number and function coded at a minimum of eighteen (18) inch intervals.
- No electrical, stationary or mechanical device may block the removal of the engine cover inside the bus.

- All wiring passing through the body metal shall have anti-chaffing grommets.
- Each vehicle shall contain a set of detailed system by system “as built” wiring schematics covering all electrical equipment and electrical circuits installed, complete with wiring codes for each vehicle ordered.
- Identification on the wiring diagram must tie the diagram to the bus.

XXXV. WINDOWS:

- All windows to be of tempered safety glass and water and airtight.
- Window in driver’s door, windshield and entrance door glass are all to be tinted.
- All the windows in the passenger area are to be factory-installed smoked glass with at minimum 30 percent tint. **No Add on Film**
- Windows must be a top horizontal sliding T- transit type that the ventilation openings are located at the top of the window.
- Must be constructed of corrosion resistant aluminum frames.

NOTE:

All windows and emergency exits must meet the performance and operational requirements as outlined in the Federal Motor Vehicle Safety Standards and Procedures.

XXXVI. EMERGENCY EXITS:

- At least one (1) window on each side at or near the rear of the vehicle shall be equipped with emergency release latches to provide emergency exits.
- Release instructions shall be provided at or near the release handles and an audible alarm shall be installed near the driver, which will be activated when the window is released.

XXXVII. BACK-UP ALARM:

Alarm shall be waterproof **ECCO #530 or equivalent.**

- Must be mounted in the rear of the vehicle
- Must be readily audible outside the vehicle when the transmission is in reverse.

XXXVIII. WHEELCHAIR LIFT:

An electric powered hydraulic wheelchair lift shall be installed inside the vehicle at the side door.

- Bus must meet FMVSS 403-404 lift installation requirements.

- Wheelchair lift shall meet the following MINIMUM requirements.

1. A Braun wheel chair Lift NL919FIB-2 (Millennium-2 Series) or equivalent. Ground cable from lift must be connected to vehicle frame. Connecting ground cable to lifts mounting bolts is NOT ALLOWED.

- (a) 800 pound load capacity lifts assembly.
- (b) An electric hydraulic pump, powered by vehicle's electrical system.
- (c) Platform dimensions 34" wide by 51" long.
- (d) Platform to be constructed of 11 gauge expanded metal.
- (e) Platform shall be stored in an upright position within the vehicle.
- (f) Powered operation for (1) unfolding and folding the platforms and (2) raising and lowering the platform.
- (g) Emergency platforms release to permit the platform to be unfolded manually and lowered by gravity.
- (h) To prevent the wheelchair from rolling off, a barrier 1 ½" at minimum shall be provided on the outer edges of the platform and have an outboard roll stop that engages and locks before the platform leaves the ground to form a safety barrier when platform is raised or lowered
- (i) A free floating bridge plate will be replaced between the lift platform and the vehicle. This bridge plate will be hinged in a manner to permit upward movement should a person's foot become entangled.
- (j) Lift shall be securely bolted to the floor and floor reinforced as necessary to support the load.
- (k) To permit the lift platform to be raised without electrical power, a hand pump that allows the operator to raise the platform shall be installed.
- (l) An interior light shall be provided to illuminate the lift area;
- (m) All moving parts likely to cause personal injury shall be shielded.
- (n) Working parts, such as cables, pulleys, and shafts, which can be expected to wear, and upon which the lift depends for support of the load, shall have a safety factor of at least six, based on the ultimate strength of the material. Nonworking parts, such as platform, frame, and attachment hardware, which would not be expected to wear, shall have a safety factor of a least three, based on the ultimate strength of the material.
- (o) Lift shall be installed as specified by the manufacturer and shall be thoroughly tested prior to delivery.
- (p) Repair manual, parts list and instructions for adjusting hydraulic valves and electrical equipment shall be provided.
- (q) Lift controls shall be interlocked with the vehicle brakes, transmission, or door, or shall provide other appropriate mechanisms or systems to

ensure that the vehicle cannot be moved when the lift is not stowed and so the lift cannot be deployed unless the interlocks or systems are engaged.

- (r) The left control cord must be secured in a manner not to interfere with the door being closed.

XXXIX. USE BY STANDEES:

Lift shall accommodate persons using walkers, crutches, canes or braces or who otherwise have difficulty using steps. The platform may be marked to indicate a preferred standing position.

XL. HANDRAILS

Platform on lift shall be equipped with handrails on two sides, which move in tandem with the lift, and which shall be graspable and provide support to standees throughout the entire lift operation.

- Handrails shall have a usable component at least 8" long with the lowest portion a minimum 30" above the platform and the highest portion a maximum 38" above the platform.
- Capability of withstanding a force of 100 pounds concentrated at any point on the handrail without permanent deformation of the rail or its supporting structure required.
- Cross-sectional diameter of handrail shall be between 1 ¼" and 1½", and shall have eased edges with corner radii of not less than 1/8".
- Handrails shall not interfere with wheelchair or mobility aid maneuverability when entering or leaving the vehicle.

XLI. WHEELCHAIR SECUREMENT:

- Wheelchair parking space shall have a (Minimum) clear floor area of 30" wide by 48" long and be equipped with a four-point wheelchair securement tie-down.
- Occupant restraint system must be **Q'Straint Q-8306-SC or equivalent**. Shall have a Retractable lap/shoulder belt combo with a Retractable height adjuster that are anchored to floor and wall with L Tracks that meet SAE J2249 and ADA requirements.
- Tracks shall be recessed into the floor and not shift position under anticipated loads. Any tracks overlapping the access path must be flush with the floor to prevent passengers from tripping.

The L tracks and Slide N Click anchors must be bolted to structural steel.

- Bolting to plywood floor without bolting into structural steel under floor **IS NOT ALLOWED.**
- Wheel Chair Securement system must be **Q'Straint QRT MAX Automatic Retractor System with Slide N Click anchorage system and J-Hooks, or equivalent to.**
- There must be 52" at minimum and 54" maximum measured from center to center between front and rear Slide N Click anchor points. And be fully assembled and ready to use.
- Must have securement pouches attached to wall to store wheelchair securement tie-downs.
- Must include eight (8) **Q'Straint Q5-7580 Webbing Loops or equivalent to** for Securing Scooters. Wheelchair location must be in the rear of bus, one beside the other.

NOTE:

Each wheelchair securement location shall have sign designating it as such. Lettering size and type on these signs shall comply with the Americans with disabilities Act Regulations,

XLII. WHEELCHAIR ACCESSIBILITY SYMBOL:

The vehicle will display the international wheelchair accessibility symbol of a person in a wheelchair that is outlined in white on blue background.

- This symbol will be placed on all four sides of the bus.

XLIII. VEHICLE COLORS:

Body: Vendor to supply list of colors and prices available.

XLIV. WINDOW BLACKOUT PAINT:

Bus must have window blackout paint.

NOTE: See Figure 2

XLV. COLOR OF SEATS:

Proposal must include all colors available

- Successful vendor shall coordinate with the agency issuing this purchase order in the selection of material and color of the seats.
- Seats shall be fully padded.

XLVI. VEHICLE FLOOR PLAN:

A proposed floor plan including all pertinent interior dimensions such as overall length, width, distance between seats, etc.,

- Shall be submitted with the proposal.

XLVII. CHASSIS SPECIFICATIONS:

Supplier must list chassis specs must be listed the spaces provided below.

Overall vehicle length: 282” minimum
307” maximum

Width: Exterior 96” minimum
Interior 91” minimum

Height Exterior 110” minimum
124” maximum
Interior 75” minimum

Wheelbase: 176” minimum
186” maximum

GVWR, axle, spring and tire:
14,500 lb. GVWR minimum
Front axle- 5,000 lb. GAWR minimum
Rear axle – 9,500 lb. GAWR minimum

(Dual wheel are required on rear axle.)

Front springs – heavy duty, 5,000 lb minimum
Rating combined at ground.
Rear springs – heavy duty, 9,500 lb minimum
Ratings each, at ground.

NOTE:

It is the supplier’s responsibility to calculate the actual loaded weight, spring and axle ratings so that the vehicle is engineered for safety.

XLVIII. TIRES:

Tire size must meet 14,500 GVWR minimum and must be steel radial with “E” load rating.

- Steel or brass valve stems 1.5” in length shall be used on all wheels with elbow extensions on the inside rear dual for access.
- Stainless steel or brass valve caps with an inner air seal shall be used.
- One mounted spare tire and wheel to match existing tires/wheels to be shipped loose.

XLIX. ENGINE: GASOLINE:

Minimum – (6.8 liter) displacement.

- Must Have a CNG Capable Engine with hardened intake and exhaust valves with hardened intake and exhaust valve seats Ford Option # 91G.

L. RADIATOR:

Heavy Duty, with factory installed recovery system.

- The cooling system must be winterized with ethylene glycol for temperatures to –20 degrees F (-28.8889 C).

LI. TRANSMISSION:

At minimum, heavy-duty 5-speed automatic with overdrive, lock-up converter, lock in park and a heavy-duty auxiliary transmission cooler.

LII. WHEEL WELLS:

The wheel housing shall be of sturdy heavy-duty construction of a minimum 14 gauge galvanized steel or stainless steel and provide ample tire clearance during all operating conditions.

- Fender and splash aprons (underskirt) of durable construction shall be provided so as to provide maximum deflection of the wheel splash.
- There shall be sufficient clearance to enable easy removal of wheels mounted with inflated tires.

LIII. REAR FENDER FLARES:

Vehicle must have Rubber or Fiberglass Fender Flares.

LIV. DRIVE SHAFT:

Drive shaft must be properly supported, balanced and guaranteed not to vibrate. Each drive shaft shall be equipped with a protective metal guard or

guards to prevent whipping through the floor or dropping to the ground in the event of a tube or universal joint failure, or if the drive shaft breaks.

LV. WHEEL COVERS:

Bright Metal Stainless Steel Wheel inserts.

LVI. BRAKES:

Two (2) braking systems are required. Service brakes shall be dual hydraulic, disc front and disc rear.

- The parking brake system shall be operated by a cable to the rear wheels, or Drive Shaft Drum Brake.
- The braking system shall be adequate for the GVWR of the vehicle.

LVII. GEAR RATIO:

Must be a 4:56 gear ratio

LVIII. FUEL CAPACITY:

Must be at minimum of 55 gallons

LIX. FUEL PUMP ACCESS DOOR:

An aluminum diamond plate access door shall be provided in the floor of the vehicle above the fuel tank to allow the fuel pump to be serviced without removal of the tank.

NOTE: Door must be Large enough and centered over fuel pump to allow easy removal of pump.

LX. SHOCK ABSORBERS:

- Must have heavy duty, front and rear shock absorbers.
- Rear Shock Absorbers upper mounting brackets **shall Not be Covered** by any Body Braces that would prevent easy access to Upper Shock Mounting Bolts and Nuts.

LXI. SUSPENSION

Rear shall have Leaf Springs.

- Right rear shall have an extra leaf to compensate for weight of wheelchair lift.

LXII. STEERING:

- Must have power-assisted steering

- Must have tilt wheel,
- Must have factory installed cruise control.

LXIII. AIR CLEANER:

Must have a heavy duty, dry type air cleaner

LXIV. OIL FILTER:

Must have a heavy duty, throw away type oil filter.

LXV. ALTERNATOR:

Vehicle shall have Ford OEM 225-amp Alternator or equivalent.

LXVI. BATTERIES:

Two (2) heavy duty, maintenance free, minimum 650 CCA at 0 degrees F (-17.778 C) Batteries must be wired together in a parallel circuit to increase total battery capacity.

- Front OEM battery must have OEM type battery hold down brackets to securely hold battery in place.
- Instep Battery Box that is bolted down securely and must be sealed to keep mud and debris from getting on Rear Coach Battery.
- Battery must be bolted within this instep box. Cloth holds down straps are **not ALLOWED**.
- Battery box must be sealed to keep mud from getting on batteries.

SEE FIGURE 4 & 5

LXVII. GROUNDS:

A ground of the battery cable size, shall be installed between the engine and chassis frame.

- The vehicle body shall be properly grounded to the chassis frame at least 2 (two) places.
- Engine and body grounds shall be installed to handle subsystem electrical capacity.
- Grounding wires fastened to the frame shall use a bolt with a nut installed in a proper sized hole with dielectric compound applied to the cleaned surfaces, bolt, and cable end.
- Lift pump motor shall be grounded directly to chassis frame using a cable of the same size as the pump motor feed wire.
- All exterior lights and accessories added by the body manufacture shall be grounded by an in harness ground attached at a fuse panel common grounding point.

- For all ground wire connections paint shall be removed at the grounding point to provide a surface, cable end, bolt, and nut where each positive or grounding cable is attached.

LXVIII. STABILIZER BAR:

Heavy Duty Front and rear

LXIX. HORN:

Vehicle must have a dual, electric horn.

LXX. SIGNAL:

Directional and self-canceling with hazard warning flashers.

LXXI. TOW HOOKS

Shall have 2 tow hooks on Rear.

LXXII. WINDSHIELD WIPERS:

Minimum two speeds with intermittent feature and washer.

LXXIII. KEYS

Vehicle must include three (3) sets of keys for the entire bus.

LXXIV. RADIO:

Must have an AM & FM CD radio

- Radio must be of same manufacture as chassis. Radio must be mounted in the Chassis OEM Location in dash.
- Must have a minimum of six speaker's two (2) OEM speakers in front chassis doors. The coach body's four (4) speakers shall be a **3-way Kicker KS Series Model KS6930 or equivalent to.**

LXXV. PAINTING, DECALS AND MONOGRAMS:

All signs required by State and federal law shall be affixed to each vehicle exterior and interior.

- It is up to the bus dealer/manufacture to add such signs and decals upon delivery of vehicle.
- No decals, name plates, or painted identification of the bus dealer/manufacture are to be added to the vehicle.

LXXVI. UNDERCOATING:

Floor and wheel housing, anti-rust factory installed.

LXXVII. WARRANTY REQUIREMENTS:

The contractor warrants and guarantees to the original Procuring Agency each complete bus and specific subsystem and components for 100% parts and labor as follows:

- OEM standard factory warranties for chassis and engine.
- Complete bus body and body structure, exterior, wiring, flooring installation, and paint are warranted to be free from defects, related defects and to maintain structural integrity for a period of Five (5) year or 100,000 miles
- Add-on components shall have component manufacture's standard warranty.
- Warranty shall begin on the date that the vehicle delivery is accepted by the agency issuing the purchase order.
- The wheelchair lift shall have a five (5) year unlimited mileage and unlimited cycles.
- The air-conditioning system shall have a minimum 2 years unlimited mileage.
- The chassis powertrain shall be warrantied for a period or Five (5) years or 100,000 miles.

Any parts under warranty must be available and delivered to the purchasing transportation provider or their repair shop within 5 days of the time they requested/ordered them. The bus vendor/manufacture shall bear all reasonable financial costs of shipment of parts.

The warranty, as well as any recall notifications, shall cover each vehicle of the ultimate purchaser or recipient agency. The vendor shall provide a copy of any recall notice to each purchasing agency.

LXXVIII. BUS TESTING:

Certification shall be provided that in accordance with 49 CFR Part 665,

- Bus Testing, the vehicle either does not need to be tested (with justification specified for exemption) or has been tested at the bus testing facility and a test report is included.

LXXIX. BUS WATER TESTING:

The roofs, windows, windshield and all doors of all coaches shall be water tested, as follows:

- The waster test shall consist of a series of nozzles that are strategically located around the perimeter of the vehicle so as to the nozzles spray water over the entire surface of the vehicle.

- The nozzles shall eject a volume of water no less than 2.6 gallons per minute under a pressure of no less than twenty-two (22) pounds per square inch measured at the nozzle tip.
- There shall be no less than twenty (20) nozzles installed in the water test area, each capable of directing a force of water as indicated above.
- The Vendor/Manufacture shall be required to water test each vehicle, under the conditions set forth above, for no less than five (5) minutes, in order to determine whether or not there are any body leaks at the window areas, door areas, roof panels, etc.
- The Vendor/Manufacture shall take the necessary corrective action when body leaks are found to exist as a result of the above test, and conduct a second water test to recheck for body leaks following corrective action.

LXXX. ALTOONA TESTING:

Vehicle must be tested in the 7-year/200,000 mile category at the Altoona Bus Testing Facility in Duncansville, PA. And a copy of the full report **must be submitted with the Proposal.**

LXXXI. GENERAL:

All equipment cataloged as standard for the basic vehicle, unless superseded by these specifications, must be furnished and included in the purchase price of each vehicle. Complete printed specifications, published literature, and photos, or illustrations of the basic units that the supplier proposes to furnish with this Proposal must accompany each Proposal.

LXXXII. QUALITY OF MATERIALS:

Welding procedures and materials shall be in accordance with standards of the American Society of Testing Materials and the American Welding Society. All visible welds shall be grounded smooth. Where metal is welded, the contact surface shall be free of scale, spatter, and grease and shall be treated to preclude rusting.

LXXXIII. PUBLICATIONS AND PRINTED MATERIALS:

Each vehicle shall have a complete set of operation, quality assurance, and warranty publications.

The information shall be organized in a three ring binder format with each sections clearly identified.

1. As built wiring diagram and as built parts manuals for body and all auxiliary equipment.

2. Maintenance and inspection schedule incorporating the required maintenance and inspection of the basic vehicle and its sub-systems.
3. Operator's manual: A complete operations manual and troubleshooting guide with a detailed manufacturer's parts list that covers the conversion features on the vehicle as listed in this specification. The manual will provide complete, comprehensive instructions for the wheelchair accessories, wheelchair list deployment, air conditioning system, tie downs, heater, deployment of seats, wiring diagram and related equipment.
4. Warranty papers for chassis, body, and additional equipment.
5. Warranty Information: Each vehicle must have a published listing of contractor warranty repair locations, including address, telephone number, and contact names for the State of Oklahoma.

LXXXIV. PRE-AWARD AUDIT:

The vehicles are not considered delivered to the purchasing agency until the required FTA documents are completed by a Government Official.

A Pre-Award Audit shall be conducted to determine if the proposal meets specifications. The supplier shall submit documents, which include certification of the manufacturer's compliance with the Federal Transit Administration (FTA) Pre-Award Buy America Audit Requirements. The document submitted shall include the following information for each major component used on vehicle proposed:

1. Name and address of each supplier.
2. Cost of each major component and subcomponent. In order to protect proprietary information, the document may reflect the percentage of total cost each item represents instead of the actual cost.
3. Country of origin of each major component and subcomponent.
4. Name and address of company where final assembly occurs.
5. Cost of final assembly
6. Signature of authorized representative of vehicle manufacturer.

LXXXV. POST- DELIVERY AUDIT:

A Post Delivery Audit of the vehicle(s) shall be conducted at the purchaser's facility, to determine that the completed vehicle(s) meets specifications.

Once this process has been satisfactorily completed, the vehicle(s) shall be considered acceptable.

ACCESSIBILITY REQUIREMENTS:

When submitting a Proposal for an accessible vehicle for the disabled, the vendor shall provide a list of the vehicle related equipment illustrating the

component cost and related installation charges. The purpose of this list is to reflect an accurate cost for those vehicle related items, which are required to make the vehicle accessible to the disabled.

LXXXVI. ACCEPTANCE OF VEHICLES:

Upon delivery at the designed location specified within this document the final acceptance will occur after the vehicles have been inspected, road tested and all FTA required post audit delivery requirements have been meet.

- All vehicles shall be insured by the supplier until the post audit delivery as been conducted at minimum.

SPECIFICATIONS FOR OPTIONAL ITEMS:

1. CNG CONVERSION FORD CHASSIS:

OEM engine shall be converted to operate on dedicated CNG. A WESTPORT/BAF Cal Comp System or approved equal shall be provided. System shall be CARB and EPA certified, OBDII compliant, and fully integrated into the OEM powertrain control system. No additional control module will be accepted. Dual fuel systems will not be accepted. System must comply with the following:

- a. Closed-loop fuel control
- b. Sequential fuel injection (SFI)
- c. Optimized ignition timing
- d. Must maintain original fault codes (DTCs)
- e. Diagnostics accessed through DLC using original scan tool or any generic OBD-II scanner
- f. CNG system shall be covered by 3 year/50,000 mile warranty and cannot void the OEM powertrain warranty.
- g. The minimum CNG tank capacity on the mini-buses should be 39 Gasoline Gallon Equivalent
- h. CNG interlock – Engine will not run when filling CNG tanks.
- i. Must provide a detailed floor plan of the placement of the CNG tanks.
- j. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

2. CNG BIFUEL CONVERSION FORD CHASSIS:

OEM engine shall be converted to operate on CNG and Gasoline. System shall be CARB and EPA certified, OBDII compliant, and fully integrated into the OEM powertrain control system. No additional module will be accepted. System shall be capable of switching between CNG and Gasoline. The Gasoline fuel tank will be installed as per OEM specifications. The system must comply with the following:

- a. Closed-loop fuel control
- b. Sequential fuel injection (SFI)
- c. Optimized ignition timing
- d. Must maintain original fault codes (DTCs)
- e. Diagnostics accessed through DLC using original scan tool or any generic OBD-II scanner
- f. CNG system shall be covered by 3 year/50,000 mile warranty and cannot void the OEM powertrain warranty.
- g. The minimum CNG tank capacity on the mini-buses should be 29 Gasoline Gallon Equivalent
- h. Must provide a detailed floor plan of the placement of the CNG tanks.
- i. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

3. DEDICATED PROPANE AUTOGAS INJECTION :

The system shall be a Roush CleanTech System or approved equal. The system must be CARB, EPA certified, and OBDII Compliant. The system shall have the following system components:

- a. PCM Calibration
- b. Billet aluminum high-pressure fuel rail.
- c. Appropriate fuel injectors
- d. Appropriate fuel lines
- e. Appropriate OEM engine prep package
- f. Coverage of Five (5) year/ 60,000 mile warranty.
- g. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

4. DUAL FUEL VEHICLE PROPANE AUTOGAS INJECTION:

System shall be a Roush CleanTech System or approved equal.
The system shall be a Roush CleanTech System or approved equal. The system must be CARB, EPA certified, and OBDII Compliant. The system shall have the following system components:

- a. PCM Calibration
- b. Billet aluminum high-pressure fuel rail.
- c. Appropriate fuel injectors
- d. Appropriate fuel lines
- e. Appropriate OEM engine prep package
- f. Coverage of Five (5) year/ 60,000 mile warranty.
- g. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

5. BACK-UP MONITOR SYSTEM:

ASA Voyager AOM562A or approved equal with a 5.6" color LCD screen mounted on rear view mirror OEM Bracket. With a rear mounted outside backup camera and a second inside front mounted camera to view passengers.

6. TWO-WAY RADIO SYSTEM: UHF:

ICOM F221 UHF two-way Radio System with a PCTEL MUF4505 UHF antenna and coax or approved equal.

- Antenna shall be mounted on an L bracket on fender opposite of OEM AM/FM radio antenna.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for the agency issuing this purchase.

7. TWO-WAY RADIO SYSTEM:

ICOM F121 VHF two-way Radio System with a PCTEL MHB5800 VHF antenna and coax or approved equal.

- Antenna shall be mounted on an L bracket on fender opposite of OEM AM/FM radio antenna.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for the agency issuing this purchase.

8. TWO-WAY RADIO SYSTEM: 800 MHZ

Kenwood TK-980 800 mhz two-way Radio System with a PCTEL MUF8003 antenna and coax or approved equal.

- Antenna shall be mounted on an L bracket on fender opposite of OEM AM/FM radio antenna.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for agency issuing this purchase.

9. DRIVER'S SHIELD:

A clear Plexiglas barrier shall be erected behind the driver and extend from the stanchion crossbar behind the driver up to the ceiling.

- This shield start at the wall on the driver's left side (close enough to prevent a passenger from reaching through to the driver) and should extend 3 inches past the right side of the driver's seat, but shall not obstruct the view from the rear view mirror.
- This barrier shall consist of clear Plexiglas and shall be at least ¼ inch thick.
- A 1 ½ inch clearance between the stanchion and barrier should be provided to allow a hand hold on the right side.

10. PAINTED LOWER SKIRTS:

Paint to purchaser's color specs.

NOTE: See Figure 2.

11. OUTSIDE PASSENGER DOOR SWITCH:

Outside keyed electric passenger door switch outside. Switch must be water proof.

12. BUS CAMERA SYSTEM:

- **REI Bus-Watch R4001 with 500GB Hard drive and four cameras or approved equal.** Successful vendor shall coordinate with the agency issuing this purchase for location of Camera's.

NOTE: See Figure 3 for camera type and location of cameras.

13. FABRIC INSERT ON CEILING:

Must match seat fabric and pattern.

14. STREET SIDE EXHAUST:

Exhaust to be turned out opposite side of Wheel Chair lift

15. INTEGRATED CHILD SEAT:

Integrated Child Restraint Seat must be a **Freedman Seating ICS-10 or equivalent**

- Must have an integrated 4-point safety harness. for children 22-78 Lbs with under seat retractor seat belts for adults

16. VINYL SEATS:

This will be a price deduction from the durable transit style level 5 cloth fabrics.

- Vinyl deduction is for passenger seats only
- Pilot and co-pilot seats shall be durable transit quality level 5-cloth fabric

17. PUBLIC ADDRESS SYSTEM:

A public address system shall be installed with a hand held microphone.

- The system shall include a solid-state amplifier of sufficient power and quality that the operator's voice can be clearly heard without distortion.
- The amplifier shall be firmly secured in a protective area.
- The PA system shall use the vehicles 6 speakers for sound.
- A power switch for the PA system shall be mounted on the dash to provide operation for the inside and amplifier off.
- Any noise suppression due to alternator, lighting, engine or other source is required of the contractor.

18. PASSENGER SIGNAL SYSTEM PULL CORD:

The Stop Request system shall have the following features:

- Separate provisions for W/C passengers and ambulatory passengers to signal a Stop request.
- Must use a yellow pull cord run below the windows for the ambulatory request and a large yellow push pad mounted at least 15" above the floor, but not more than 48". There must be a touch pad per W/C space for the passengers to signal a stop request.

- The driver should have a means of telling if a W/C passenger has signaled. There must be a Blue dash light to signal a W/C passenger request and a RED light to signal an ambulatory passenger request.
- The “Stop Request” lighted sign should show if a W/C passenger has signaled; the sign shall be a universal W/C symbol which lights in blue.
- There shall be an audible signal when a stop is requested and must be able to be heard by the driver.
- Once the pull cord is pulled, the sign will light, the driver’s red light goes on, and a chime sounds. The sign will stay lit until the bus is stopped and the entry door is opened. The system automatically re sets itself
- When the W/C passenger signals a stop request, the W/C portion of the sign lights, the chime sounds, and the blue light on the dash goes on. The sign will stay lit until the W/C lift is deployed and then stowed and the W/C door is closed again.

19. PASSENGER STOP REQUEST SIGNS:

Passenger stop request sign must be **Transign, or equivalent**.

- The signs must be back-lighted stop requests and shall be mounted overhead on the front ceiling end closure.
- The sign shall be so designated as to remain illuminated when activated (by the passenger signal system) until it is extinguished by opening the door.

20. FARE COLLECTION BOX:

Fare collection box must be **GFI Genfare "Cents a bill" farebox or compatible**.

- With this option, the mounted fare box will eliminate the front passenger seat and make the bus a 14 passenger.
- Also must have the OEM Co-Driver seat covered with same fabric as the other passenger seats shipped loose with the bus. Co-Driver door shall have the same type of running board as driver’s door.

21. DESTINATION SIGNS:

Destination signs must be **Twinvision, or equivalent**. The automatic electronic destination sign system shall be furnished on the front and on the right side near the front door of the vehicle. Display areas of destination signs shall be clearly visible in direct sunlight and/or at night. The sign system shall provide optimum visibility of the message display units for passengers and shall meet applicable ADA requirements defined in 49 CFR, Part 38.39. Destination signs shall be installed in such a manner as to facilitate easy access for

replacement of the entire sign assembly, or components such as fluorescent lamps/LED's and electronic control modules, from inside the bus within 30 minutes by a mechanic. Lamps and associated parts shall be commercially available.

Destination messages, route designations, and public relations messages shall be independently selectable via a single Operator's Control Panel (OCP) which shall include a display monitor. The OCP display monitor readout shall show the exact information displayed on the destination signs. The OCP shall be conveniently located for the bus operator and mounted in such a manner that will not pose any safety hazard. The OCP shall utilize a durable weatherproof keypad with tactile feel for destination message control functions.

The destination sign system shall be capable of programming 10,000 message lines. The number of public relations messages shall be limited only by the remaining number of message lines not used for destination purposes. Sign displays shall have alternating message capability with programmable blanking time between message lines as may be required. Variable blanking times shall be programmable between 0.5 to 25 seconds in duration. Each line message or blanking time for each message shall be individually programmable. The message display units shall incorporate an automatic blanking feature that will cause the display area to blank within 30 seconds of the bus master power switch being turned off.

An emergency message shall be initiated by the closure, or opening, of a dry contact switch or relay. The emergency message shall be displayed on the exterior of the bus only. The OCP shall not display the emergency message. The destination sign shall automatically resume normal operation when the remote emergency switch is returned to its normal position.

Destination Sign Programming: The electronic sign system shall be programmable via an integral connector located in the front destination sign area. Software shall be furnished for programming the sign system via an IBM-compatible, laptop computer. Software shall be capable of providing a high degree of flexibility to create, or select preprogrammed, fonts and graphic displays. The sign shall have the capability of being programmed in the field using a PC or field programmer. Message program information shall be transferable

to and/or from the field programmer device as specified by the transit system in attachments to Part 5: Technical Specifications.

The destination sign compartments shall be designed to prevent condensation and entry of moisture and dirt. Additional provisions shall be included, if necessary, to prevent fogging of both destination sign compartment window and glazing on unit itself. Access shall be provided to allow cleaning of inside of destination sign compartment window and unit glazing.

A complete listing of destination sign readings for initial sign programming by the manufacturer are provided in attachments to Part 5: Technical Specifications.

Front Signs:

Sign Size:

A 16 Row by 148 Column Spectrum Route Multi-Color Sign that shall have no less than 3,264 LEDs with a message display area of not less than 8.0 inches high by not less than 64.6 inches wide. The LEDs displays shall consist of red-blue-green LEDs and amber colored LEDs. The color LEDs shall be rated by their manufacturers for a life expectancy of 50,000 hours to 100,000 hours and shall support up to 27 colors.

Sign Readability:

The destination message shall be readable by a person with 20/20 vision from a distance of 250 feet. The sign shall have an equal readability at 65 degrees on either side of the line perpendicular to the center of the mean plane of the display. The entire display area of all signs shall be clearly visible and readable both in direct sunlight and at night.

Side Signs:

Sign Size:

An 8 Row by 96 Column Spectrum Route Multi-Color Sign that shall have no less than 768 LEDs with a message display area of not less than 2.8 inches high by not less than 36.3 inches wide. The LEDs shall be rated by their manufacturers for a 100,000-hour life expectancy.

Sign Readability:

The destination message shall be easily read from the sidewalk level. The entire display area of all signs shall be clearly visible and readable both in direct sunlight and at night.

System Control Console – Operator Display and Keyboard:

The system control console shall be used to view and update display messages. The system control console shall utilize a 28-key conductive rubber pad keyboard with tactile feel, designed especially for the harsh transit environment or approved equal.

The system control console shall contain a 16 x 128 pixel vacuum fluorescent display. The system control console shall contain an audio annunciator that beeps to alert the operator to view the display for a message, or beeps indicating that a key is depressed. The system control console shall continuously display the complete message associated with the selected destination code.

Memory Transfer:

The sign system shall be reprogrammable through the system control console by either a PCMCIA flash card or a Memory Transfer Unit.

Emergency Message Display:

If required, a special emergency message can be activated by a switch. This message shall be displayed on signs, facing outside the vehicle, while the signs inside the vehicle, including the system control console, remain unchanged. The emergency message shall be canceled by entering a new destination code or by removing the emergency signal.

Programming:

A programming software package shall be furnished to generate message lists for the destination sign system. A PCMCIA flash memory card having a minimum of 8 megabytes of memory shall be provided to facilitate bus system programming. The software must be compatible with Windows NT, Windows 2000, Windows XP, Windows Vista and Windows 7

The programming software shall use techniques that require minimal operator training and that are intended for use by operators that are not trained in complex computer operations. All operator screens shall utilize pull down and pop-up menus.

22. BICYCLE RACKS:

Manufacturer/model should be **Sportworks Veloporter 2 or equivalent.**

- Racks must have a 2 (two) bike capacity, and follow the specs noted below.

1. The bike rack must meet OSHA requirements for lifting by a single individual and be capable of being raised or lowered with one hand
2. The bike rack must accommodate all bicycles with wheels 16" (for example, the Dahon folding bicycle series) or larger diameter, excluding tandems and recumbent type bicycles. The rack must accommodate all bicycles 80" and longer.
3. The bike rack frame must be manufactured with 304 stainless steel tubing with a minimum wall thickness of 0.125 in., outside corners to be rounded, pinch joints minimized and welds smoothed.
4. All nuts, bolts and washers shall be either AISI Type 304 stainless steel or Grade 8 yellow zinc plated steel
5. The bike rack must be mounted to the front of the bus and accommodate two (2) bicycles. In the stowed position, folded up against the front of the bus, it shall protrude no more than 8" from the front bumper. The protrusion shall be no more than 36" when deployed.
6. The latching mechanism must automatically lock the bike rack in the stowed and deployed positions.
7. The bike rack, when stowed, shall not interfere with any access panels/doors, windshield wipers or driver vents.
8. The bike rack shall be designed for loading and unloading from the front, curbside, of the bus. The securement can only contact the bicycle's tires as to not do any damage to the bicycle's frame. The bike rack shall have a positive securement with a four (4) point locking system, contacting the wheel in such a way that greater than half the circumference of the wheel is captured. Straps, cords, and/or springs shall not be required to secure a bicycle.
9. The carrier shall not interfere with the ability of the driver to safely operate the vehicle. This includes, but is not limited to, the obstruction

of the windshield view and the operation of the windshield wipers, turn signals, and headlights.

10. The carrier shall be compatible with automated bus washing systems and shall be capable of repeated use with automated washing equipment without sustaining damage to the carrier, vehicle, or the washing equipment. The carrier shall be designed as not to accumulate water internally.

11. The use of this rack shall not affect route scheduling. The bike rack shall have a design capability of being loaded or unloaded in 20 seconds or less.

12. The mounting bracket/ pivot plate assembly must be designed to fit all urban transit buses, both standard floor and low floor.

13. The bicycle rack shall be warranted against defects in materials and workmanship for a period of one (1) year from date of installation.

14. The bicycle rack manufacturer is required to furnish all the complete parts and service (maintenance) books.

15. The bicycle rack should have a latching system in both positions, stowed and deployed; this will need to be explained in detail

16. The racks should be in a friendly design and a tire only mount.

17. The mounting brackets should be detailed at to what bus needs with brackets.

Product Standards:

Only first quality materials, workmanship and finish shall be acceptable.

All general materials and workmanship shall be guaranteed to be free of defects for a minimum of at least one (1) year from date of installation except as noted below. Any defects shall be rectified or replaced to meet specifications at the expense of the manufacturer, including freight, parts and labor.

Any exposed fasteners shall be colored to match the finish of the framework components.

Spare Parts:

The contractor will provide pricing and the delivery time on the available spare parts for each bicycle rack and maintain adequate stock levels.

23. DELETE COPILOT DOOR, SEAT AND B PILLAR :

This Moves the Passenger door from the coach Body to the chassis cab section. This delete's the Copilot door; seat and B pillar section of the cab. This will add 2 seats positions in Coach Body.

24. DELETE ALTRO CHROMA FLOORING:

This delete's the Altro Chroma Floor covering to install the Gray RCA Rubber Transit-Flor. The step well, entrance area, and center aisle floor area shall be overlaid with ribbed, slip resistant, oil resistant commercial 3/16" step tread thickness. The 1/8" thickness flooring under the seats and in the wheelchair area shall be smooth, slip resistant, and oil resistant. The flooring shall extend up the sidewall and rear wall to the seat rail line and shall be coved at the floor/wall joint to form a smooth water-tight transition. Flooring adhesive shall be oil resistant.

25. DELETE YELLOW POWDER COAT ON HANDRAILS:

This delete's the yellow powder coating on the stainless steel handrails, grab handles and stanchions. They will be the natural brushed Stainless steel Color.

26. 100% NIDA-CORE[®] STRUCTURE OR APPROVED EQUAL:

Resin Hardened Nida-Core[®] or approved equal Polypropylene Copolymer honeycomb (1" thickness, minimum) Throughout 100% of the entire body structure, walls, roof, front and rear caps must be used instead of Honeycomb Paper Vertical. This is to eliminate any possibility of rotting in any area of the body structure.

27. COMPOSITE FLOOR:

Composite Space-age Synthetics Thermo-Lite Board-Tough Series or approved equal Floor that will not rot and is lighter than the standard marine grade plywood floor.

28. SIDE DOOR SLIDE OUT BATTERY TRAY:

Must have an Extra Heavy Duty Stainless Steel slide out Battery Tray for all auxiliary batteries mounted under Bus. Battery Box must have OEM type battery hold down brackets to securely hold batteries in place. Cloth hold down straps is not ALLOWED. Battery box must be sealed to keep mud from getting on batteries.

29. DIESEL ENGINE:

Current Power plant for the make and model of chassis

30. REAR SPARE TIRE HOLDER:

A rear spare tire holder that shall be affixed to the vehicle in a way to allow easy removal of spare tire.

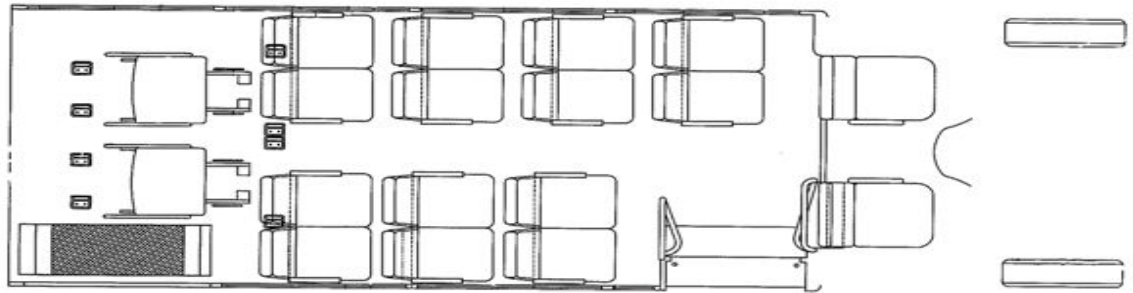
31. ADJUSTABLE REAR SUPENSION SYSTEM:

System shall be a MOR/ryde suspension system or equal shall be used with the following:

- a. Installed as per the manufactures recommendations.
- b. Fully adjusted for each bus installed on.
- c. Warranty to be a 5 year 100,000 mile.

FIGURE 1:

Figure 1



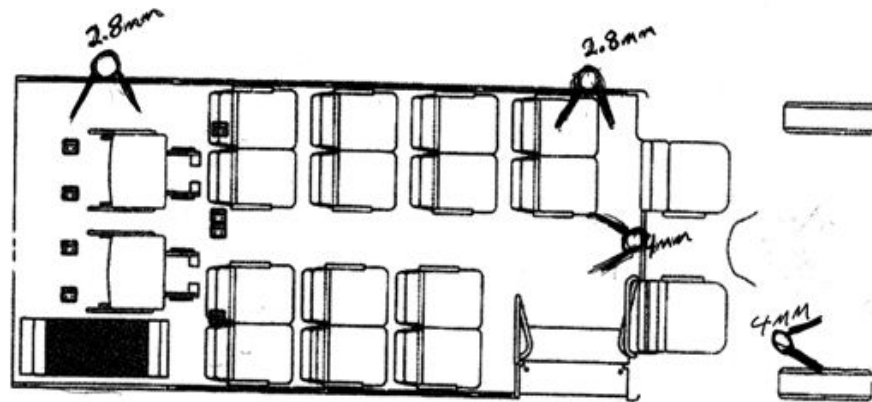
24' 15 Passenger Rear
Lift B Pillar

FIGURE 2:



FIGURE 3:

Figure 1



24' 15 Passenger Rear
Lift B Pillar

FIGURE 4:



FIGURE 5:



SECTION "K"
24' 15 Passenger Composite Bus
RESPONSE SHEET

BASE
VEHICLE

COST PER
UNIT

Transit Bus (gas engine)

\$ _____ / ea.

CHASSIS SPECIFICATIONS

Specify Overall Vehicle Length (outside of front bumper to outside of Rear bumper): _____

Overall vehicle length: 282" minimum _____
307" maximum _____

Width: Exterior 96" minimum _____
Interior 91" minimum _____

Height Exterior 110" minimum _____
124" maximum _____
Interior 75" minimum _____

Wheelbase: 176" minimum _____
186" maximum _____

AIR CONDITIONING

Make and Model of Rear A/C Unit and Cooling Capacity of rear Unit BTU's/Hr.
Include literature on unit being proposed.

MAKE/MODEL _____

BTU/HR of Rear Unit only _____

HEATING

BTU/HR of Rear Unit only _____

OPTIONAL ITEMS**COST**

- | | | |
|-----|------------------------------------|--------------|
| 1. | CNG Conversion Ford Chassis | \$_____ /ea. |
| 1. | CNG Bifuel Conversion Ford Chassis | \$_____ /ea. |
| 2. | Propane Dedicated Conversion | \$_____ /ea. |
| 3. | Propane Dual Fuel Conversion | \$_____ /ea. |
| 5. | Back-Up Monitor System | \$_____ /ea. |
| 6. | Two-way radio (UHF) | \$_____ /ea. |
| 7. | Two-way radio (VHF) | \$_____ /ea. |
| 8. | Two-way radio (800 MHZ) | \$_____ /ea. |
| 9. | Driver's Shield | \$_____ /ea. |
| 10. | Painted lower skirts | \$_____ /ea. |
| 11. | Outside Passenger Door Switch | \$_____ /ea. |
| 12. | Bus Camera System: | \$_____ /ea. |
| 13. | Fabric Insert on Ceiling | \$_____ /ea. |
| 14. | Street Side Exhaust | \$_____ /ea. |
| 15. | Integrated Child Seats | \$_____ /ea. |
| 16. | Vinyl Seats (Price Deduction) | \$_____ /ea. |
| 17. | Public Address System | \$_____ /ea. |
| 18. | Passenger Signal System Pull Cord | \$_____ /ea. |
| 19. | Passenger Stop request Signs | \$_____ /ea. |
| 20. | Fare Collection Box | \$_____ /ea. |

21. Destination Signs \$_____/ea.
22. Bicycle Racks \$_____/ea.
23. Delete B pillar and copilot seat (Price Deduction) \$_____/ea.
24. Delete Altro Chroma Flooring (Price Deduction) \$_____/ea.
25. Delete Yellow Powder Coating on Handrails, Grab Rails and Stanchions. (Price Deduction) \$_____/ea.
1. 100% Nida-Core[®] structure \$_____/ea.
27. Composite floor \$_____/ea.
28. Side Door Slide Out Battery Box \$_____/ea.
29. Diesel Engine: \$_____/ea.
30. Rear Spare Tire Holder: \$_____/ea.
31. Adjustable Rear Suspension System: \$_____/ea.

A list of optional equipment and/or accessories shall be provided. The list must contain:

- Item
- Description and functionality detail
- Cost of item installed in final delivery of vehicle
- Any changes to listed specifications as outlined above to accommodate options

RFP EXCEPTIONS:

Supplier must list any exceptions here to be used as a part of the RFP evaluation and analysis. Please list the roman numerical on the standard specs or the number for the options when listing any RFP exceptions.

**SECTION “L”
SPECIFICATIONS FOR
24’ 15 PASSENGER, REAR LIFT METAL
TRANSIT VEHICLE**

GENERAL DESCRIPTION

It is the intent of these specifications to set forth minimum standards for the procurement of a light transit vehicle that complies with Title 49 Code of Federal Regulations, part 38, subpart B, entitled “Americans with Disabilities Act (ADA) Accessibility Specifications for Buses, Vans and Systems”. All dimensions and equipment shall comply with the standards as set forth within the 49 CFR. The vehicle shall be new, the most current production model available, and must be complete with manufacturer’s standard equipment and accessories, fully serviced and ready for operation. The vehicle shall be equipped to meet all Federal Motor Vehicle Safety Standards and Procedures (FMVSSP) that apply. If these specifications contradict any listed in the Federal Regulations, they are superseded by those of the Federal Regulations

To take advantage of administrative and cost savings and to ensure that all federal requirements are met, this procurement is assignable to other agencies, organizations and Tribal Governments funded by the Federal Transit Administration.

NOTE:

Any Brand names and specifications mentioned within this document are for reference only. Proposals will only be considered when brochures/specifications are included for each component provided with Proposal for evaluation.

I. DELIVERY:

Vehicle must be delivered at a maximum of 120 calendar days from the date a Purchase order is issued. Pre-delivery servicing and adjustments: prior to acceptance by the purchaser, the vendor shall service and adjust each vehicle for operation. This process shall include but not be limited to the following:

1. The vehicle must have a full tank of fuel when delivered.
2. Each bus shall be designed to facilitate the disassembly, reassembly, servicing or maintenance thereof by use of tools and items that are normal and available as commercial standard items. The body and structure shall be designed for ease of maintenance and repair.

3. All parts added, as part of the modification process shall be new.
4. Headlights properly aligned
5. Engine Tuned
6. All accessories properly adjusted
7. Electrical, braking and suspension systems inspected
8. Both batteries Charged
9. Front-end alignment must be done after body is put on chassis. Chamber, caster and toe must be adjusted to the center of OEM specs. Ford chassis buses must have adjustable caster, camber bushings installed. Standard OEM bushings will not be accepted. Each bus must come with documentation stating before and after actual alignment readings of bus.
10. All wheels balanced, including spare
11. All lubricants checked, and greased if needed
12. Cooling system serviced with permanent type anti-freeze and summer coolant for minus 20 degrees F (-28.888C).
13. Warranty papers and owner's guide
14. Exterior and interior cleaned and washed.
15. Odometer cannot exceed 3,000 miles at the time of delivery of completed buses to the purchasing agency. There will be a charge of one dollar (\$1.00) per mile for each vehicle with an odometer reading in excess of 3,000 miles payable to the purchasing agency at the time of delivery.
16. Under no circumstances are tow vehicles to be attached to any buses.
17. Each vehicle must be delivered to the agency submitting the P.O.

Copies of the all Certificate of Origins and signed invoices must be sent to the organization named on the purchase order before delivery is made and must be delivered with the vehicle: receipt of these after delivery **is not acceptable**

NOTE:

- If these specifications contradict any listed in the Federal Regulations, they are superseded by those of the Federal Regulations.

II. NO PROTOTYPES:

Must be a Current production Model, B Pillar type bus that has been in Production for a minimum of one year.

I. BODY STRUCTURE:

The vehicle shall have a purpose-built body, which will provide for a minimum floor to ceiling distance of 76" at the center aisle.

- The floor frame must be welded or bolted to the sidewall frame, and the sidewall frame must be welded or bolted to the roof frame.
- Steel roll cage must form a complete Unitized body and a steel support cage behind front and rear cap to prevent flexing. All steel joints must have gussets for additional strength. All steel parts shall either be galvanized, powder coated or primed to prevent rusting.
- Composite construction is **not acceptable**.
- Construction methods utilizing double-sided tape to secure sidewall skin will **not be accepted**.
- If utilizing aluminum for the roof or sidewall skin it must be a minimum of .060" thick **with AZDEL SuperLite backing or equivalent**.
- All surfaces and hardware having sharp edges, corners, or angles that could cause injury shall be covered and padded with heavy-duty vinyl-foam type material.
- The roof will be constructed of the same reinforced materials as the body of the vehicle and of sufficient strength to prevent vibration, drumming and flexing.
- If exterior roof or sidewall skin is made of Fiberglass it must be a Minimum of 3/16" thick this is not including any FRP, Luan, plywood or foam backings.

Fiberglass Roof must be a one piece molded unit that has molded sides to connect to side walls. Bending a flat sheet of fiberglass to connect to walls is **NOT ALLOWED**.

If exterior roof or sidewall skin is made of Galvanized steel it must be a minimum of .024" thick with **AZDEL SuperLight backing or equivalent**.

- Roof design shall prevent pooling of water on the roof.

III. OEM CHASIS FRAME

The rear overhang, measured from the center of the rear axle to the outer edge of the rear bumper, cannot exceed 1/3 of the overall vehicle length.

- Further, ODOT will not allow re-certification of the chassis OEM GVWR and GAWR.
- Any vehicle that exceeds the OEM GVWR and/or GAWR **will not be accepted**.

NOTE:

Supplier must provide detailed documentation if chassis modification must be made to accommodate length of wheelbase from OEM.

- This documentation shall include, but not limited to : (type of modification, frame supports, out sourcing of frame work, drive shafts, or quality control).

IV. DOORS:**Passenger Entry Door:**

Passenger entry door must have a Two (2)-panel door design providing a minimum 32" X 80" clear opening. **A&M door actuator, or equivalent.**

- Door is located in coach body and electrically power operated controlled by the driver.
- Each door panel shall be actuated together by a single electric powered overhead actuator.
- Actuator is equipped with an emergency manual release lever.
- Vertical door shafts shall be an integral part of the door panels.
- The top portion of the shaft shall be designed to prevent door panels from rotating out of alignment.
- Shafts shall pivot on a top-mounted, bronze thrust bushing and a lower stud-mounted alignment pivot, accommodated with a glass-filled molded bearing equal to **A&M door actuator, or equivalent.**
- Perimeter door edges shall be sealed with neoprene 2" leading edge seals.
- Seals shall overlap front and rear to provide an air and watershed.
- Upper and lower edges of doors shall be tightly sealed against entrance of air drafts and water, including spray from vehicle washing.
- Operating controls should be located within easy reach of the driver.

V. PASSENGERS DOOR INTERLOCK:

Electric Passenger door in coach body will only work when transmission in Park.

VI. WHEELCHAIR LIFT DOORS:

A double door entrance shall be provided on the right (curb) side of the vehicle behind the vehicle's rear wheels.

- The door opening shall be at minimum width of 48" and height of 70" to accommodate the wheelchair lift specified within this document.

- Clearance between the top of the door opening and the raised lift platform shall be a minimum of 68”.
- Each door shall be equipped with an **A.L. Hansen Type 23 Door Check or equivalent** which is a Top Mounted Spring Loaded Device that will securely hold the door in the open position while the wheelchair lift is in operation. (Sliding door is not acceptable).
- Each door must have a window which shall be the same height as the passenger windows.

VII. COACH BODY DOOR LOCKS:

All doors shall be equipped with a lock.

VIII. DRIVER’S DOOR AND CO-DRIVER’S DOOR:

- Must have Power windows, Power door locks

IX. RUNNING BOARDS:

Extra Heavy-duty Running Boards that are bolted to Coach Body for added step strength

- Steps must be able to hold over 400lbs.

X. HANDRAIL:

- Handrails (left and right) of the front passenger door shall be provided. Cross-sectional diameter of handrail shall be between 1 ¼” and 1½”.
- Entrance handrails shall not be padded.
- Must have at minimum a wall thickness of 18 gauge steel.
- Two overhead ceiling-mounted handrails with mounting brackets at 24” on centers placed over the aisle shall be provided for the full length of the vehicle’s passenger aisle way, except in wheelchair lift area and over passenger entry door.
- All handrails must be Powder coated Steel that will not rattle or Flex and mounting bolts shall be bolted into Structural steel.
- Color of Handrails shall be bright yellow (to assist the visually impaired),
- Wood mounting **is not allowed.**

XI. GRAB RAILS:

Must have grab rails with the following:

- Shall be installed in the entrance to the vehicle running parallel to the steps in a configuration which allows persons with disabilities to grasp while entering or exiting the vehicle.
- Cross-sectional diameter of grab rail shall be between 1 ¼” and 1½”
- Must be at minimum a wall thickness of 18 gauge steel.
- All Grab rails must be Powder Coated Steel that will not Rattle or Flex and mounting bolts shall be bolted into Structural steel.
- Color of grab rails shall be bright yellow_(to assist the visually impaired),
- Wood mounting **is not allowed**.

XII. STANCHIONS:

- Must be at minimum a wall thickness of 18 gauge steel.
- All stanchions must be Powder Coated Steel that will not Rattle or Flex and mounting bolts shall be bolted into Structural steel.
- Wood mounting **is not allowed**.
- Color of stanchions shall be bright yellow_(to assist the visually impaired),
- A stanchion and vinyl padded modesty panel shall be provided at entrance door in front of first passenger seat.
- A stanchion from the floor to roof shall be installed on the interior left side of the front passenger door approximately 14 inches inside the vehicle.
- A horizontal handrail shall be installed between the stanchion and the right wall approximately 30 inches above the floor.
- A stanchion shall be located in the rear of the driver’s seat at the edge of the aisle and a handrail shall extend from the stanchion to the side wall of the vehicle behind the driver’s seat.
- The stanchion shall not interfere with a rearward travel of the driver’s power seat adjustment.

XIII. MODESTY PANEL:

- A modesty panel shall be positioned at the rear edge of the step well.
- This will be made up of a stanchion at the inner rear corner of the step well with a rail running from that stanchion to the wall at windowsill height and the modesty panel installed therein.

- Panel shall have no less than 1 ½” between the bottom of the panel and the floor to facilitate cleaning of the floor.
- Fastening of the panel shall be by bolts or rivets.

Screws **will not be acceptable.**

XIV. STEPWELL:

Must be made of Galvanized, Primed or Powder Coated steel,

- Must have two steps covered with the same slip resistant floor covering as specified within this document.
- maximum 12” minimum 10” from ground to first step,
- 9” riser, Tread depth minimum 8½”.

All steps to get up to floor level must be in step well area.

XV. INTERIOR:

All interior panels shall be vinyl coated with **AZDEL SuperLite backing, vinyl coated metal, FRP or equivalent** with same durability and cleaning ease.

Vendor shall provide a list of available colors at their quoted price and may also include a list of colors available at additional cost.

- Interior shall be trimmed with an attractive molding, covering all seams.
- All surfaces and items or hardware in passenger compartment having sharp edges, corners, or angles that could cause injury shall be passed with heavy-duty vinyl covered foam-type material.
- Door and instrument panel is to be painted or otherwise finished to match overall tones of interior panels

XVI. DRIVERS AREA:

The drivers area shall consist of an ergonomically designed molded dash console, located conveniently to the driver’s seated position and in full view of the driver.

- Supplemental control panels mounted above the driver’s head or above windshield **are not accepted.**
- All switches are to be properly labeled and illuminated.
- The instrument control panel shall be painted or otherwise finished with non-reflective, anti-glare black finish.

XVII. STORAGE COMPARTMENT:

Vehicle must have a large overhead driver storage compartment.

- This compartment must have a lip on the inside to protect objects from opening compartment door. Also shall provide easy access to clearance lights connectors through top of Storage Compartment. And provide a door latch to hold door open.

XVIII. FLOOR ASSEMBLY:

The floor shall consist of **3/4 inch Advantech Engineered flooring or equivalent with Undercoating.**

- Construction of sufficient strength and support to not allow flexing of the finished or surface floor. The chassis, body and flooring shall be attached in such a manner as to act as one unit without any movement or flexing at the joints.
- **Shall have Floor Coving material at wall.**

XIX. SLIP-RESISTANT FLOOR COVERING:

Floor covering shall be slip resistant vinyl flooring, constructed with aluminum oxide, silicon carbide and optional PVC chip blended throughout a high quality vinyl wear surface.

- Top coating **is not acceptable.**
- Backing to be polyester/cellulose material with fiberglass fiber reinforced center scrim for additional durability.
- Bacteriostats will be incorporated providing all exposed surfaces with excellent anti-bacterial properties.
- Must be **Altro Chrome with a minimum thickness of 2.2 millimeters or equivalent**
- Color to be selected from current Altro color range by each agency.
- The whole floor will be a uniform thickness throughout the vehicle, eliminating the need for ribbed surfaces, while exceeding the ADA minimum slip resistance standard rating of .06 static coefficient of friction under dry or wet conditions.
- Coving material is to be installed to support floor when rolling floor covering up the sidewall of vehicle to the seat track.
- Seams must be heat welded to provide a permanent waterproof seal against water penetration leading to premature sub-floor failure or curling leading to possible tripping hazards.
- Landing area and step edgings are to be Altro yellow safety vinyl edging.

- Edging is to heat welded to the main floor and step tread to provide for a long lasting seam.
- The floor must be installed according to manufacturer's directions using proper tools, accessories and adhesives.

NOTE:

If the flooring is not installed according to the flooring manufacture (heat welded and adhesives) specifications the bus **will not be accepted**.

XX. GAUGES:

Vehicles shall be equipped with the following needle-type gauges (lights in lieu of gauges are not acceptable): and all shall be in easy view of driver. If OEM gauges are not available then Stewart Warner gauges or equivalent shall be used.

1. OEM chassis Voltmeter Plus a Auxiliary Voltmeter Gauge
2. Oil pressure
3. Temperature
4. Fuel level
5. Speedometer
6. Odometer
7. Tachometer
8. Engine hour meter

XXI. BUMPERS:

Front and rear bumpers shall be securely fastened to the chassis frame to adequately absorb shock from impact. In no case are the bumpers to be fastened directly to the vehicle body.

- Rear bumper must be an energy absorbing Romeo Rim with Heavy Duty bumper mounting brackets that use four 7/16 grade 8 bolts per bracket or equivalent.
- Front bumper and grille shall be chrome plated.

XXII. INSULATION:

Insulation shall be provided in both walls, roof, front cap, rear wall and roof side radius area where roof meets walls.

- Adequate insulating properties shall be provided to ensure minimum heat, cold and noise penetration into the vehicle interior.
- Insulation may be accomplished through the use of **fiberglass, vacuum design or equivalent**.

- Must have a minimum R-value of 6, and fire resistant.

XXIII. AIR CONDITIONING

- Air conditioning efficiency is of paramount concern to the purchaser. Air conditioning shall be adequate to cool both the passengers and driver areas. Only vehicles offering top of the line commercial transit type air conditioning systems will be considered.
- The vehicle's electrical system shall be designed and integrated such that ample electrical supply is provided to maintain optimum air conditioning performance without battery discharge.
- The air conditioning system offered shall have a proven transit performance record and shall be provided by a nationally recognized manufacturer of bus air conditioning.
- The OEM Dash unit and Rear Air Conditioning unit shall be two separate stand alone systems. Tying into the front OEM dash system **is not allowed**.
- Rear evaporator shall have an easy accessible return air filter; having to remove evaporator cover housing to gain access to filter **will not be accepted**.
 - The rear air conditioning system shall provide a minimum cooling capacity of 65,000 BTU/Hr.
 - **A Carrier model AC-833MAX System or equivalent.** The Combined Total cooling Capacity of the OEM dash unit and Rear Unit shall be a minimum of 78,000 BTU/hr.

The Rear A/C System must have the following specified components.

1. Carrier EM-3 Evaporator or equivalent
2. Carrier CM-3 Condenser or equivalent
3. Carrier TM-21 Compressor or equivalent
4. Carrier Flex CLICK SAE J-2064 Type E Color coded hoses or equivalent.
5. Service Ports for rear Air conditioning System must be easily accessible and located under the bus near the rear A/C Condenser.

A conventional dash mounted unit for the front of the driver's area of the vehicle. Both units shall be equipped with multi-speed fans (minimum 2 speeds).

- Evaporator fans shall produce a minimum of 1600 CFM.

The Rear system shall include a skirt mounted commercial condenser. Condenser fan(s) shall produce a minimum of 2400 CFM of airflow over the coils. All components of the condenser unit shall be coated or constructed with a corrosion resistant material to protect the unit from road salts other foreign substances that might be sprayed on the unit.

- Condenser unit shall be positioned so as not to draw air from under vehicle.

NOTE:

Air conditioning refrigerant lines, to include their foam covering, will not be exposed to road hazards or elements of the weather. All air conditioning refrigerant lines, which extend from the engine area to the rear evaporator, shall be protected from damage. And all drain lines, hoses and wiring from evaporator shall be covered from view.

XXIV. VENTILATION:

Vents provided in driver area.

XXV. HEATING:

- Front & rear heater core factory installed hot water type, of sufficient capacity to warm cabin area and clear windows of snow, ice and fog.
- An easily accessible clearly marked shut-off ¼ turn ball valves shall be installed in heater supply and return lines which will allow the water to be cut off to the rear heater core.
- The water lines for the rear heater core shall be protected from damage.

Rear heating unit shall provide a minimum of 65,000 BTU's/Hr. this is in addition to front dash unit. State BTU/HR of rear heating unit you are proposing.

XXVI. SAFETY EQUIPMENT:

All miscellaneous equipment must be secured to the vehicle and easily accessible.

1. First aid kit: (24M – National Standard School Bus Metal
 - Must be Certified Safety Mfg. Model S203-045 or equivalent.
2. Fire extinguisher – Multi-purpose Stored Pressure Dry Chemical Extinguisher.

- Must be a **5 lb. type 3A:40B: C Pro Line, Kiddie Model # FXBND9 or equivalent.**
 - Must have a gauge to indicate state of charge and mounted to vehicle using a bracket and having a heavy duty vinyl cover.
3. Triangle warning devices (3), with storage container.
 - must meet FMVSSP # 125
 4. Bloodborne Pathogens infection control kit.
 - Must be Certified Safety Mfg. Model #FK200-931, **or equivalent.**
 5. Seat belt cutter

XXVII. MIRRORS:

Exterior:

Heavy Duty Heated Power Mirrors by **Velvac Model 2020 Deluxe Head with Turn Signals or equivalent.**

- Mirrors are to be mounted to the driver and copilot doors in the same position as the OEM mirrors.

Interior:

Vehicle must have the two (2) following mirrors.

- Must be OEM Day/night, 10" rear view mirror, confirming to FMVSS No. 111. (This mirror will be deleted if purchaser chooses backup camera as an option).
- Passenger viewing and backup mirror shall be made of safety glass, having rounded corners and protective edges, and a 6" x 16". This mirror is in addition to the mirror mounted on windshield.

Fresnel Lens:

11" x 14" Lens on rear window.

XXVIII. SEATS:

Driver's Seat and Co-Driver's Seat:

1. The driver seat must be a deluxe bucket, OEM high back 6-way power seat.
2. The Co-Driver's Seat must be adjustable fore and aft.
3. Seats must be padded with allergy-free material and upholstered with a durable transit quality level 5-cloth fabric.
4. Both seats must have adjustable lumbar

5. Both seats must have a certified seat belt and shoulder harness with retractor shall be attached to frame.
6. Both seats must have reclining backs and padded armrests.

NOTE:

Supplier must supply seating diagram reflecting all listed dimensions for approval.

Passenger Seats:

Seating shall be provided for fifteen (15) ambulatory passengers.

- Wheelchair spaces will each be equipped with a wheelchair securement tie down and occupant restraint system, which meets the Americans with Disabilities Act requirements.
- All seats shall be “bucket” semi-contoured transit type.
- Seats are to be consistent with what is accepted as transit quality construction. School bus type seats **are not acceptable**.
- Seat frames are to be welded.
- Seats must be padded with allergy-free material and upholstered with a durable transit quality level 5-cloth fabric.

If the seating configuration being proposed is different than that shown in Figure 1, a diagram must be furnished.

- Aisle seats must have padded fold up armrests and Anti-Vandal grab handles on the seat backs.
- Seats must be **Freedman Seating Mid Back type bucket seat or equivalent**.
- Seat belts to be installed at each seat position, and must be a Retractable under Seat Retractor, type of seat belts.
- Must include Two (2) Seat Belt Extensions that will fit Passenger Seat Belts.
- A commercial quality seat belt knife fastened to bus in driver’s reach.
- All seats shall provide a minimum seat width of 17” per passenger, or 34” per two (2) -passenger seats.
- Minimum depth of seat (front to back contour) 18”
- All seats including any foldaway seats must be bolted to structural steel.

Bolting seats to plywood floor without bolting into structural steel under floor is **NOT ALLOWED**.

All seat tracks must be welded to steel sidewalls and steel floor sections. Riveting or bolting seat tracks to sidewalls is **NOT ALLOWED**.

- Seats shall be fully padded and shall be constructed with a no-sag spring bottom suspension. Plywood seat bottoms are unacceptable.
- Seats shall be covered with a durable transit quality level 5-cloth fabric.
- Seats shall be spaced on a minimum of 28 1/2" centers, allowing for a minimum of 10" between the front of the bottom cushion and the back of the next forward seat.
- Minimum aisle width shall be 16".
- All seats shall meet, as minimum, FMVSSP 302 207 requirements.

XXIX. PRIORITY SEATING SIGNS:

Each vehicle shall contain sign(s), which indicate that, the row of forward – facing seats located in the front of the vehicle are priority seats for persons with disabilities, and that other passengers should make such seats available to those who wish to use them.

- The signs shall be located on the interior walls directly above the front row of forward-facing seats.
- Signs must follow FTA 49CFR38 Section 38.27 for the required lettering characters of the signs.

XXX. LIGHTING:

All manufacturers' lighting added to the vehicle (both interior and exterior) shall be provided with light-emitting diode (LED) lights.

- Door activated 4 way flashers that are activated when passenger door is opened. This includes 2 additional amber LED flashing lights mounted high on each side of the rear wall.
- The location, type and hookup of all exterior lights and reflectors to conform to Federal Motor Vehicle Safety Standards and Procedures.
- The number of interior lights and their light output shall be determined by providing a minimum average of 7 foot-candles of illumination on a 1 square foot plane, at an angle of 45 degrees from horizontal, centered 33 inches above the floor and 24 inches in front of the seat back at each seat position.
- Floor surface in the aisles shall be a minimum of 10 foot-candles.

- Each vehicle shall be equipped with OEM daytime running lights.
- Must have Red LED lights over all emergency exits
- All interior lighting in the passenger area shall be mounted in the ceiling cove at the sidewall with a minimum of three (3) fixtures on each side of the vehicle. Lighting fixtures shall be installed on the interior walls and ceiling in a manner that does not present a head strike to the passengers.

NOTE:

All clearance lights front, rear and side shall have metal armored shields. This shall protect lights from tree limb damage.

- A.** Tail lights are to be recessed and shall not protrude more than 2 inches from the body; they shall include a pair of amber combinational hazard and signal lights. Rear tail-lamps shall also include a pair of red tail lights and red stop lights, which may be combinational. **(Ref: Dialight 46121RB-Red, 46121AB-Amber or equivalent)**
- B.** Side signal lamps, with marker, shall be provided independently or be incorporated into the center of the vehicle. Location must be above and in front of the rear wheel opening and provide visibility from behind the rear wheel opening. **(Ref.: Dialight 18001AB811 or equivalent)**
- C.** Clearance marker lights shall be installed surface-mounted, facing the front, rear, and each side at rear. **(Ref.: Dialight 15001RB, 15001AB or equivalent)**
- D.** The third brake light shall be center-mounted above the rear window, minimum 18" in length. **(Ref.: Dialight 87121RB or equivalent)**
- E.** Two back-up lights, one mounted on each side of the body rear cap. **(Ref.: Dialight 46001CB or equivalent)**
- F.** Step lighting shall be mounted to provide light for the entire step-well and an area a minimum of three (3) feet beyond the first step on the ground area outside the bus **(Ref.: Dialight 170-81CB or equal)**.
Note: The step lights shall be extinguished when the front door has closed.

- G. Raised floor step lighting shall be provided by one strip light mounted in the step riser. Light strip shall be a minimum of 18 inches and recess-mounted to protect from accidental damage by passengers contacting light while using the step. **(Ref.: Dialight 87121CB or equivalent).**
- H. Exterior step light shall be mounted away from wheel splash. **(Ref.: Dialight #VSW-CC-19B-35-801 or equivalent)**
- I. Wheelchair lift area light shall be positioned in the manufacturer's standard location in order to illuminate the area in the immediate vicinity of the wheelchair lift platform for night operation. The light shall be automatically activated only when the wheelchair lift doors are open. **(Ref.: Dialight Light #46121CB or equivalent)**

XXXI. ELECTRICAL WIRING:

All wiring shall meet the requirements of SAE recommended practice J878a, Type SXL.

- Connections with 3 to 12 circuits shall be environmentally sealed high impact plastic connectors with pull apart locking tabs.
- All non-OEM connections containing one or two circuits shall be made with Posi-lock connectors.
- No butt connectors **will be allowed.**
- All added wiring shall be in a loom and securely clipped for maximum protection and routed in separate hangers from the heater hoses or air conditioning hoses.
- Clips shall be rubber or plastic coated to prevent them from cutting the wiring insulation.
- All electrical wiring shall be automotive stranded and sufficient size to carry the required current without excessive voltage drop and shall be color, number and function coded at a minimum of eighteen (18) inch intervals.
- No electrical, stationary or mechanical device may block the removal of the engine cover inside the bus.
- All wiring passing through the body metal shall have anti-chaffing grommets.
- Each vehicle shall contain a set of detailed system by system “as built” wiring schematics covering all electrical equipment and electrical circuits installed, complete with wiring codes for each vehicle ordered.
- Identification on the wiring diagram must tie the diagram to the bus.

XXXII. WINDOWS:

- All windows to be of tempered safety glass and water and airtight.
- Window in driver's door, windshield and entrance door glass are all to be tinted.
- All the windows in the passenger area are to be factory-installed smoked glass with at minimum 30 percent tint. **No Add on Film**
- Windows must be a top horizontal sliding T- transit type that the ventilation openings are located at the top of the window.
- Must be constructed of corrosion resistant aluminum frames.

NOTE:

All windows and emergency exits must meet the performance and operational requirements as outlined in the Federal Motor Vehicle Safety Standards and Procedures.

XXXIII. EMERGENCY EXITS:

- At least one (1) window on each side at or near the rear of the vehicle shall be equipped with emergency release latches to provide emergency exits.
- Release instructions shall be provided at or near the release handles and an audible alarm shall be installed near the driver, which will be activated when the window is released.

XXXIV. BACK-UP ALARM:

Alarm shall be waterproof **ECCO #530 or equivalent.**

- Must be mounted in the rear of the vehicle
- Must be readily audible outside the vehicle when the transmission is in reverse.

XXXV. WHEELCHAIR LIFT:

An electric powered hydraulic wheelchair lift shall be installed inside the vehicle at the side door.

- Bus must meet FMVSS 403-404 lift installation requirements.
- Wheelchair lift shall meet the following MINIMUM requirements.

1. **A Braun wheel chair Lift NL919FIB-2 (Millennium-2 Series) or equivalent.** Ground cable from lift must be connected to vehicle frame.

Connecting ground cable to lifts mounting bolts is **NOT ALLOWED.**

- (a) 800 pound load capacity lifts assembly.
- (b) An electric hydraulic pump, powered by vehicle's electrical system.
- (c) Platform dimensions 34" wide by 51" long.
- (d) Platform to be constructed of 11 gauge expanded metal.
- (e) Platform shall be stored in an upright position within the vehicle.
- (f) Powered operation for (1) unfolding and folding the platforms and (2) raising and lowering the platform.
- (g) Emergency platforms release to permit the platform to be unfolded manually and lowered by gravity.
- (h) To prevent the wheelchair from rolling off, a barrier 1 ½" at minimum shall be provided on the outer edges of the platform and have an outboard roll stop that engages and locks before the platform leaves the ground to form a safety barrier when platform is raised or lowered
- (i) A free floating bridge plate will be replaced between the lift platform and the vehicle. This bridge plate will be hinged in a manner to permit upward movement should a person's foot become entangled.
- (j) Lift shall be securely bolted to the floor and floor reinforced as necessary to support the load.
- (k) To permit the lift platform to be raised without electrical power, a hand pump that allows the operator to raise the platform shall be installed.
- (l) An interior light shall be provided to illuminate the lift area;
- (m) All moving parts likely to cause personal injury shall be shielded.
- (n) Working parts, such as cables, pulleys, and shafts, which can be expected to wear, and upon which the lift depends for support of the load, shall have a safety factor of at least six, based on the ultimate strength of the material. Nonworking parts, such as platform, frame, and attachment hardware, which would not be expected to wear, shall have a safety factor of a least three, based on the ultimate strength of the material.
- (o) Lift shall be installed as specified by the manufacturer and shall be thoroughly tested prior to delivery.
- (p) Repair manual, parts list and instructions for adjusting hydraulic valves and electrical equipment shall be provided.
- (q) Lift controls shall be interlocked with the vehicle brakes, transmission, or door, or shall provide other appropriate mechanisms or systems to ensure that the vehicle cannot be moved when the lift is not stowed and so the lift cannot be deployed unless the interlocks or systems are engaged.
- (r) The left control cord must be secured in a manner not to interfere with the door being closed.

XXXVI. USE BY STANDEES:

Lift shall accommodate persons using walkers, crutches, canes or braces or who otherwise have difficulty using steps. The platform may be marked to indicate a preferred standing position.

XXXVII. HANDRAILS

Platform on lift shall be equipped with handrails on two sides, which move in tandem with the lift, and which shall be graspable and provide support to standees throughout the entire lift operation.

- Handrails shall have a usable component at least 8" long with the lowest portion a minimum 30" above the platform and the highest portion a maximum 38" above the platform.
- Capability of withstanding a force of 100 pounds concentrated at any point on the handrail without permanent deformation of the rail or its supporting structure required.
- Cross-sectional diameter of handrail shall be between 1 ¼" and 1½", and shall have eased edges with corner radii of not less than 1/8".
- Handrails shall not interfere with wheelchair or mobility aid maneuverability when entering or leaving the vehicle.

XXXVIII. WHEELCHAIR SECUREMENT:

- Wheelchair parking space shall have clear floor area of 30" wide by 52" long and be equipped with a four-point wheelchair securement tie-down.
- Occupant restraint system must be **Q'Straint Q-8306-SC or equivalent**. Shall have a Retractable lap/shoulder belt combo with a Retractable height adjuster that are anchored to floor and wall with L Tracks that meet SAE J2249 and ADA requirements.
- Tracks shall be recessed into the floor and not shift position under anticipated loads. Any tracks overlapping the access path must be flush with the floor to prevent passengers from tripping.

The L tracks and Slide N Click anchors must be bolted to structural steel.

- Bolting to plywood floor without bolting into structural steel under floor **IS NOT ALLOWED**.
- Wheel Chair Securement system must be **Q'Straint QRT MAX Automatic Retractor System Q-8306-SC with Slide N Click anchorage system and J-Hooks, or equivalent**.

- There must be 52” at minimum and 54” maximum measured from center to center between front and rear Slide N Click anchor points. And be fully assembled and ready to use.
- Must have securement pouches attached to wall to store wheelchair securement tie-downs.
- Must include eight (8) **Q’Straint Q5-7580 Webbing Loops or equivalent** for Securing Scooters. Wheelchair location must be in the rear of bus, one beside the other.

NOTE:

Each wheelchair securement location shall have sign designating it as such. Lettering size and type on these signs shall comply with the Americans with disabilities Act Regulations,

XXXIX. WHEELCHAIR ACCESSIBILITY SYMBOL:

The vehicle will display the international wheelchair accessibility symbol of a person in a wheelchair that is outlined in white on blue background.

- This symbol will be placed on all four sides of the bus.

XL. VEHICLE COLORS:

Body: Vendor to supply list of colors and prices available.

XLI. WINDOW BLACKOUT PAINT:

Bus must have window blackout paint.

NOTE: See Figure 2

XLII. COLOR OF SEATS:

Proposal must include all colors available

- Successful vendor shall coordinate with the agency issuing this purchase order in the selection of material and color of the seats.
- Seats shall be fully padded.

XLIII. VEHICLE FLOOR PLAN:

A proposed floor plan including all pertinent interior dimensions such as overall length, width, distance between seats, etc.,

- Shall be submitted with the proposal.

XLIV. CHASSIS SPECIFICATIONS:

Supplier must list chassis specs must be listed the spaces provided below.

Overall vehicle length: 282" minimum
307" maximum

Width: Exterior 95" minimum
Interior 91" minimum

Height Exterior 105" minimum
124" maximum
Interior 76" minimum

Wheelbase: 176" minimum
190" maximum

GVWR, axle, spring and tire:

14,500 lb. GVWR minimum

Front axle- 5,000 lb. GAWR minimum

Rear axle – 9,500 lb. GAWR minimum

(Dual wheel are required on rear axle.)

Front springs – heavy duty, 5,000 lb minimum

Rating combined at ground.

Rear springs – heavy duty, 9,500 lb minimum

Ratings each, at ground.

NOTE:

It is the supplier's responsibility to calculate the actual loaded weight, spring and axle ratings so that the vehicle is engineered for safety.

XLV. TIRES:

Tire size must meet 14,500 GVWR minimum and must be steel radial with "E" load rating.

- Steel or brass valve stems 1.5" in length shall be used on all wheels with elbow extensions on the inside rear dual for access.
- Stainless steel or brass valve caps with an inner air seal shall be used.
- One mounted spare tire and wheel to match existing tires/wheels to be shipped loose.

XLVI. ENGINE: GASOLINE:

Minimum – (6.8 liter) displacement.

- Must Have a CNG Capable Engine with hardened intake and exhaust valves with hardened intake and exhaust valve seats Ford Option # 91G.

XLVII. RADIATOR:

Heavy Duty, with factory installed recovery system.

- The cooling system must be winterized with ethylene glycol for temperatures to –20 degrees F (-28.8889 C).

XLVIII. TRANSMISSION:

At minimum, heavy-duty 5-speed automatic with overdrive, lock-up converter, lock in park and a heavy-duty auxiliary transmission cooler.

XLIX. WHEEL WELLS:

The wheel housing shall be of sturdy heavy-duty construction of a minimum 14 gauge galvanized steel or stainless steel and provide ample tire clearance during all operating conditions.

- Fender and splash aprons (underskirt) of durable construction shall be provided so as to provide maximum deflection of the wheel splash.
- There shall be sufficient clearance to enable easy removal of wheels mounted with inflated tires.

L. REAR FENDER FLARES:

Must have Rubber or Fiberglass Fender Flares.

LI. DRIVE SHAFT:

Drive shaft must be properly supported, balanced and guaranteed not to vibrate. Each drive shaft shall be equipped with a protective metal guard or guards to prevent whipping through the floor or dropping to the ground in the event of a tube or universal joint failure, or if the drive shaft breaks.

LII. WHEEL COVERS:

Bright Metal Stainless Steel Wheel inserts.

LIII. BRAKES:

Two (2) braking systems are required. Service brakes shall be dual hydraulic, disc front and disc rear.

- The parking brake system shall be operated by a cable to the rear wheels, or Drive Shaft Drum Brake.
- The braking system shall be adequate for the GVWR of the vehicle.

LIV. GEAR RATIO:

Must be a 4:56 gear ratio

LV. FUEL CAPACITY:

Must be at minimum of 55 gallons

LVI. FUEL PUMP ACCESS DOOR:

An aluminum diamond plate access door shall be provided in the floor of the vehicle above the fuel tank to allow the fuel pump to be serviced without removal of the tank.

NOTE: Door must be Large enough and centered over fuel pump to allow easy removal of pump.

LVII. SHOCK ABSORBERS:

Must have heavy duty, front and rear shock absorbers.

- Rear Shock Absorbers upper mounting brackets **Shall Not be Covered** by any Body Braces that would prevent easy access to Upper Shock Mounting Bolts and Nuts.

LVIII. SUSPENSION

Rear shall have Leaf Springs.

- Right rear shall have an extra leaf to compensate for weight of wheelchair lift.

LIX. STEERING:

- Must have power-assisted steering
- Must have tilt wheel,
- Must have factory installed cruise control.

LX. AIR CLEANER:

Must have a heavy duty, dry type air cleaner

LXI. OIL FILTER:

Must have a heavy duty, throw away type oil filter.

LXII. ALTERNATOR:

Vehicle shall have Ford OEM 225-amp Alternator or equivalent.

LXIII. BATTERIES:

Two (2) heavy duty, maintenance free, minimum 650 CCA at 0 degrees F (-17.778 C) Batteries must be wired together in a parallel circuit to increase total battery capacity.

- Front OEM battery must have OEM type battery hold down brackets to securely hold battery in place.
- Instep Battery Box that is bolted down securely and must be sealed to keep mud and debris from getting on Rear Coach Battery.
- Battery must be bolted within this instep box. Cloth holds down straps are **not ALLOWED**.
- Battery box must be sealed to keep mud from getting on batteries.

SEE FIGURE 4 & 5

LXIV. GROUNDS:

A ground of the battery cable size, shall be installed between the engine and chassis frame.

- The vehicle body shall be properly grounded to the chassis frame at least 2 (two) places.
- Engine and body grounds shall be installed to handle subsystem electrical capacity.
- Grounding wires fastened to the frame shall use a bolt with a nut installed in a proper sized hole with dielectric compound applied to the cleaned surfaces, bolt, and cable end.
- Lift pump motor shall be grounded directly to chassis frame using a cable of the same size as the pump motor feed wire.
- All exterior lights and accessories added by the body manufacture shall be grounded by an in harness ground attached at a fuse panel common grounding point.
- For all ground wire connections paint shall be removed at the grounding point to provide a surface, cable end, bolt, and nut where each positive or grounding cable is attached.

LXV. STABILIZER BAR:

Heavy Duty Front and rear

LXVI. HORN:

Must have a dual, electric horn.

- LXVII. SIGNAL:**
Directional and self-canceling with hazard warning flashers.
- LXVIII. TOW HOOKS**
Shall have 2 tow hooks on Rear.
- LXIX. WINDSHIELD WIPERS:**
Minimum two speeds with intermittent feature and washer.
- LXX. KEYS**
Vehicle must include three (3) sets of keys for the entire bus.
- LXXI. RADIO:**
Must have an AM & FM CD radio
- Radio must be of same manufacture as chassis. Radio must be mounted in the Chassis OEM Location in dash.
 - Must have a minimum of six speakers two (2) OEM speakers in front chassis doors. The coach body's four (4) speakers shall be a **3-way Kicker KS Series Model KS6930 or equivalent.**
- LXXII. PAINTING, DECALS AND MONOGRAMS:**
All signs required by State and federal law shall be affixed to each vehicle exterior and interior.
- It is up to the bus dealer/manufacture to add such signs and decals upon delivery of vehicle.
 - No decals, name plates, or painted identification of the bus dealer/manufacture are to be added to the vehicle.
- LXXIII. UNDERCOATING:**
Floor and wheel housing, anti-rust factory installed.
- LXXIV. WARRANTY REQUIREMENTS:**
The contractor warrants and guarantees to the original Procuring Agency each complete bus and specific subsystem and components for 100% parts and labor as follows:
- OEM standard factory warranties for chassis and engine.
 - Complete bus body and body structure, exterior, wiring, flooring installation, and paint are warranted to be free from defects, related defects and to maintain structural integrity for a period of Five (5) year or 100,000 miles.

- Add-on components shall have component manufacture's standard warranty.
- Warranty shall begin on the date that the vehicle delivery is accepted by the agency issuing the purchase order.
- The wheelchair lift shall have a five (5) year unlimited mileage and unlimited cycles.
- The air-conditioning system shall have a minimum 2 years unlimited mileage.
- The Chassis powertrain should be warrantied for a five (5) years or 100,000 miles.

Any parts under warranty must be available and delivered to the purchasing transportation provider or their repair shop within 5 days of the time they requested/ordered them. The bus vendor/manufacture shall bear all reasonable financial costs of shipment of parts.

The warranty, as well as any recall notifications, shall cover each vehicle of the ultimate purchaser or recipient agency. The vendor shall provide a copy of any recall notice to the purchasing agency.

LXXV. BUS TESTING:

Certification shall be provided that in accordance with 49 CFR Part 665,

- Bus Testing, the vehicle either does not need to be tested (with justification specified for exemption) or has been tested at the bus testing facility and a test report is included.

LXXVI. BUS WATER TESTING:

The roofs, windows, windshield and all doors of all coaches shall be water tested, as follows:

- The waster test shall consist of a series of nozzles that are strategically located around the perimeter of the vehicle so as to the nozzles spray water over the entire surface of the vehicle.
- The nozzles shall eject a volume of water no less than 2.6 gallons per minute under a pressure of no less than twenty-two (22) pounds per square inch measured at the nozzle tip.
- There shall be no less than twenty (20) nozzles installed in the water test area, each capable of directing a force of water as indicated above.
- The Vendor/Manufacture shall be required to water test each vehicle, under the conditions set forth above, for no less than five (5) minutes, in order to determine whether or not there are any body leaks at the window areas, door areas, roof panels, etc.

- The Vendor/Manufacture shall take the necessary corrective action when body leaks are found to exist as a result of the above test, and conduct a second water test to recheck for body leaks following corrective action.

LXXVII. ALTOONA TESTING:

Vehicle must be tested in the 7-year/200,000 mile category at the Altoona Bus Testing Facility in Duncansville, PA. And a copy of the full report **must be submitted with the Proposal.**

LXXVIII. GENERAL:

All equipment cataloged as standard for the basic vehicle, unless superseded by these specifications, must be furnished and included in the purchase price of each vehicle. Complete printed specifications, published literature, and photos, or illustrations of the basic units that the supplier proposes to furnish with this Proposal must accompany each Proposal.

LXXIX. QUALITY OF MATERIALS:

Welding procedures and materials shall be in accordance with standards of the American Society of Testing Materials and the American Welding Society. All visible welds shall be grounded smooth. Where metal is welded, the contact surface shall be free of scale, spatter, and grease and shall be treated to preclude rusting.

LXXX. PUBLICATIONS AND PRINTED MATERIALS:

Each vehicle shall have a complete set of operation, quality assurance, and warranty publications.

The information shall be organized in a three ring binder format with each sections clearly identified.

1. As built wiring diagram and as built parts manuals for body and all auxiliary equipment.
2. Maintenance and inspection schedule incorporating the required maintenance and inspection of the basic vehicle and its sub-systems.
3. Operator's manual: A complete operations manual and troubleshooting guide with a detailed manufacturer's parts list that covers the conversion features on the vehicle as listed in this specification. The manual will provide complete, comprehensive instructions for the wheelchair accessories, wheelchair list deployment, air conditioning system, tie downs, heater, deployment of seats, wiring diagram and related equipment.
4. Warranty papers for chassis, body, and additional equipment.

5. Warranty Information: Each vehicle must have a published listing of contractor warranty repair locations, including address, telephone number, and contact names for the State of Oklahoma.

LXXXI. PRE-AWARD AUDIT:

The vehicles are not considered delivered to the purchasing agency until the required FTA documents are completed by an ODOT staff member.

A Pre-Award Audit shall be conducted to determine if the proposal meets specifications. The Supplier shall submit documents, which include certification of the manufacturer's compliance with the Federal Transit Administration (FTA) Pre-Award Buy America Audit Requirements. The document submitted shall include the following information for each major component used on vehicle:

1. Name and address of each supplier.
2. Cost of each major component and subcomponent. In order to protect proprietary information, the document may reflect the percentage of total cost each item represents instead of the actual cost.
3. Country of origin of each major component and subcomponent.
4. Name and address of company where final assembly occurs.
5. Cost of final assembly
6. Signature of authorized representative of vehicle manufacturer.

LXXXII. POST- DELIVERY AUDIT:

A Post Delivery Audit of the vehicle(s) shall be conducted at the purchaser's facility, to determine that the completed vehicle(s) meets specifications.

Once this process has been satisfactorily completed, the vehicle(s) shall be considered acceptable.

LXXXIII. ACCESSIBILITY REQUIREMENTS:

When submitting a Proposal for an accessible vehicle for the disabled, the vendor shall provide a list of the vehicle related equipment illustrating the component cost and related installation charges. The purpose of this list is to reflect an accurate cost for those vehicle related items, which are required to make the vehicle accessible to the disabled.

LXXXIV. ACCEPTANCE OF VEHICLES:

Upon delivery at the designed location specified within this document the final acceptance will occur after the vehicles have been inspected, road tested and all FTA required post audit delivery requirements have been met.

- All vehicles shall be insured by the supplier until the post audit delivery has been conducted at minimum.

SPECIFICATIONS FOR OPTIONAL ITEMS:

1. CNG CONVERSION FORD CHASSIS

OEM engine shall be converted to operate on dedicated CNG. A WESTPORT/BAF Cal Comp System or approved equal shall be provided. System shall be CARB and EPA certified, OBDII compliant, and fully integrated into the OEM powertrain control system. No additional control module will be accepted. Dual fuel systems will not be accepted. System must comply with the following:

- a. Closed-loop fuel control
- b. Sequential fuel injection (SFI)
- c. Optimized ignition timing
- d. Must maintain original fault codes (DTCs)
- e. Diagnostics accessed through DLC using original scan tool or any generic OBD-II scanner
- f. CNG system shall be covered by 3 year/50,000 mile warranty and cannot void the OEM powertrain warranty.
- g. The minimum CNG tank capacity on the mini-buses should be 39 Gasoline Gallon Equivalent
- h. CNG interlock – Engine will not run when filling CNG tanks.
- i. Must provide a detailed floor plan of the placement of the CNG tanks.
- j. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

2. CNG BIFUEL CONVERSION FORD CHASSIS

OEM engine shall be converted to operate on CNG and Gasoline. System shall be CARB and EPA certified, OBDII compliant, and fully integrated into the OEM powertrain control system. No additional module will be accepted. System shall be capable of switching between CNG and Gasoline. The Gasoline fuel tank will be installed as per OEM specifications. The system must comply with the following:

- a. Closed-loop fuel control
- b. Sequential fuel injection (SFI)
- c. Optimized ignition timing

- d. Must maintain original fault codes (DTCs)
- e. Diagnostics accessed through DLC using original scan tool or any generic OBD-II scanner
- f. CNG system shall be covered by 3 year/50,000 mile warranty and cannot void the OEM powertrain warranty.
- g. The minimum CNG tank capacity on the mini-buses should be 29 Gasoline Gallon Equivalent
- h. Must provide a detailed floor plan of the placement of the CNG tanks.
- i. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

3. DEDICATED PROPANE AUTOGAS INJECTION

The system shall be a Roush CleanTech System or approved equal. The system must be CARB, EPA certified, and OBDII Compliant. The system shall have the following system components:

- a. PCM Calibration
- b. Billet aluminum high-pressure fuel rail.
- c. Appropriate fuel injectors
- d. Appropriate fuel lines
- e. Appropriate OEM engine prep package
- f. Coverage of Five (5) year/ 60,000 mile warranty.
- g. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

4. DUAL FUEL VEHICLE PROPANE AUTOGAS INJECTION

System shall be a Roush CleanTech System or approved equal. The system shall be a Roush CleanTech System or approved equal. The system must be CARB, EPA certified, and OBDII Compliant. The system shall have the following system components:

- a. PCM Calibration
- b. Billet aluminum high-pressure fuel rail.
- c. Appropriate fuel injectors
- d. Appropriate fuel lines
- e. Appropriate OEM engine prep package
- f. Coverage of Five (5) year/ 60,000 mile warranty.
- g. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

5. BACK-UP MONITOR SYSTEM:

ASA Voyager AOM562A or approved equal with a 5.6” color LCD screen mounted on rear view mirror OEM Bracket. With a rear mounted outside backup camera and a second inside front mounted camera to view passengers.

6. TWO-WAY RADIO SYSTEM: UHF:

ICOM F221 UHF two-way Radio System with a PCTEL MUF4505 UHF antenna and coax or approved equal.

- Antenna shall be mounted on an L bracket on fender opposite of OEM AM/FM radio antenna.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for the agency issuing this purchase.

7. TWO-WAY RADIO SYSTEM:

ICOM F121 VHF two-way Radio System with a PCTEL MHB5800 VHF antenna and coax or approved equal.

- Antenna shall be mounted on an L bracket on fender opposite of OEM AM/FM radio antenna.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for the agency issuing this purchase.

8. TWO-WAY RADIO SYSTEM: 800 MHZ

Kenwood TK-980 800 mhz two-way Radio System with a PCTEL MUF8003 antenna and coax or approved equal.

- Antenna shall be mounted on an L bracket on fender opposite of OEM AM/FM radio antenna.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for agency issuing this purchase.

9. DRIVER'S SHIELD:

A clear Plexiglas barrier shall be erected behind the driver and extend from the stanchion crossbar behind the driver up to the ceiling.

- This shield start at the wall on the driver's left side (close enough to prevent a passenger from reaching through to the driver) and should extend 3 inches past the right side of the driver's seat, but shall not obstruct the view from the rear view mirror.
- This barrier shall consist of clear Plexiglas and shall be at least ¼ inch thick.
- A 1 ½ inch clearance between the stanchion and barrier should be provided to allow a hand hold on the right side.

10. PAINTED LOWER SKIRTS

Paint to purchaser's color specs.

NOTE:

See Figure 2.

11. OUTSIDE PASSENGER DOOR SWITCH:

Outside keyed electric passenger door switch outside. Switch must be water proof.

12. BUS CAMERA SYSTEM:

- **REI Bus-Watch R4001 with 500GB Hard drive and four cameras or approved equal.** Successful vendor shall coordinate with the agency issuing this purchase for location of Camera's.

NOTE:

See Figure 3 for camera type and location of cameras.

13. FABRIC INSERT ON CEILING

Must match seat fabric and pattern.

14. STREET SIDE EXHAUST

Exhaust to be turned out opposite side of Wheel Chair lift

15. INTEGRATED CHILD SEAT:

Integrated Child Restraint Seat must be a **Freedman Seating ICS-10 or equivalent**

- Must have an integrated 4-point safety harness. for children 22-78 Lbs with under seat retractor seat belts for adults

16. VINYL SEATS:

This will be a price deduction from the durable transit style level 5 cloth fabrics.

- Vinyl deduction is for passenger seats only
- Pilot and co-pilot seats shall be durable transit quality level 5-cloth fabric

17. PUBLIC ADDRESS SYSTEM:

A public address system shall be installed with a hand held microphone.

- The system shall include a solid-state amplifier of sufficient power and quality that the operator's voice can be clearly heard without distortion.
- The amplifier shall be firmly secured in a protective area.
- The PA system shall use the vehicles 6 speakers for sound.
- A power switch for the PA system shall be mounted on the dash to provide operation for the inside and amplifier off.
- Any noise suppression due to alternator, lighting, engine or other source is required of the contractor.

18. PASSENGER SIGNAL SYSTEM PULL CORD:

The Stop Request system shall have the following features:

- Separate provisions for W/C passengers and ambulatory passengers to signal a Stop request.
- Must use a yellow pull cord run below the windows for the ambulatory request and a large yellow push pad mounted at least 15" above the floor, but not more than 48". There must be a touch pad per W/C space for the passengers to signal a stop request.
- The driver should have a means of telling if a W/C passenger has signaled. There must be a Blue dash light to signal a W/C passenger request and a RED light to signal an ambulatory passenger request.
- The "Stop Request" lighted sign should show if a W/C passenger has signaled; the sign shall be a universal W/C symbol which lights in blue.
- There shall be an audible signal when a stop is requested and must be able to be heard by the driver.

- Once the pull cord is pulled, the sign will light, the driver's red light goes on, and a chime sounds. The sign will stay lit until the bus is stopped and the entry door is opened. The system automatically re sets itself
- When the W/C passenger signals a stop request, the W/C portion of the sign lights, the chime sounds, and the blue light on the dash goes on. The sign will stay lit until the W/C lift is deployed and then stowed and the W/C door is closed again.

19. PASSENGER STOP REQUEST SIGNS:

Passenger stop request sign must be **Transign, or equivalent**.

- The signs must be back-lighted stop requests and shall be mounted overhead on the front ceiling end closure.
- The sign shall be so designated as to remain illuminated when activated (by the passenger signal system) until it is extinguished by opening the door.

20. FARE COLLECTION BOX:

Fare collection box must be **GFI Genfare "Cents a bill" fare box or compatible**.

- With this option, the mounted fare box will eliminate the front passenger seat and make the bus a 14 passenger.
- Also must have the OEM Co-Driver seat covered with same fabric as the other passenger seats shipped loose with the bus. Co-Driver door shall have the same type of running board as driver's door.

21. DESTINATION SIGNS:

Destination signs must be **Twinvision, or equivalent**. The automatic electronic destination sign system shall be furnished on the front and on the right side near the front door of the vehicle. Display areas of destination signs shall be clearly visible in direct sunlight and/or at night. The sign system shall provide optimum visibility of the message display units for passengers and shall meet applicable ADA requirements defined in 49 CFR, Part 38.39. Destination signs shall be installed in such a manner as to facilitate easy access for replacement of the entire sign assembly, or components such as fluorescent lamps/LED's and electronic control modules, from inside the bus within 30 minutes by a mechanic. Lamps and associated parts shall be commercially available.

Destination messages, route designations, and public relations messages shall be independently selectable via a single Operator's

Control Panel (OCP) which shall include a display monitor. The OCP display monitor readout shall show the exact information displayed on the destination signs. The OCP shall be conveniently located for the bus operator and mounted in such a manner that will not pose any safety hazard. The OCP shall utilize a durable weatherproof keypad with tactile feel for destination message control functions.

The destination sign system shall be capable of programming 10,000 message lines. The number of public relations messages shall be limited only by the remaining number of message lines not used for destination purposes. Sign displays shall have alternating message capability with programmable blanking time between message lines as may be required. Variable blanking times shall be programmable between 0.5 to 25 seconds in duration. Each line message or blanking time for each message shall be individually programmable. The message display units shall incorporate an automatic blanking feature that will cause the display area to blank within 30 seconds of the bus master power switch being turned off.

An emergency message shall be initiated by the closure, or opening, of a dry contact switch or relay. The emergency message shall be displayed on the exterior of the bus only. The OCP shall not display the emergency message. The destination sign shall automatically resume normal operation when the remote emergency switch is returned to its normal position.

Destination Sign Programming: The electronic sign system shall be programmable via an integral connector located in the front destination sign area. Software shall be furnished for programming the sign system via an IBM-compatible, laptop computer. Software shall be capable of providing a high degree of flexibility to create, or select preprogrammed, fonts and graphic displays. The sign shall have the capability of being programmed in the field using a PC or field programmer. Message program information shall be transferable to and/or from the field programmer device as specified by the transit system in attachments to Part 5: Technical Specifications.

The destination sign compartments shall be designed to prevent condensation and entry of moisture and dirt. Additional provisions shall be included, if necessary, to prevent fogging of both destination sign compartment window and glazing on unit itself. Access shall be

provided to allow cleaning of inside of destination sign compartment window and unit glazing.

A complete listing of destination sign readings for initial sign programming by the manufacturer are provided in attachments to Part 5: Technical Specifications.

Front Signs:

Sign Size:

A 16 Row by 148 Column Spectrum Route Multi-Color Sign that shall have no less than 3,264 LEDs with a message display area of not less than 8.0 inches high by not less than 64.6 inches wide. The LEDs displays shall consist of red-blue-green LEDs and amber colored LEDs. The color LEDs shall be rated by their manufacturers for a life expectancy of 50,000 hours to 100,000 hours and shall support up to 27 colors.

Sign Readability:

The destination message shall be readable by a person with 20/20 vision from a distance of 250 feet. The sign shall have an equal readability at 65 degrees on either side of the line perpendicular to the center of the mean plane of the display. The entire display area of all signs shall be clearly visible and readable both in direct sunlight and at night.

Side Signs:

Sign Size:

An 8 Row by 96 Column Spectrum Route Multi-Color Sign that shall have no less than 768 LEDs with a message display area of not less than 2.8 inches high by not less than 36.3 inches wide. The LEDs shall be rated by their manufacturers for a 100,000-hour life expectancy.

Sign Readability:

The destination message shall be easily read from the sidewalk level. The entire display area of all signs shall be clearly visible and readable both in direct sunlight and at night.

System Control Console – Operator Display and Keyboard:

The system control console shall be used to view and update display messages. The system control console shall utilize a 28-key

conductive rubber pad keyboard with tactile feel, designed especially for the harsh transit environment or approved equal.

The system control console shall contain a 16 x 128 pixel vacuum fluorescent display. The system control console shall contain an audio annunciator that beeps to alert the operator to view the display for a message, or beeps indicating that a key is depressed. The system control console shall continuously display the complete message associated with the selected destination code.

Memory Transfer:

The sign system shall be reprogrammable through the system control console by either a PCMCIA flash card or a Memory Transfer Unit.

Emergency Message Display:

If required, a special emergency message can be activated by a switch. This message shall be displayed on signs, facing outside the vehicle, while the signs inside the vehicle, including the system control console, remain unchanged. The emergency message shall be canceled by entering a new destination code or by removing the emergency signal.

Programming:

A programming software package shall be furnished to generate message lists for the destination sign system. A PCMCIA flash memory card having a minimum of 8 megabytes of memory shall be provided to facilitate bus system programming. The software must be compatible with Windows NT, Windows 2000, Windows XP, Windows Vista and Windows 7

The programming software shall use techniques that require minimal operator training and that are intended for use by operators that are not trained in complex computer operations. All operator screens shall utilize pull down and pop-up menus.

22. BICYCLE RACKS:

Manufacturer/model should be **Sportworks Veloporter 2 or equivalent.**

- Racks must have a 2 (two) bike capacity, and follow the specs noted below.

1. The bike rack must meet OSHA requirements for lifting by a single individual and be capable of being raised or lowered with one hand
2. The bike rack must accommodate all bicycles with wheels 16" (for example, the Dahon folding bicycle series) or larger diameter, excluding tandems and recumbent type bicycles. The rack must accommodate all bicycles 80" and longer.
3. The bike rack frame must be manufactured with 304 stainless steel tubing with a minimum wall thickness of 0.125 in., outside corners to be rounded, pinch joints minimized and welds smoothed.
4. All nuts, bolts and washers shall be either AISI Type 304 stainless steel or Grade 8 yellow zinc plated steel
5. The bike rack must be mounted to the front of the bus and accommodate two (2) bicycles. In the stowed position, folded up against the front of the bus, it shall protrude no more than 8" from the front bumper. The protrusion shall be no more than 36" when deployed.
6. The latching mechanism must automatically lock the bike rack in the stowed and deployed positions.
7. The bike rack, when stowed, shall not interfere with any access panels/doors, windshield wipers or driver vents.
8. The bike rack shall be designed for loading and unloading from the front, curbside, of the bus. The securement can only contact the bicycle's tires as to not do any damage to the bicycle's frame. The bike rack shall have a positive securement with a four (4) point locking system, contacting the wheel in such a way that greater than half the circumference of the wheel is captured. Straps, cords, and/or springs shall not be required to secure a bicycle.
9. The carrier shall not interfere with the ability of the driver to safely operate the vehicle. This includes, but is not limited to, the obstruction of the windshield view and the operation of the windshield wipers, turn signals, and headlights.
10. The carrier shall be compatible with automated bus washing systems and shall be capable of repeated use with automated washing equipment without sustaining damage to the carrier, vehicle, or the

washing equipment. The carrier shall be designed as not to accumulate water internally.

11. The use of this rack shall not affect route scheduling. The bike rack shall have a design capability of being loaded or unloaded in 20 seconds or less.

12. The mounting bracket/ pivot plate assembly must be designed to fit all urban transit buses, both standard floor and low floor.

13. The bicycle rack shall be warranted against defects in materials and workmanship for a period of one (1) year from date of installation.

14. The bicycle rack manufacture is required to furnish all the complete parts and service (maintenance) books.

15. The bicycle rack should have a latching system in both positions, stowed and deployed; this will need to be explained in detail

16. The racks should be in a friendly design and a tire only mount.

17. The mounting brackets should be detailed at to what bus needs with brackets.

Product Standards:

Only first quality materials, workmanship and finish shall be acceptable.

All general materials and workmanship shall be guaranteed to be free of defects for a minimum of at least one (1) year from date of installation except as noted below. Any defects shall be rectified or replaced to meet specifications at the expense of the manufacturer, including freight, parts and labor.

Any exposed fasteners shall be colored to match the finish of the framework components.

Spare Parts:

The contractor will provide pricing and the delivery time on the available spare parts for each bicycle rack and maintain adequate stock levels.

23. DELETE COPILOT DOOR, SEAT AND B PILLAR :

This Moves the Passenger door from the coach Body to the chassis cab section. This delete's the Copilot door; seat and B pillar section of the cab. This will add 2 seats positions in Coach Body.

24. DELETE ALTRO CHROMA FLOORING:

This delete's the Altro Chroma Floor covering to install the Gray RCA Rubber Transit-Flor. The step well, entrance area, and center aisle floor area shall be overlaid with ribbed, slip resistant, oil resistant commercial 3/16" step tread thickness. The 1/8" thickness flooring under the seats and in the wheelchair area shall be smooth, slip resistant, and oil resistant. The flooring shall extend up the sidewall and rear wall to the seat rail line and shall be coved at the floor/wall joint to form a smooth water-tight transition. Flooring adhesive shall be oil resistant.

25. DELETE YELLOW POWDER COAT ON HANDRAILS:

This delete's the yellow powder coating on the stainless steel handrails, grab handles and stanchions. They will be the natural brushed Stainless steel Color.

26. 100% NIDA-CORE[®] STRUCTURE OR APPROVED EQUAL:

Resin Hardened Nida-Core[®] or approved equal Polypropylene Copolymer honeycomb (1" thickness, minimum) Throughout 100% of the entire body structure, walls, roof, front and rear caps must be used instead of Honeycomb Paper Vertical. This is to eliminate any possibility of rotting in any area of the body structure.

27. COMPOSITE FLOOR:

Composite Space-age Synthetics Thermo-Lite Board-Tough Series or approved equal Floor that will not rot and is lighter than the standard marine grade plywood floor.

28. SIDE DOOR SLIDE OUT BATTERY TRAY:

Must have an Extra Heavy Duty Stainless Steel slide out Battery Tray for all auxiliary batteries mounted under Bus. Battery Box must have OEM type battery hold down brackets to securely hold batteries in place. Cloth hold down straps is not ALLOWED. Battery box must be sealed to keep mud from getting on batteries.

29. DIESEL ENGINE:

Current Power plant for the make and model of chassis

30. REAR SPARE TIRE HOLDER:

A rear spare tire holder that shall be affixed to the vehicle in a way to allow easy removal of spare tire.

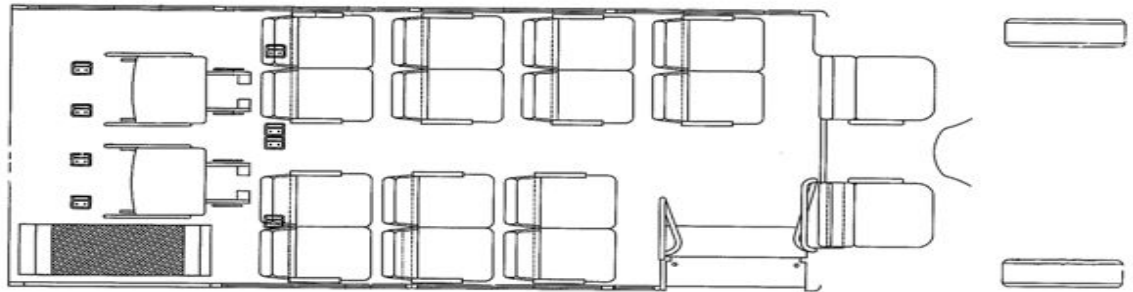
31. ADJUSTABLE REAR SUPSENIION SYSTEM:

System shall be a MOR/ryde suspension system or equal shall be used with the following:

- a. Installed as per the manufactures recommendations.
- b. Fully adjusted for each bus installed on.
- c. Warranty to be a 5 year 100,000 mile.

FIGURE 1:

Figure 1



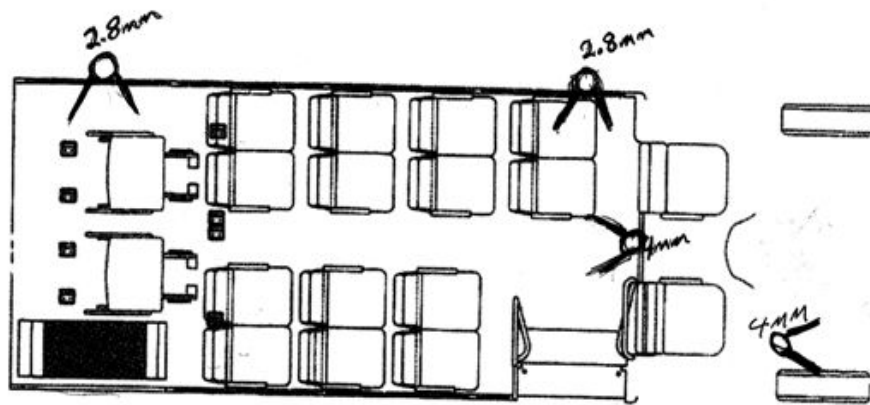
24' 15 Passenger Rear
Lift B Pillar

FIGURE 2:



FIGURE 3:

Figure 1



24' 15 Passenger Rear
Lift B Pillar

FIGURE 4:



FIGURE 5:



SECTION "L"
24' 15 Passenger Metal Bus
RESPONSE SHEET

BASE
VEHICLE

COST PER
UNIT

Transit Bus (gas engine)

\$ _____ / ea.

CHASSIS SPECIFICATIONS

Specify Overall Vehicle Length (outside of front bumper to outside of Rear bumper): _____

Overall vehicle length: 282" minimum _____
307" maximum _____

Width: Exterior 95" minimum _____
Interior 91" minimum _____

Height Exterior 105" minimum _____
124" maximum _____
Interior 76" minimum _____

Wheelbase: 176" minimum _____
190" maximum _____

AIR CONDITIONING

Make and Model of Rear A/C Unit and Cooling Capacity of rear Unit BTU's/Hr.
Include literature on unit being proposed.

MAKE/MODEL _____

BTU/HR of Rear Unit only _____

HEATING

BTU/HR of Rear Unit only _____

OPTIONAL ITEMS**COST**

- | | | |
|-----|------------------------------------|--------------|
| 1. | CNG Conversion Ford Chassis | \$_____ /ea. |
| 1. | CNG Bifuel Conversion Ford Chassis | \$_____ /ea. |
| 2. | Propane Dedicated Conversion | \$_____ /ea. |
| 3. | Propane Dual Fuel Conversion | \$_____ /ea. |
| 5. | Back-Up Monitor System | \$_____ /ea. |
| 6. | Two-way radio (UHF) | \$_____ /ea. |
| 7. | Two-way radio (VHF) | \$_____ /ea. |
| 8. | Two-way radio (800 MHZ) | \$_____ /ea. |
| 9. | Driver's Shield | \$_____ /ea. |
| 10. | Painted lower skirts | \$_____ /ea. |
| 11. | Outside Passenger Door Switch | \$_____ /ea. |
| 12. | Bus Camera System: | \$_____ /ea. |
| 13. | Fabric Insert on Ceiling | \$_____ /ea. |
| 14. | Street Side Exhaust | \$_____ /ea. |
| 15. | Integrated Child Seats | \$_____ /ea. |
| 16. | Vinyl Seats (Price Deduction) | \$_____ /ea. |
| 17. | Public Address System | \$_____ /ea. |
| 18. | Passenger Signal System Pull Cord | \$_____ /ea. |
| 19. | Passenger Stop request Signs | \$_____ /ea. |

- | | | |
|------------|---|--------------|
| 20. | Fare Collection Box | \$_____ /ea. |
| 21. | Destination Signs | \$_____ /ea. |
| 22. | Bicycle Racks | \$_____ /ea. |
| 23. | Delete B pillar and copilot seat
(Price Deduction) | \$_____ /ea. |
| 24. | Delete Altro Chroma Flooring
(Price Deduction) | \$_____ /ea. |
| 25. | Delete Yellow Powder Coating on
Handrails, Grab Rails and Stanchions.
(Price Deduction) | \$_____ /ea. |
| 1. | 100% Nida-Core [®] structure | \$_____ /ea. |
| 27. | Composite floor | \$_____ /ea. |
| 28. | Side Door Slide Out Battery Box | \$_____ /ea. |
| 29. | Diesel Engine: | \$_____ /ea. |
| 30. | Rear Spare Tire Holder: | \$_____ /ea. |
| 31. | Adjustable Rear Suspension System: | \$_____ /ea. |

A list of optional equipment and/or accessories shall be provided. The list must contain:

- Item
- Description and functionality detail
- Cost of item installed in final delivery of vehicle
- Any changes to listed specifications as outlined above to accommodate options

RFP EXCEPTIONS:

Supplier must list any exceptions here to be used as a part of the Proposal evaluation and analysis. Please list the roman numerical on the standard specs or the number for the options when listing any Proposal exceptions.

**SECTION “M”
SPECIFICATIONS FOR
24’ 20 PASSENGER, FRONT LIFT COMPOSITE
TRANSIT VEHICLES**

GENERAL DESCRIPTION

It is the intent of these specifications to set forth minimum standards for the procurement of a light transit vehicle that complies with Title 49 Code of Federal Regulations, part 38, subpart B, entitled “Americans with Disabilities Act (ADA) Accessibility Specifications for Buses, Vans and Systems”. All dimensions and equipment shall comply with the standards as set forth within the 49 CFR. The vehicle shall be new, the most current production model available, and must be complete with manufacturer’s standard equipment and accessories, fully serviced and ready for operation. The vehicle shall be equipped to meet all Federal Motor Vehicle Safety Standards and Procedures (FMVSSP) that apply. If these specifications contradict any listed in the Federal Regulations, they are superseded by those of the Federal Regulations

To take advantage of administrative and cost savings and to ensure that all federal requirements are met, this procurement is assignable to other agencies, organizations and Tribal Governments funded by the Federal Transit Administration.

NOTE:

Any Brand names and specifications mentioned within this document are for reference only. Proposals will only be considered when brochures/specifications are included for each component provided with Proposal for evaluation.

I. DELIVERY:

Vehicle must be delivered at a maximum of 120 calendar days from the date a Purchase order is issued. Pre-delivery servicing and adjustments: prior to acceptance by the purchaser, the vendor shall service and adjust each vehicle for operation. This process shall include but not be limited to the following:

1. The vehicle must have a full tank of fuel when delivered.
2. Each bus shall be designed to facilitate the disassembly, reassembly, servicing or maintenance thereof by use of tools and items that are normal and available as commercial standard items. The body and structure shall be designed for ease of maintenance and repair.
3. All parts added, as part of the modification process shall be new.

4. Headlights properly aligned
5. Engine Tuned
6. All accessories properly adjusted
7. Electrical, braking and suspension systems inspected
8. Both batteries Charged
9. Front-end alignment must be done after body is put on chassis. Chamber, caster and toe must be adjusted to the center of OEM specs. Ford chassis buses must have adjustable caster, camber bushings installed. Standard OEM bushings will not be accepted. Each bus must come with documentation stating before and after actual alignment readings of bus.
10. All wheels balanced, including spare
11. All lubricants checked, and greased if needed
12. Cooling system serviced with permanent type anti-freeze and summer coolant for minus 20 degrees F (-28.888C).
13. Warranty papers and owner's guide
14. Exterior and interior cleaned and washed.
15. Odometer cannot exceed 3,000 miles at the time of delivery of completed buses to the purchasing agency. There will be a charge of one dollar (\$1.00) per mile for each vehicle with an odometer reading in excess of 3,000 miles payable to the purchasing agency at the time of delivery.
16. Under no circumstances are tow vehicles to be attached to any buses.
17. Each vehicle must be delivered to the agency submitting the P.O.

Copies of the all Certificate of Origins and signed invoices must be sent to the organization named on the purchase order before delivery is made and must be delivered with the vehicle: receipt of these after delivery **is not acceptable**.

NOTE:

- If these specifications contradict any listed in the Federal Regulations, they are superseded by those of the Federal Regulations.

II. NO PROTOTYPES:

Must be a Current production Model, B Pillar type bus that has been in Production for a minimum of one year.

III. BODY STRUCTURE:

Fiberglass Reinforced Plastic (FRP) Composite Unitized-type Body

The bus body shall have a heavy-duty unitized structure and shall be of durable fiberglass reinforced plastic (FRP) composite construction. All the body panels shall consist of an exterior high gloss gel coat (.020" thickness, minimum) on a resin-hardened FRP (.125" thickness, minimum) attached to a center layer of

Resin Hardened Nida-Core[®] or approved equal Polypropylene Copolymer Honeycomb (1" thickness, minimum) must be used in all high moisture areas around the fuel fill cutout, fender flare cutout, front to back of the bus at floor level to keep any road splash from degrading the structure on both driver and pass sides, roof hatch cutout, rear window cutout and lift door area. Resin Hardened Paper Vertical Honeycomb (1" thickness, minimum) can be used in all other non high moisture locations.

Steel perimeter and transverse supports, completely fiber glassed to adjoining body parts. It shall use proper adhesive materials to adequately bond and mechanically fasten all joints and points of stress with sufficient strength to comply with the FMVSS 220 rollover protection test. Each supplier shall provide certification with the Proposal that the bus as proposed meets or exceeds FMVSS 220 and FMVSS 221 requirements.

All exterior side and roof panels when completed shall be at a minimum 1 1/8" thick. Bond lines at the side walls, rear end cap, roof, and front cap shall be interlocked by adhesives, resin saturated fiberglass matting, and mechanical fasteners, forming a unibody design without exposed fasteners or protruding moldings. Imbedded reinforcements equal to the structural members of the body shall be installed at all door openings in order to support door mounting hardware and door operating mechanisms. All door openings shall have full structural framing to maintain integrity of the body structure. **All door frame structure's including wheel chair door frame shall be made of 304 Grade stainless steel powder coated OEM white.**

Interior panels may be an integral part of the FRP composite panel or may be made of scuff-resistant laminate/FRP finished material. Molded ABS may be used as trim but not for interior panels. Where threaded fasteners are in the trim/interior panel only, an imbedded reinforcing nut or a reinforcing steel panel shall be integrated into the FRP composite for added strength and fastener retention.

Where self-tapping fasteners are used in body panels, the body panels shall have an imbedded reinforcing nut or a steel reinforcing panel shall be integrated into the FRP composite for added strength and fastener retention.

Window openings cut into body panels shall have a maximum frame clearance of 1/8" on each side, to minimize the need for caulking. All openings cut into body exterior panels must have the exposed edges of the cutout properly coated to prevent moisture intrusion before further assembly or painting occurs. **Steel window frames in the body shall be Zinc Dipped to prevent corrosion and**

windows shall be properly caulked/sealed to prevent intrusion of moisture and dust.

Fiberglass Roof must be a one piece molded unit that has molded sides to connect to side walls. Bending a flat sheet of fiberglass to connect to walls is **NOT ALLOWED**.

V. OEM CHASIS FRAME

The rear overhang, measured from the center of the rear axle to the outer edge of the rear bumper, cannot exceed 1/3 of the overall vehicle length.

- Further, ODOT will not allow re-certification of the chassis OEM GVWR and GAWR.
- Any vehicle that exceeds the OEM GVWR and/or GAWR **will not be accepted**.

NOTE:

Supplier must provide detailed documentation if chassis modification must be made to accommodate length of wheelbase from OEM.

- This documentation shall include, but not limited to (type of modification, frame supports, out sourcing of frame work, drive shafts, or quality control).

VI. DOORS:

Passenger Entry Door:

Passenger entry door must have a Two (2)-panel door design providing a minimum 32"X 80" clear opening. **A&M door actuator, or equivalent**.

- Door is located in coach body and electrically power operated controlled by the driver.
- Each door panel shall be actuated together by a single electric powered overhead actuator.
- Actuator is equipped with an emergency manual release lever.
- Vertical door shafts shall be an integral part of the door panels.
- The top portion of the shaft shall be designed to prevent door panels from rotating out of alignment.
- Shafts shall pivot on a top-mounted, bronze thrust bushing and a lower stud-mounted alignment pivot, accommodated with a glass-filled molded bearing equal to **A&M door actuator, or equivalent**.
- Perimeter door edges shall be sealed with neoprene 2" leading edge seals.
- Seals shall overlap front and rear to provide an air and watershed.

- Upper and lower edges of doors shall be tightly sealed against entrance of air drafts and water, including spray from vehicle washing.
- Operating controls should be located within easy reach of the driver.

VII. PASSENGERS DOOR INTERLOCK:

Electric Passenger door in coach body will only work when transmission in Park.

VIII. WHEELCHAIR LIFT DOORS:

A double door entrance shall be provided on the right (curb) side of the vehicle in front of the vehicle's rear wheels.

- The door opening shall be at minimum width of 48" and height of 70" to accommodate the wheelchair lift specified within this document.
- Clearance between the top of the door opening and the raised lift platform shall be a minimum of 68".
- Each door shall be equipped with an **A.L. Hansen Type 23 Door Check or equivalent** which is a Top Mounted Spring Loaded Device that will securely hold the door in the open position while the wheelchair lift is in operation. (Sliding door is not acceptable).
- Each door must have a window which shall be the same height as the passenger windows.

IX. COACH BODY DOOR LOCKS:

All doors shall be equipped with a lock.

X. DRIVER'S DOOR AND CO-DRIVER'S DOOR:

- Must have Power windows, Power door locks

XI. RUNNING BOARDS:

Extra Heavy-duty Running Boards that are bolted to Coach Body for added step strength

- Steps must be able to hold over 400lbs.

XII. HANDRAIL:

- Handrails (left and right) of the front passenger door shall be provided. Cross-sectional diameter of handrail shall be between 1 1/4" and 1 1/2".
- Entrance handrails shall not be padded.
- Must have at minimum a wall thickness of 18 gauge steel.
- Two overhead ceiling-mounted handrails with mounting brackets at 24" on centers placed over the aisle shall be provided for the full

length of the vehicle's passenger aisle way, except in wheelchair lift area and over passenger entry door.

- All handrails must be Powder coated Steel that will not rattle or Flex and mounting bolts shall be bolted into Structural steel.
- Color of Handrails shall be bright yellow (to assist the visually impaired),
- Wood mounting **is not allowed**.

XIII. GRAB RAILS:

Must have grab rails with the following:

- Shall be installed in the entrance to the vehicle running parallel to the steps in a configuration which allows persons with disabilities to grasp while entering or exiting the vehicle.
- Cross-sectional diameter of grab rail shall be between 1 ¼" and 1½"
- Must be at minimum a wall thickness of 18 gauge steel.
- All Grab rails must be Powder Coated Steel that will not Rattle or Flex and mounting bolts shall be bolted into Structural steel.
- Color of grab rails shall be bright yellow (to assist the visually impaired).
- Wood mounting **is not allowed**.

XIV. STANCHIONS:

- Must be at minimum a wall thickness of 18 gauge steel.
- All stanchions must be Powder Coated Steel that will not Rattle or Flex and mounting bolts shall be bolted into Structural steel.
- Wood mounting **is not allowed**.
- Color of stanchions shall be bright yellow (to assist the visually impaired),
- A stanchion and vinyl padded modestly panel shall be provided at entrance door in front of first passenger seat.
- A stanchion from the floor to roof shall be installed on the interior left side of the front passenger door approximately 14 inches inside the vehicle.
- A horizontal handrail shall be installed between the stanchion and the right wall approximately 30 inches above the floor.
- A stanchion shall be located in the rear of the driver's seat at the edge of the aisle and a handrail shall extend from the stanchion to the side wall of the vehicle behind the driver's seat.
- The stanchion shall not interfere with a rearward travel of the driver's power seat adjustment.

XV. MODESTY PANEL:

- A modesty panel shall be positioned at the rear edge of the step well.
- This will be made up of a stanchion at the inner rear corner of the step well with a rail running from that stanchion to the wall at windowsill height and the modesty panel installed therein.
- Panel shall have no less than 1 ½" between the bottom of the panel and the floor to facilitate cleaning of the floor.
- Fastening of the panel shall be by bolt and nut type system.

Screws **will not be acceptable.**

XVI. STEPWELL:

Must be made of minimum 14 gauge 304 Stainless steel to prevent rusting and powder coated white.

- Must have two steps covered with the same slip resistant floor covering as specified within this document.
- maximum 12" minimum 10" from ground to first step,
- 9" riser, Tread depth minimum 8½".
- All steps to get up to floor level must be in step well area.

XVII. INTERIOR:

All interior panels shall have **AZDEL SuperLite backing or equivalent behind vinyl coated metal, FRP or Federal Foam or equivalent.**

Vendor shall provide a list of available colors at their quoted price and may also include a list of colors available at additional cost.

- Interior shall be trimmed with an attractive molding, covering all seams.
- All surfaces and items or hardware in passenger compartment having sharp edges, corners, or angles that could cause injury shall be passed with heavy-duty vinyl covered foam-type material.
- Door and instrument panel is to be painted or otherwise finished to match overall tones of interior panels

XVIII. DRIVERS AREA:

The drivers area shall consist of an ergonomically designed molded dash console, located conveniently to the driver's seated position and in full view of the driver.

- Supplemental control panels mounted above the driver's head or above windshield **are not accepted.**

- All switches are to be properly labeled and illuminated.
- The instrument control panel shall be painted or otherwise finished with non-reflective, anti-glare black finish.

XIX. STORAGE COMPARTMENT:

Vehicle must have a large overhead driver storage compartment.

- This compartment must have a lip on the inside to protect objects from opening compartment door. Also shall provide easy access to clearance lights connectors through top of Storage Compartment. And provide a door latch to hold door open.

XX. FLOOR ASSEMBLY:

The floor shall consist of **3/4 inch Marine Grade Plywood with edge undercoating.**

- Construction of sufficient strength and support to not allow flexing of the finished or surface floor. The chassis, body and flooring shall be attached in such a manner as to act as one unit without any movement or flexing at the joints.
- **Shall have Floor Coving material at wall.**

XXI. SLIP-RESISTANT FLOOR COVERING:

Floor covering shall be slip resistant vinyl flooring, constructed with aluminum oxide, silicon carbide and optional PVC chip blended throughout a high quality vinyl wear surface.

- Top coating **is not acceptable.**
- Backing to be polyester/cellulose material with fiberglass fiber reinforced center scrim for additional durability.
- Bacteriostats will be incorporated providing all exposed surfaces with excellent anti-bacterial properties.
- Must be **Altro Chroma with a minimum thickness of 2.2 millimeters or equivalent**
- Color to be selected from current Altro color range by each agency.
- The whole floor will be a uniform thickness throughout the vehicle, eliminating the need for ribbed surfaces, while exceeding the ADA minimum slip resistance standard rating of .06 static coefficient of friction under dry or wet conditions.
- Coving material is to be installed to support floor when rolling floor covering up the sidewall of vehicle to the seat track.
- Seams must be heat welded to provide a permanent waterproof seal against water penetration leading to premature sub-floor failure or curling leading to possible tripping hazards.

- Landing area and step edgings are to be Altro yellow safety vinyl edging.
- Edging is to heat welded to the main floor and step tread to provide for a long lasting seam.
- The floor must be installed according to manufacturer's directions using proper tools, accessories and adhesives.

NOTE:

If the flooring is not installed according to the flooring manufacture (heat welded and adhesives) specifications the bus **will not be accepted.**

XXII. GAUGES:

Vehicles shall be equipped with the following needle-type gauges (lights in lieu of gauges are not acceptable): and all shall be in easy view of driver. If OEM gauges are not available then Stewart Warner gauges or equivalent shall be used.

1. OEM chassis Voltmeter Plus a Auxiliary Voltmeter Gauge
2. Oil pressure
3. Temperature
4. Fuel level
5. Speedometer
6. Odometer
7. Tachometer
8. Engine hour meter

XXIII. BUMPERS:

Front and rear bumpers shall be securely fastened to the chassis frame to adequately absorb shock from impact. In no case are the bumpers to be fastened directly to the vehicle body.

- Rear bumper must be an energy absorbing Romeo Rim with Heavy Duty bumper mounting brackets that use four 7/16 grade 8 bolts per bracket or equivalent.
- Front bumper and grille shall be chrome plated.

XXIV. INSULATION:

Insulation shall be provided in both walls, roof, front cap, rear wall and roof side radius area where roof meets walls.

- Adequate insulating properties shall be provided to ensure minimum heat, cold and noise penetration into the vehicle interior.
- Insulation may be accomplished through the use of **fiberglass, vacuum design or equivalent.**
- Must have a minimum R-value of 6, and fire resistant.

XXV. AIR CONDITIONING

- Air conditioning efficiency is of paramount concern to the purchaser. Air conditioning shall be adequate to cool both the passengers and driver areas. Only vehicles offering top of the line commercial transit type air conditioning systems will be considered.
- The vehicle's electrical system shall be designed and integrated such that ample electrical supply is provided to maintain optimum air conditioning performance without battery discharge.
- The air conditioning system offered shall have a proven transit performance record and shall be provided by a nationally recognized manufacturer of bus air conditioning.
- The OEM Dash unit and Rear Air Conditioning unit shall be two separate stand alone systems. Tying into the front OEM dash system **is not allowed**.
- Rear evaporator shall have an easy accessible return air filter; having to remove evaporator cover housing to gain access to filter **will not be accepted**.
 - The rear air conditioning system shall provide a minimum cooling capacity of 65,000 BTU/Hr.
 - **A Carrier model AC-833MAX System or equivalent.** The Combined Total cooling Capacity of the OEM dash unit and Rear Unit shall be a minimum of 78,000 BTU/hr.
 - Rear Evaporator shall have an easy accessible return air filter; having to remove the evaporator cover housing to gain access to filter will not be accepted.

The Rear A/C System must have the following specified components.

1. Carrier EM-3 Evaporator or equivalent
2. Carrier CM-3 Condenser or equivalent
3. Carrier TM-21 Compressor or equivalent
4. Carrier Flex CLICK SAE J-2064 Type E Color coded hoses or equivalent.
5. Service Ports for rear Air conditioning System must be easily accessible and located under the bus near the rear A/C Condenser.

A conventional dash mounted unit for the front of the driver's area of the vehicle. Both units shall be equipped with multi-speed fans (minimum 2 speeds).

- Evaporator fans shall produce a minimum of 1600 CFM.

The Rear system shall include a skirt mounted commercial condenser. Condenser fan(s) shall produce a minimum of 2400 CFM of airflow over the coils. All components of the condenser unit shall be coated or constructed with a corrosion resistant material to protect the unit from road salts other foreign substances that might be sprayed on the unit.

- Condenser unit shall be positioned so as not to draw air from under vehicle.

NOTE:

Air conditioning refrigerant lines, to include their foam covering, will not be exposed to road hazards or elements of the weather. All air conditioning refrigerant lines, which extend from the engine area to the rear evaporator, shall be protected from damage. And all drain lines, hoses and wiring from evaporator shall be covered from view.

XXVI. VENTILATION:

Vents provided in driver area.

XXVII. HEATING:

- Front & rear heater core factory installed hot water type, of sufficient capacity to warm cabin area and clear windows of snow, ice and fog.
- An easily accessible clearly marked shut-off ¼ turn ball valves shall be installed in heater supply and return lines which will allow the water to be cut off to the rear heater core.
- The water lines for the rear heater core shall be protected from damage.

Rear heating unit shall provide a minimum of 65,000 BTU's/Hr. this is in addition to front dash unit. State BTU/HR of rear heating unit you are proposing.

XXVIII. SAFETY EQUIPMENT:

All miscellaneous equipment must be secured to the vehicle and easily accessible.

1. First aid kit: (24M – National Standard School Bus Metal
 - Must be Certified Safety Mfg. Model S203-045 or equivalent.
2. Fire extinguisher – Multi-purpose Stored Pressure Dry Chemical Extinguisher.
 - Must be a **5 lb. type 3A:40B: C Pro Line, Kiddie Model # FXBND9 or equivalent.**

- Must have a gauge to indicate state of charge and mounted to vehicle using a bracket and having a heavy duty vinyl cover.
- 3. Triangle warning devices (3), with storage container.
 - must meet FMVSSP # 125
- 4. Bloodborne Pathogens infection control kit.
 - Must be Certified Safety Mfg. Model #FK200-931, **or equivalent.**
- 5. Seat belt cutter

XXIX. MIRRORS:

Exterior:

Heavy Duty Heated Power Mirrors by **Velvac Model 2020 Deluxe Head with Turn Signals or equivalent.**

- Mirrors are to be mounted to the driver and copilot doors in the same position as the OEM mirrors.

Interior:

Vehicle must have the two (2) following mirrors.

- Must be OEM Day/night, 10" rear view mirror, confirming to FMVSS No. 111. (This mirror will be deleted if purchaser chooses backup camera as an option).
- Passenger viewing and backup mirror shall be made of safety glass, having rounded corners and protective edges, and a 6" x 16". This mirror is in addition to the mirror mounted on windshield.

Fresnel Lens:

11" x 14" Lens on rear window.

XXX. SEATS:

Driver's Seat and Co-Driver's Seat:

1. The driver seat must be a deluxe bucket, OEM high back 6-way power seat.
2. The Co-Driver's Seat must be adjustable fore and aft.
3. Seats must be padded with allergy-free material and upholstered with a durable transit quality level 5-cloth fabric.
4. Both seats must have adjustable lumbar
5. Both seats must have a certified seat belt and shoulder harness with retractor shall be attached to frame.
6. Both seats must have reclining backs and padded armrests.

NOTE:

Supplier must supply seating diagram reflecting all listed dimensions for approval.

Passenger Seats:

Seating shall be provided for fourteen (14) ambulatory passengers with three (3) foldaway seats that will accommodate six (6) passengers for a total seating capacity of twenty (20) passengers.

- Wheelchair spaces will each be equipped with a wheelchair securement tie down and occupant restraint system, which meets the Americans with Disabilities Act requirements.
- All seats shall be “bucket” semi-contoured transit type.
- Seats are to be consistent with what is accepted as transit quality construction. School bus type seats **are not acceptable**.
- Seat frames are to be welded.
- Seats must be padded with allergy-free material and upholstered with a durable transit quality level 5-cloth fabric.

If the seating configuration being proposed is different than that shown in Figure 1, a diagram must be furnished.

- Aisle seats must have padded fold up armrests and Anti-Vandal grab handles on the seat backs.
- Seats must be **Freedman Seating Mid Back type bucket seat or equivalent**.
- Seat belts to be installed at each seat position, and must be a Retractable under Seat Retractor, type of seat belts.
- Must include Two (2) Seat Belt Extensions that will fit Passenger Seat Belts.
- A commercial quality seat belt knife fastened to bus in driver’s reach.
- All seats shall provide a minimum seat width of 17” per passenger, or 34” per two (2) -passenger seats.
- Minimum depth of seat (front to back contour) 18”
- All seats including any foldaway seats must be bolted to structural steel.

Bolting seats to plywood floor without bolting into structural steel under floor **is NOT ALLOWED**.

All seat tracks must be welded to steel sidewalls and steel floor sections. Riveting or bolting seat tracks to sidewalls **is NOT ALLOWED**.

- Seats shall be fully padded and shall be constructed with a no-sag spring bottom suspension. Plywood seat bottoms are unacceptable.
- Seats shall be covered with a durable transit quality level 5-cloth fabric.
- Seats shall be spaced on a minimum of 28 1/2" centers, allowing for a minimum of 10" between the front of the bottom cushion and the back of the next forward seat.
- Minimum aisle width shall be 16".
- All seats shall meet, as minimum, FMVSSP 302 207 requirements.

XXXI. PRIORITY SEATING SIGNS:

Each vehicle shall contain sign(s), which indicate that, the row of forward – facing seats located in the front of the vehicle are priority seats for persons with disabilities, and that other passengers should make such seats available to those who wish to use them.

- The signs shall be located on the interior walls directly above the front row of forward-facing seats.
- Signs must follow FTA 49CFR38 Section 38.27 for the required lettering characters of the signs.

XXXII. LIGHTING:

All manufacturers' lighting added to the vehicle (both interior and exterior) shall be provided with light-emitting diode (LED) lights.

- Door activated 4 way flashers that are activated when passenger door is opened. This includes 2 additional amber LED flashing lights mounted high on each side of the rear wall.
- The location, type and hookup of all exterior lights and reflectors to conform to Federal Motor Vehicle Safety Standards and Procedures.
- The number of interior lights and their light output shall be determined by providing a minimum average of 7 foot-candles of illumination on a 1 square foot plane, at an angle of 45 degrees from horizontal, centered 33 inches above the floor and 24 inches in front of the seat back at each seat position.
- Floor surface in the aisles shall be a minimum of 10 foot-candles.
- Each vehicle shall be equipped with OEM daytime running lights.
- Must have Red LED lights over all emergency exits
- All interior lighting in the passenger area shall be mounted in the ceiling cove at the sidewall with a minimum of three (3) fixtures on each side of the vehicle. Lighting fixtures shall be installed on the interior walls and ceiling in a manner that does not present a head strike to the passengers.

NOTE: All clearance lights front, rear and side shall have metal armored shields
This shall protect lights from tree limb damage.

- A.** Tail lights are to be recessed and shall not protrude more than 2 inches from the body; they shall include a pair of amber combinational hazard and signal lights. Rear tail-lamps shall also include a pair of red tail lights and red stop lights, which may be combinational. **(Ref: Dialight 46121RB-Red, 46121AB-Amber or equivalent)**
- B.** Side signal lamps, with marker, shall be provided independently or be incorporated into the center of the vehicle. Location must be above and in front of the rear wheel opening and provide visibility from behind the rear wheel opening. **(Ref.: Dialight 18001AB811 or equivalent)**
- C.** Clearance marker lights shall be installed surface-mounted, facing the front, rear, and each side at rear. **(Ref.: Dialight 15001RB, 15001AB or equivalent)**
- D.** The third brake light shall be center-mounted above the rear window, minimum 18" in length. **(Ref.: Dialight 87121RB or equivalent)**
- E.** Two back-up lights, one mounted on each side of the body rear cap. **(Ref.: Dialight 46001CB or equivalent)**
- F.** Step lighting shall be mounted to provide light for the entire step-well and an area a minimum of three (3) feet beyond the first step on the ground area outside the bus **(Ref.: Dialight 170-81CB or equal)**.
Note: The step lights shall be extinguished when the front door has closed.
- G.** Raised floor step lighting shall be provided by one strip light mounted in the step riser. Light strip shall be a minimum of 18 inches and recess-mounted to protect from accidental damage by passengers contacting light while using the step. **(Ref.: Dialight 87121CB or equivalent)**.
- H.** Exterior step light shall be mounted away from wheel splash. **(Ref.: Dialight #VSW-CC-19B-35-801 or equivalent)**

- I. Wheelchair lift area light shall be positioned in the manufacturer's standard location in order to illuminate the area in the immediate vicinity of the wheelchair lift platform for night operation. The light shall be automatically activated only when the wheelchair lift doors are open. (**Ref.: Dialight Light #46121CB or equivalent**)

XXXIII. ELECTRICAL WIRING:

All wiring shall meet the requirements of SAE recommended practice J878a, Type SXL.

- Connections with 3 to 12 circuits shall be environmentally sealed high impact plastic connectors with pull apart locking tabs.
- All non-OEM connections containing one or two circuits shall be made with Posi-lick connectors.
- No butt connectors **will be allowed**.
- All added wiring shall be in a loom and securely clipped for maximum protection and routed in separate hangers from the heater hoses or air conditioning hoses.
- Clips shall be rubber or plastic coated to prevent them from cutting the wiring insulation.
- All electrical wiring shall be automotive stranded and sufficient size to carry the required current without excessive voltage drop and shall be color, number and function coded at a minimum of eighteen (18) inch intervals.
- No electrical, stationary or mechanical device may block the removal of the engine cover inside the bus.
- All wiring passing through the body metal shall have anti-chaffing grommets.
- Each vehicle shall contain a set of detailed system by system "as built" wiring schematics covering all electrical equipment and electrical circuits installed, complete with wiring codes for each vehicle ordered.
- Identification on the wiring diagram must tie the diagram to the bus.

XXXIV. WINDOWS:

- All windows to be of tempered safety glass and water and airtight.
- Window in driver's door, windshield and entrance door glass are all to be tinted.
- All the windows in the passenger area are to be factory-installed smoked glass with at minimum 30 percent tint. **No Add on Film**
- Windows must be a top horizontal sliding T- transit type that the ventilation openings are located at the top of the window.
- Must be constructed of corrosion resistant aluminum frames.

NOTE:

All windows and emergency exits must meet the performance and operational requirements as outlined in the Federal Motor Vehicle Safety Standards and Procedures.

XXXV. EMERGENCY EXITS:

- At least one (1) window on each side at or near the rear of the vehicle shall be equipped with emergency release latches to provide emergency exits.
- Release instructions shall be provided at or near the release handles and an audible alarm shall be installed near the driver, which will be activated when the window is released.

XXXVI. BACK-UP ALARM:

Alarm shall be waterproof **ECCO #530 or equivalent**.

- Must be mounted in the rear of the vehicle
- Must be readily audible outside the vehicle when the transmission is in reverse.

XXXVII. WHEELCHAIR LIFT:

An electric powered hydraulic wheelchair lift shall be installed inside the vehicle at the side door.

- Bus must meet FMVSS 403-404 lift installation requirements.
- Wheelchair lift shall meet the following MINIMUM requirements.

1. A **Braun wheel chair Lift NL919FIB-2 (Millennium-2 Series) or equivalent**. Ground cable from lift must be connected to vehicle frame.

Connecting ground cable to lifts mounting bolts **is NOT ALLOWED**.

- (a) 800 pound load capacity lifts assembly.
- (b) An electric hydraulic pump, powered by vehicle's electrical system.
- (c) Platform dimensions 34" wide by 51" long.
- (d) Platform to be constructed of 11 gauge expanded metal.
- (e) Platform shall be stored in an upright position within the vehicle.
- (f) Powered operation for (1) unfolding and folding the platforms and (2) raising and lowering the platform.
- (g) Emergency platforms release to permit the platform to be unfolded manually and lowered by gravity.
- (h) To prevent the wheelchair from rolling off, a barrier 1 ½" at minimum shall be provided on the outer edges of the platform and have an

- outboard roll stop that engages and locks before the platform leaves the ground to form a safety barrier when platform is raised or lowered
- (i) A free floating bridge plate will be replaced between the lift platform and the vehicle. This bridge plate will be hinged in a manner to permit upward movement should a person's foot become entangled.
 - (j) Lift shall be securely bolted to the floor and floor reinforced as necessary to support the load.
 - (k) To permit the lift platform to be raised without electrical power, a hand pump that allows the operator to raise the platform shall be installed.
 - (l) An interior light shall be provided to illuminate the lift area;
 - (m) All moving parts likely to cause personal injury shall be shielded.
 - (n) Working parts, such as cables, pulleys, and shafts, which can be expected to wear, and upon which the lift depends for support of the load, shall have a safety factor of at least six, based on the ultimate strength of the material. Nonworking parts, such as platform, frame, and attachment hardware, which would not be expected to wear, shall have a safety factor of at least three, based on the ultimate strength of the material.
 - (o) Lift shall be installed as specified by the manufacturer and shall be thoroughly tested prior to delivery.
 - (p) Repair manual, parts list and instructions for adjusting hydraulic valves and electrical equipment shall be provided.
 - (q) Lift controls shall be interlocked with the vehicle brakes, transmission, or door, or shall provide other appropriate mechanisms or systems to ensure that the vehicle cannot be moved when the lift is not stowed and so the lift cannot be deployed unless the interlocks or systems are engaged.
 - (r) The left control cord must be secured in a manner not to interfere with the door being closed.

XXXVIII. USE BY STANDEES:

Lift shall accommodate persons using walkers, crutches, canes or braces or who otherwise have difficulty using steps. The platform may be marked to indicate a preferred standing position.

XXXIX. HANDRAILS

Platform on lift shall be equipped with handrails on two sides, which move in tandem with the lift, and which shall be graspable and provide support to standees throughout the entire lift operation.

- Handrails shall have a usable component at least 8" long with the lowest portion a minimum 30" above the platform and the highest portion a maximum 38" above the platform.

- Capability of withstanding a force of 100 pounds concentrated at any point on the handrail without permanent deformation of the rail or its supporting structure required.
- Cross-sectional diameter of handrail shall be between 1 ¼” and 1½”, and shall have eased edges with corner radii of not less than 1/8”.
- Handrails shall not interfere with wheelchair or mobility aid maneuverability when entering or leaving the vehicle.

XL. WHEELCHAIR SECUREMENT:

- Wheelchair parking space shall have clear floor area of 30” wide by 52” long and be equipped with a four-point wheelchair securement tie-down.
- Occupant restraint system must be **Q’Straint Q-8306-SC or equivalent**. Shall have a Retractable lap/shoulder belt combo with a Retractable height adjuster that are anchored to floor and wall with L Tracks that meet SAE J2249 and ADA requirements.
- Tracks shall be recessed into the floor and not shift position under anticipated loads. Any tracks overlapping the access path must be flush with the floor to prevent passengers from tripping.

The L tracks and Slide N Click anchors must be bolted to structural steel.

- Bolting to plywood floor without bolting into structural steel under floor **IS NOT ALLOWED**.
- Wheel Chair Securement system must be **Q’Straint QRT MAX Automatic Retractor System with Slide N Click anchorage system and J-Hooks, or equivalent**.
- There must be 52” at minimum and 54” maximum measured from center to center between front and rear Slide N Click anchor points. And be fully assembled and ready to use.
- Must have securement pouches attached to wall to store wheelchair securement tie-downs.
- Must include eight (8) **Q’Straint Q5-7580 Webbing Loops or equivalent** for Securing Scooters. Wheelchair location must be in the rear of bus, one beside the other.

NOTE:

Each wheelchair securement location shall have sign designating it as such. Lettering size and type on these signs shall comply with the Americans with disabilities Act Regulations,

XLI. WHEELCHAIR ACCESSIBILITY SYMBOL:

The vehicle will display the international wheelchair accessibility symbol of a person in a wheelchair that is outlined in white on blue background.

- This symbol will be placed on all four sides of the bus.

XLII. VEHICLE COLORS:

Body: Vendor to supply list of colors and prices available.

XLIII. WINDOW BLACKOUT PAINT:

Bus must have window blackout paint.

NOTE: See Figure 2

XLIV. COLOR OF SEATS:

Proposal must include all colors available

- Successful vendor shall coordinate with the agency issuing this purchase order in the selection of material and color of the seats.
- Seats shall be fully padded.

XLV. VEHICLE FLOOR PLAN:

A proposed floor plan including all pertinent interior dimensions such as overall length, width, distance between seats, etc.,

- Shall be submitted with the proposal.

XLVI. CHASSIS SPECIFICATIONS:

Supplier must list chassis specs must be listed the spaces provided below.

Overall vehicle length:	282" minimum
	307" maximum

Width:	Exterior	96" minimum
	Interior	91" minimum

Height	Exterior	110" minimum
		124" maximum
	Interior	75" minimum

Wheelbase:	176" minimum
	186" maximum

GVWR, axle, spring and tire:

14,500 lb. GVWR minimum

Front axle- 5,000 lb. GAWR minimum

Rear axle – 9,500 lb. GAWR minimum

(Dual wheel are required on rear axle.)

Front springs – heavy duty, 5,000 lb minimum

Rating combined at ground.

Rear springs – heavy duty, 9,500 lb minimum

Ratings each, at ground.

NOTE:

It is the Supplier's responsibility to calculate the actual loaded weight, spring and axle ratings so that the vehicle is engineered for safety.

XLVII. TIRES:

Tire size must meet 14,500 GVWR minimum and must be steel radial with "E" load rating.

- Steel or brass valve stems 1.5" in length shall be used on all wheels with elbow extensions on the inside rear dual for access.
- Stainless steel or brass valve caps with an inner air seal shall be used.
- One mounted spare tire and wheel to match existing tires/wheels to be shipped loose.

XLVIII. ENGINE: GASOLINE:

Minimum – (6.8 liter) displacement.

- Must Have a CNG Capable Engine with hardened intake and exhaust valves with hardened intake and exhaust valve seats Ford Option # 91G.

XLIX. RADIATOR:

Heavy Duty, with factory installed recovery system.

- The cooling system must be winterized with ethylene glycol for temperatures to –20 degrees F (-28.8889 C).

L. TRANSMISSION:

At minimum, heavy-duty 5-speed automatic with overdrive, lock-up converter, lock in park and a heavy-duty auxiliary transmission cooler.

LI. WHEEL WELLS:

The wheel housing shall be of sturdy heavy-duty construction of a minimum 14 gauge galvanized steel or stainless steel and provide ample tire clearance during all operating conditions.

- Fender and splash aprons (underskirt) of durable construction shall be provided so as to provide maximum deflection of the wheel splash.
- There shall be sufficient clearance to enable easy removal of wheels mounted with inflated tires.

LII. REAR FENDER FLARES:

Vehicle must have Rubber or Fiberglass Fender Flares.

LIII. DRIVE SHAFT:

Drive shaft must be properly supported, balanced and guaranteed not to vibrate. Each drive shaft shall be equipped with a protective metal guard or guards to prevent whipping through the floor or dropping to the ground in the event of a tube or universal joint failure, or if the drive shaft breaks.

LIV. WHEEL COVERS:

Bright Metal Stainless Steel Wheel inserts.

LV. BRAKES:

Two (2) braking systems are required. Service brakes shall be dual hydraulic, disc front and disc rear.

- The parking brake system shall be operated by a cable to the rear wheels, or Drive Shaft Drum Brake.
- The braking system shall be adequate for the GVWR of the vehicle.

LVI. GEAR RATIO:

Must be a 4:56 gear ratio

LVII. FUEL CAPACITY:

Must be at minimum of 55 gallons

LVIII. FUEL PUMP ACCESS DOOR:

An aluminum diamond plate access door shall be provided in the floor of the vehicle above the fuel tank to allow the fuel pump to be serviced without removal of the tank.

NOTE: Door must be Large enough and centered over fuel pump to allow easy removal of pump.

LIX. SHOCK ABSORBERS:

Must have heavy duty, front and rear shock absorbers.

- Rear Shock Absorbers upper mounting brackets **shall Not be Covered** by any Body Braces that would prevent easy access to Upper Shock Mounting Bolts and Nuts.

LX. SUSPENSION

Rear shall have Leaf Springs.

- Right rear shall have an extra leaf to compensate for weight of wheelchair lift.

LXI. STEERING:

- Must have power-assisted steering
- Must have tilt wheel,
- Must have factory installed cruise control.

LXII. AIR CLEANER:

Must have a heavy duty, dry type air cleaner

LXIII. OIL FILTER:

Must have a heavy duty, throw away type oil filter.

LXIV. ALTERNATOR:

Ford OEM 225-amp Alternator or equivalent.

LXV. BATTERIES:

Two (2) heavy duty, maintenance free, minimum 650 CCA at 0 degrees F (-17.778 C) Batteries must be wired together in a parallel circuit to increase total battery capacity.

- Front OEM battery must have OEM type battery hold down brackets to securely hold battery in place.
- Instep Battery Box that is bolted down securely and must be sealed to keep mud and debris from getting on Rear Coach Battery.
- Battery must be bolted within this instep box. Cloth holds down straps are **not ALLOWED**.
- Battery box must be sealed to keep mud from getting on batteries.

SEE FIGURE 4 & 5

LXVI. GROUNDS:

A ground of the battery cable size, shall be installed between the engine and chassis frame.

- The vehicle body shall be properly grounded to the chassis frame at least 2 (two) places.
- Engine and body grounds shall be installed to handle subsystem electrical capacity.
- Grounding wires fastened to the frame shall use a bolt with a nut installed in a proper sized hole with dielectric compound applied to the cleaned surfaces, bolt, and cable end.
- Lift pump motor shall be grounded directly to chassis frame using a cable of the same size as the pump motor feed wire.
- All exterior lights and accessories added by the body manufacture shall be grounded by an in harness ground attached at a fuse panel common grounding point.
- For all ground wire connections paint shall be removed at the grounding point to provide a surface, cable end, bolt, and nut where each positive or grounding cable is attached.

LXVII. STABILIZER BAR:

Heavy Duty Front and rear

LXVIII. HORN:

Vehicle must have a dual, electric horn.

LXIX. SIGNAL:

Directional and self-canceling with hazard warning flashers.

LXX. TOW HOOKS

Shall have 2 tow hooks on Rear.

LXXI. WINDSHIELD WIPERS:

Minimum two speeds with intermittent feature and washer.

LXXII. KEYS

Vehicle must include three (3) sets of keys for the entire bus.

LXXIII. RADIO:

Must have an AM & FM CD radio

- Radio must be of same manufacture as chassis. Radio must be mounted in the Chassis OEM Location in dash.
- Must have a minimum of six speaker's two (2) OEM speakers in front chassis doors. The coach body's four (4) speakers shall be a **3-way Kicker KS Series Model KS6930 or equivalent.**

LXXIV. PAINTING, DECALS AND MONOGRAMS:

All signs required by State and federal law shall be affixed to each vehicle exterior and interior.

- It is up to the bus dealer/manufacture to add such signs and decals upon delivery of vehicle.
- No decals, name plates, or painted identification of the bus dealer/manufacture are to be added to the vehicle.

LXXV. UNDERCOATING:

Floor and wheel housing, anti-rust factory installed.

LXXVI. WARRANTY REQUIREMENTS:

The contractor warrants and guarantees to the original Procuring Agency each complete bus and specific subsystem and components for 100% parts and labor as follows:

- OEM standard factory warranties for chassis and engine.
- Complete bus body and body structure, exterior, wiring, flooring installation, and paint are warranted to be free from defects, related defects and to maintain structural integrity for a period of Five (5) year or 100,000 miles
- Add-on components shall have component manufacture's standard warranty.
- Warranty shall begin on the date that the vehicle delivery is accepted by the agency issuing the purchase order.
- The wheelchair lift shall have a five (5) year unlimited mileage and unlimited cycles.
- The air-conditioning system shall have a minimum 2 years unlimited mileage.
- The chassis powertrain shall be warrantied for a period or Five (5) years or 100,000 miles.

Any parts under warranty must be available and delivered to the purchasing transportation provider or their repair shop within 5 days of the time they requested/ordered them. The bus vendor/manufacture shall bear all reasonable financial costs of shipment of parts.

The warranty, as well as any recall notifications, shall cover each vehicle of the ultimate purchaser or recipient agency. The vendor shall provide a copy of any recall notice to each purchasing agency.

LXXVII. BUS TESTING:

Certification shall be provided that in accordance with 49 CFR Part 665,

- Bus Testing, the vehicle either does not need to be tested (with justification specified for exemption) or has been tested at the bus testing facility and a test report is included.

LXXVIII. BUS WATER TESTING:

The roofs, windows, windshield and all doors of all coaches shall be water tested, as follows:

- The waster test shall consist of a series of nozzles that are strategically located around the perimeter of the vehicle so as to the nozzles spray water over the entire surface of the vehicle.
- The nozzles shall eject a volume of water no less than 2.6 gallons per minute under a pressure of no less than twenty-two (22) pounds per square inch measured at the nozzle tip.
- There shall be no less than twenty (20) nozzles installed in the water test area, each capable of directing a force of water as indicated above.
- The Vendor/Manufacture shall be required to water test each vehicle, under the conditions set forth above, for no less than five (5) minutes, in order to determine whether or not there are any body leaks at the window areas, door areas, roof panels, etc.
- The Vendor/Manufacture shall take the necessary corrective action when body leaks are found to exist as a result of the above test, and conduct a second water test to recheck for body leaks following corrective action.

LXXIX. ALTOONA TESTING:

Vehicle must be tested in the 7-year/200,000 mile category at the Altoona Bus Testing Facility in Duncansville, PA. And a copy of the full report **must be submitted with the Proposal.**

LXXX. GENERAL:

All equipment cataloged as standard for the basic vehicle, unless superseded by these specifications, must be furnished and included in the purchase price of each vehicle. Complete printed specifications, published literature, and photos, or illustrations of the basic units that the supplier proposes to furnish with this Proposal must accompany each Proposal.

LXXXI. QUALITY OF MATERIALS:

Welding procedures and materials shall be in accordance with standards of the American Society of Testing Materials and the American Welding Society. All visible welds shall be grounded smooth. Where metal is welded, the contact surface shall be free of scale, spatter, and grease and shall be treated to preclude rusting.

LXXXII. PUBLICATIONS AND PRINTED MATERIALS:

Each vehicle shall have a complete set of operation, quality assurance, and warranty publications.

The information shall be organized in a three ring binder format with each sections clearly identified.

1. As built wiring diagram and as built parts manuals for body and all auxiliary equipment.
2. Maintenance and inspection schedule incorporating the required maintenance and inspection of the basic vehicle and its sub-systems.
3. Operator's manual: A complete operations manual and troubleshooting guide with a detailed manufacturer's parts list that covers the conversion features on the vehicle as listed in this specification. The manual will provide complete, comprehensive instructions for the wheelchair accessories, wheelchair list deployment, air conditioning system, tie downs, heater, deployment of seats, wiring diagram and related equipment.
4. Warranty papers for chassis, body, and additional equipment.
5. Warranty Information: Each vehicle must have a published listing of contractor warranty repair locations, including address, telephone number, and contact names for the State of Oklahoma.

LXXXIII. PRE-AWARD AUDIT:

The vehicles are not considered delivered to the purchasing agency until the required FTA documents are completed by a Government Official.

A Pre-Award Audit shall be conducted to determine if the proposal meets specifications. The supplier shall submit documents, which include certification of the manufacturer's compliance with the Federal Transit Administration (FTA) Pre-Award Buy America Audit Requirements. The document submitted shall include the following information for each major component used on vehicle Proposal:

1. Name and address of each supplier.
2. Cost of each major component and subcomponent. In order to protect proprietary information, the document may reflect the percentage of total cost each item represents instead of the actual cost.
3. Country of origin of each major component and subcomponent.
4. Name and address of company where final assembly occurs.
5. Cost of final assembly
6. Signature of authorized representative of vehicle manufacturer.

LXXXIV. POST- DELIVERY AUDIT:

A Post Delivery Audit of the vehicle(s) shall be conducted at the purchaser's facility, to determine that the completed vehicle(s) meets specifications. Once this process has been satisfactorily completed, the vehicle(s) shall be considered acceptable.

LXXXV. ACCESSIBILITY REQUIREMENTS:

When submitting a Proposal for an accessible vehicle for the disabled, the vendor shall provide a list of the vehicle related equipment illustrating the component cost and related installation charges. The purpose of this list is to reflect an accurate cost for those vehicle related items, which are required to make the vehicle accessible to the disabled.

LXXXVI. ACCEPTANCE OF VEHICLES:

Upon delivery at the designed location specified within this document the final acceptance will occur after the vehicles have been inspected, road tested and all FTA required post audit delivery requirements have been meet.

- All vehicles shall be insured by the supplier until the post audit delivery has been conducted at minimum.

SPECIFICATIONS FOR OPTIONAL ITEMS:

1. CNG CONVERSION FORD CHASSIS

OEM engine shall be converted to operate on dedicated CNG. A WESTPORT/BAF Cal Comp System or approved equal shall be provided. System shall be CARB and EPA certified, OBDII compliant, and fully integrated into the OEM powertrain control system. No additional control module will be accepted. Dual fuel systems will not be accepted. System must comply with the following:

- a. Closed-loop fuel control
- b. Sequential fuel injection (SFI)
- c. Optimized ignition timing
- d. Must maintain original fault codes (DTCs)
- e. Diagnostics accessed through DLC using original scan tool or any generic OBD-II scanner
- f. CNG system shall be covered by 3 year/50,000 mile warranty and cannot void the OEM powertrain warranty.
- g. The minimum CNG tank capacity on the mini-buses should be 39 Gasoline Gallon Equivalent

- h. CNG interlock – Engine will not run when filling CNG tanks.
- i. Must provide a detailed floor plan of the placement of the CNG tanks.
- j. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

2. CNG BIFUEL CONVERSION FORD CHASSIS

OEM engine shall be converted to operate on CNG and Gasoline. System shall be CARB and EPA certified, OBDII compliant, and fully integrated into the OEM powertrain control system. No additional module will be accepted. System shall be capable of switching between CNG and Gasoline. The Gasoline fuel tank will be installed as per OEM specifications. The system must comply with the following:

- a. Closed-loop fuel control
- b. Sequential fuel injection (SFI)
- c. Optimized ignition timing
- d. Must maintain original fault codes (DTCs)
- e. Diagnostics accessed through DLC using original scan tool or any generic OBD-II scanner
- f. CNG system shall be covered by 3 year/50,000 mile warranty and cannot void the OEM powertrain warranty.
- g. The minimum CNG tank capacity on the mini-buses should be 29 Gasoline Gallon Equivalent
- h. Must provide a detailed floor plan of the placement of the CNG tanks.
- i. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

3. DEDICATED PROPANE AUTOGAS INJECTION

The system shall be a Roush CleanTech System or approved equal. The system must be CARB, EPA certified, and OBDII Compliant. The system shall have the following system components:

- a. PCM Calibration
- b. Billet aluminum high-pressure fuel rail.
- c. Appropriate fuel injectors
- d. Appropriate fuel lines
- e. Appropriate OEM engine prep package
- f. Coverage of Five (5) year/ 60,000 mile warranty.
- g. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

4. DUAL FUEL VEHICLE PROPANE AUTOGAS INJECTION

System shall be a Roush CleanTech System or approved equal.

The system shall be a Roush CleanTech System or approved equal. The system must be CARB, EPA certified, and OBDII Compliant. The system shall have the following system components:

- a. PCM Calibration
- b. Billet aluminum high-pressure fuel rail.
- c. Appropriate fuel injectors
- d. Appropriate fuel lines
- e. Appropriate OEM engine prep package
- f. Coverage of Five (5) year/ 60,000 mile warranty.
- g. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

5. BACK-UP MONITOR SYSTEM:

ASA Voyager AOM562A or approved equal with a 5.6" color LCD screen mounted on rear view mirror OEM Bracket. With a rear mounted outside backup camera and a second inside front mounted camera to view passengers.

6. TWO-WAY RADIO SYSTEM: UHF:

ICOM F221 UHF two-way Radio System with a PCTEL MUF4505 UHF antenna and coax or approved equal.

- Antenna shall be mounted on an L bracket on fender opposite of OEM AM/FM radio antenna.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for the agency issuing this purchase.

7. TWO-WAY RADIO SYSTEM:

ICOM F121 VHF two-way Radio System with a PCTEL MHB5800 VHF antenna and coax or approved equal.

- Antenna shall be mounted on an L bracket on fender opposite of OEM AM/FM radio antenna.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for the agency issuing this purchase.

8. TWO-WAY RADIO SYSTEM: 800 MHZ

Kenwood TK-980 800 mhz two-way Radio System with a PCTEL MUF8003 antenna and coax or approved equal.

- Antenna shall be mounted on an L bracket on fender opposite of OEM AM/FM radio antenna.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for agency issuing this purchase.

9. DRIVER'S SHIELD:

A clear Plexiglas barrier shall be erected behind the driver and extend from the stanchion crossbar behind the driver up to the ceiling.

- This shield start at the wall on the driver's left side (close enough to prevent a passenger from reaching through to the driver) and should extend 3 inches past the right side of the driver's seat, but shall not obstruct the view from the rear view mirror.
- This barrier shall consist of clear Plexiglas and shall be at least ¼ inch thick.
- A 1 ½ inch clearance between the stanchion and barrier should be provided to allow a hand hold on the right side.

10. PAINTED LOWER SKIRTS

Paint to purchaser's color specs.

NOTE:

See Figure 2.

11. OUTSIDE PASSENGER DOOR SWITCH:

Outside keyed electric passenger door switch outside. Switch must be water proof.

12. BUS CAMERA SYSTEM:

- **REI Bus-Watch R4001 with 500GB Hard drive and four cameras or approved equal.** Successful vendor shall coordinate with the agency issuing this purchase for location of Camera's.

NOTE:

See Figure 3 for camera type and location of cameras.

13. FABRIC INSERT ON CEILING

Must match seat fabric and pattern.

14. STREET SIDE EXHAUST

Exhaust to be turned out opposite side of Wheel Chair lift

15. INTEGRATED CHILD SEAT:

Integrated Child Restraint Seat must be a **Freedman Seating ICS-10 or equivalent**

- Must have an integrated 4-point safety harness. for children 22-78 Lbs with under seat retractor seat belts for adults

16. VINYL SEATS:

This will be a price deduction from the durable transit style level 5 cloth fabrics.

- Vinyl deduction is for passenger seats only
- Pilot and co-pilot seats shall be durable transit quality level 5-cloth fabric

17. PUBLIC ADDRESS SYSTEM:

A public address system shall be installed with a hand held microphone.

- The system shall include a solid-state amplifier of sufficient power and quality that the operator's voice can be clearly heard without distortion.
- The amplifier shall be firmly secured in a protective area.
- The PA system shall use the vehicles 6 speakers for sound.
- A power switch for the PA system shall be mounted on the dash to provide operation for the inside and amplifier off.
- Any noise suppression due to alternator, lighting, engine or other source is required of the contractor.

18. PASSENGER SIGNAL SYSTEM PULL CORD:

The Stop Request system shall have the following features:

- Separate provisions for W/C passengers and ambulatory passengers to signal a Stop request.
- Must use a yellow pull cord run below the windows for the ambulatory request and a large yellow push pad mounted at least 15" above the floor, but not more than 48". There must be a touch pad per W/C space for the passengers to signal a stop request.
- The driver should have a means of telling if a W/C passenger has signaled. There must be a Blue dash light to signal a W/C passenger request and a RED light to signal an ambulatory passenger request.
- The "Stop Request" lighted sign should show if a W/C passenger has signaled; the sign shall be a universal W/C symbol which lights in blue.

- There shall be an audible signal when a stop is requested and must be able to be heard by the driver.
- Once the pull cord is pulled, the sign will light, the driver's red light goes on, and a chime sounds. The sign will stay lit until the bus is stopped and the entry door is opened. The system automatically re sets itself
- When the W/C passenger signals a stop request, the W/C portion of the sign lights, the chime sounds, and the blue light on the dash goes on. The sign will stay lit until the W/C lift is deployed and then stowed and the W/C door is closed again.

19. PASSENGER STOP REQUEST SIGNS:

Passenger stop request sign must be **Transign, or equivalent**.

- The signs must be back-lighted stop requests and shall be mounted overhead on the front ceiling end closure.
- The sign shall be so designated as to remain illuminated when activated (by the passenger signal system) until it is extinguished by opening the door.

20. FARE COLLECTION BOX:

Fare collection box must be **GFI Genfare "Cents a bill" fare box or compatible**.

- With this option, the mounted fare box will eliminate the front passenger seat and make the bus a 14 passenger.
- Also must have the OEM Co-Driver seat covered with same fabric as the other passenger seats shipped loose with the bus. Co-Driver door shall have the same type of running board as driver's door.

21. DESTINATION SIGNS:

Destination signs must be **Twinvision, or equivalent**. The automatic electronic destination sign system shall be furnished on the front and on the right side near the front door of the vehicle. Display areas of destination signs shall be clearly visible in direct sunlight and/or at night. The sign system shall provide optimum visibility of the message display units for passengers and shall meet applicable ADA requirements defined in 49 CFR, Part 38.39. Destination signs shall be installed in such a manner as to facilitate easy access for replacement of the entire sign assembly, or components such as fluorescent lamps/LED's and electronic control modules, from inside the bus within 30 minutes by a mechanic. Lamps and associated parts shall be commercially available.

Destination messages, route designations, and public relations messages shall be independently selectable via a single Operator's

Control Panel (OCP) which shall include a display monitor. The OCP display monitor readout shall show the exact information displayed on the destination signs. The OCP shall be conveniently located for the bus operator and mounted in such a manner that will not pose any safety hazard. The OCP shall utilize a durable weatherproof keypad with tactile feel for destination message control functions.

The destination sign system shall be capable of programming 10,000 message lines. The number of public relations messages shall be limited only by the remaining number of message lines not used for destination purposes. Sign displays shall have alternating message capability with programmable blanking time between message lines as may be required. Variable blanking times shall be programmable between 0.5 to 25 seconds in duration. Each line message or blanking time for each message shall be individually programmable. The message display units shall incorporate an automatic blanking feature that will cause the display area to blank within 30 seconds of the bus master power switch being turned off.

An emergency message shall be initiated by the closure, or opening, of a dry contact switch or relay. The emergency message shall be displayed on the exterior of the bus only. The OCP shall not display the emergency message. The destination sign shall automatically resume normal operation when the remote emergency switch is returned to its normal position.

Destination Sign Programming: The electronic sign system shall be programmable via an integral connector located in the front destination sign area. Software shall be furnished for programming the sign system via an IBM-compatible, laptop computer. Software shall be capable of providing a high degree of flexibility to create, or select preprogrammed, fonts and graphic displays. The sign shall have the capability of being programmed in the field using a PC or field programmer. Message program information shall be transferable to and/or from the field programmer device as specified by the transit system in attachments to Part 5: Technical Specifications.

The destination sign compartments shall be designed to prevent condensation and entry of moisture and dirt. Additional provisions shall be included, if necessary, to prevent fogging of both destination sign compartment window and glazing on unit itself. Access shall be

provided to allow cleaning of inside of destination sign compartment window and unit glazing.

A complete listing of destination sign readings for initial sign programming by the manufacturer are provided in attachments to Part 5: Technical Specifications.

Front Signs:

Sign Size:

A 16 Row by 148 Column Spectrum Route Multi-Color Sign that shall have no less than 3,264 LEDs with a message display area of not less than 8.0 inches high by not less than 64.6 inches wide. The LEDs displays shall consist of red-blue-green LEDs and amber colored LEDs. The color LEDs shall be rated by their manufacturers for a life expectancy of 50,000 hours to 100,000 hours and shall support up to 27 colors.

Sign Readability:

The destination message shall be readable by a person with 20/20 vision from a distance of 250 feet. The sign shall have an equal readability at 65 degrees on either side of the line perpendicular to the center of the mean plane of the display. The entire display area of all signs shall be clearly visible and readable both in direct sunlight and at night.

Side Signs:

Sign Size:

An 8 Row by 96 Column Spectrum Route Multi-Color Sign that shall have no less than 768 LEDs with a message display area of not less than 2.8 inches high by not less than 36.3 inches wide. The LEDs shall be rated by their manufacturers for a 100,000-hour life expectancy.

Sign Readability:

The destination message shall be easily read from the sidewalk level. The entire display area of all signs shall be clearly visible and readable both in direct sunlight and at night.

System Control Console – Operator Display and Keyboard:

The system control console shall be used to view and update display messages. The system control console shall utilize a 28-key

conductive rubber pad keyboard with tactile feel, designed especially for the harsh transit environment or approved equal.

The system control console shall contain a 16 x 128 pixel vacuum fluorescent display. The system control console shall contain an audio annunciator that beeps to alert the operator to view the display for a message, or beeps indicating that a key is depressed. The system control console shall continuously display the complete message associated with the selected destination code.

Memory Transfer:

The sign system shall be reprogrammable through the system control console by either a PCMCIA flash card or a Memory Transfer Unit.

Emergency Message Display:

If required, a special emergency message can be activated by a switch. This message shall be displayed on signs, facing outside the vehicle, while the signs inside the vehicle, including the system control console, remain unchanged. The emergency message shall be canceled by entering a new destination code or by removing the emergency signal.

Programming:

A programming software package shall be furnished to generate message lists for the destination sign system. A PCMCIA flash memory card having a minimum of 8 megabytes of memory shall be provided to facilitate bus system programming. The software must be compatible with Windows NT, Windows 2000, Windows XP, Windows Vista and Windows 7

The programming software shall use techniques that require minimal operator training and that are intended for use by operators that are not trained in complex computer operations. All operator screens shall utilize pull down and pop-up menus.

22. BICYCLE RACKS:

Manufacturer/model should be **Sportworks Veloporter 2 or equivalent.**

- Racks must have a 2 (two) bike capacity, and follow the specs noted below.

- 1.** The bike rack must meet OSHA requirements for lifting by a single individual and be capable of being raised or lowered with one hand
- 2.** The bike rack must accommodate all bicycles with wheels 16" (for example, the Dahon folding bicycle series) or larger diameter, excluding tandems and recumbent type bicycles. The rack must accommodate all bicycles 80" and longer.
- 3.** The bike rack frame must be manufactured with 304 stainless steel tubing with a minimum wall thickness of 0.125 in., outside corners to be rounded, pinch joints minimized and welds smoothed.
- 4.** All nuts, bolts and washers shall be either AISI Type 304 stainless steel or Grade 8 yellow zinc plated steel
- 5.** The bike rack must be mounted to the front of the bus and accommodate two (2) bicycles. In the stowed position, folded up against the front of the bus, it shall protrude no more than 8" from the front bumper. The protrusion shall be no more than 36" when deployed.
- 6.** The latching mechanism must automatically lock the bike rack in the stowed and deployed positions.
- 7.** The bike rack, when stowed, shall not interfere with any access panels/doors, windshield wipers or driver vents.
- 8.** The bike rack shall be designed for loading and unloading from the front, curbside, of the bus. The securement can only contact the bicycle's tires as to not do any damage to the bicycle's frame. The bike rack shall have a positive securement with a four (4) point locking system, contacting the wheel in such a way that greater than half the circumference of the wheel is captured. Straps, cords, and/or springs shall not be required to secure a bicycle.
- 9.** The carrier shall not interfere with the ability of the driver to safely operate the vehicle. This includes, but is not limited to, the obstruction of the windshield view and the operation of the windshield wipers, turn signals, and headlights.
- 10.** The carrier shall be compatible with automated bus washing systems and shall be capable of repeated use with automated washing equipment without sustaining damage to the carrier, vehicle, or the washing equipment. The carrier shall be designed as not to accumulate water internally.
- 11.** The use of this rack shall not affect route scheduling. The bike rack shall have a design capability of being loaded or unloaded in 20 seconds or less.
- 12.** The mounting bracket/ pivot plate assembly must be designed to fit all urban transit buses, both standard floor and low floor.

13. The bicycle rack shall be warranted against defects in materials and workmanship for a period of one (1) year from date of installation.

14. The bicycle rack manufacture is required to furnish all the complete parts and service (maintenance) books.

15. The bicycle rack should have a latching system in both positions, stowed and deployed; this will need to be explained in detail

16. The racks should be in a friendly design and a tire only mount.

17. The mounting brackets should be detailed at to what bus needs with brackets.

Product Standards:

Only first quality materials, workmanship and finish shall be acceptable.

All general materials and workmanship shall be guaranteed to be free of defects for a minimum of at least one (1) year from date of installation except as noted below. Any defects shall be rectified or replaced to meet specifications at the expense of the manufacturer, including freight, parts and labor.

Any exposed fasteners shall be colored to match the finish of the framework components.

Spare Parts:

The contractor will provide pricing and the delivery time on the available spare parts for each bicycle rack and maintain adequate stock levels.

23. DELETE COPILOT DOOR, SEAT AND B PILLAR :

This Moves the Passenger door from the coach Body to the chassis cab section. This delete's the Copilot door; seat and B pillar section of the cab. This will add 2 seats positions in Coach Body.

24. DELETE ALTRO CHROMA FLOORING:

This delete's the Altro Chroma Floor covering to install the Gray RCA Rubber Transit-Flor. The step well, entrance area, and center aisle floor area shall be overlaid with ribbed, slip resistant, oil resistant commercial 3/16" step tread thickness. The 1/8" thickness flooring under the seats and in the wheelchair area shall be smooth, slip resistant, and oil resistant. The flooring shall extend up the sidewall and rear wall to the seat rail line and shall be coved at the

floor/wall joint to form a smooth water-tight transition. Flooring adhesive shall be oil resistant.

25. DELETE YELLOW POWDER COAT ON HANDRAILS:

This delete's the yellow powder coating on the stainless steel handrails, grab handles and stanchions. They will be the natural brushed Stainless steel Color.

26. 100% NIDA-CORE[®] STRUCTURE OR APPROVED EQUAL:

Resin Hardened Nida-Core[®] or approved equal Polypropylene Copolymer honeycomb (1" thickness, minimum) Throughout 100% of the entire body structure, walls, roof, front and rear caps must be used instead of Honeycomb Paper Vertical. This is to eliminate any possibility of rotting in any area of the body structure.

27. COMPOSITE FLOOR:

Composite Space-age Synthetics Thermo-Lite Board-Tough Series or approved equal Floor that will not rot and is lighter than the standard marine grade plywood floor.

28. SIDE DOOR SLIDE OUT BATTERY TRAY:

Must have an Extra Heavy Duty Stainless Steel slide out Battery Tray for all auxiliary batteries mounted under Bus. Battery Box must have OEM type battery hold down brackets to securely hold batteries in place. Cloth hold down straps is not ALLOWED. Battery box must be sealed to keep mud from getting on batteries.

29. DELETE 3 FOLDAWAY SEATS:

This delete's the three foldaway seats for a total seating capacity of fourteen (14) passengers.

30. DIESEL ENGINE:

Current Power plant for the make and model of chassis

31. REAR SPARE TIRE HOLDER:

A rear spare tire holder that shall be affixed to the vehicle in a way to allow easy removal of spare tire.

32. ADJUSTABLE REAR SUPSENIION SYSTEM:

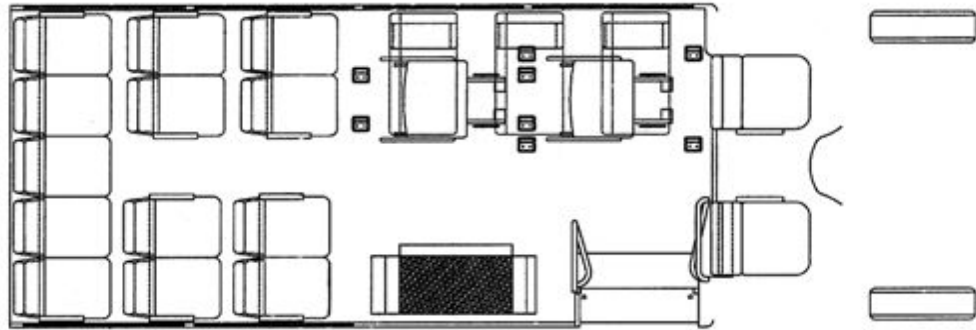
System shall be a MOR/ryde suspension system or equal shall be used with the following:

- a. Installed as per the manufactures recommendations.
- b. Fully adjusted for each bus installed on.
- c. Warranty to be a 5 year 100,000 mile.

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FIGURE 1:

Figure 1



24' 20 Passenger Front
Lift B Pillar

FIGURE 2:



FIGURE 3:

Figure 1

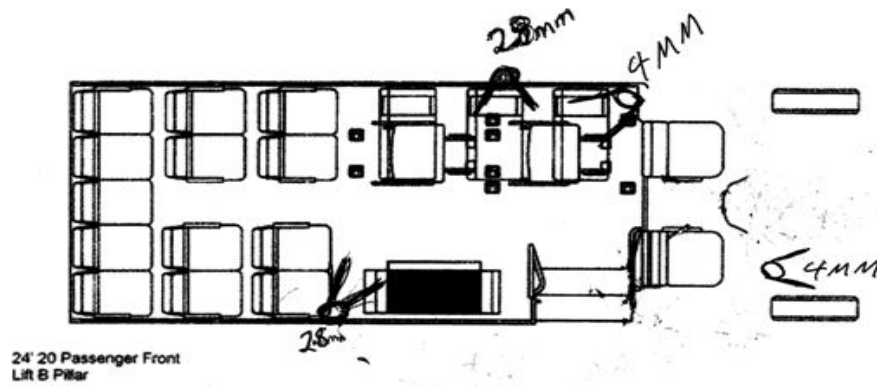


FIGURE 4:



FIGURE 5:



SECTION "M"
24' 20 Passenger Composite Bus
RESPONSE SHEET

BASE
VEHICLE

COST PER
UNIT

Transit Bus (gas engine)

\$ _____ / ea.

CHASSIS SPECIFICATIONS

Specify Overall Vehicle Length (outside of front bumper to outside of Rear bumper): _____

Overall vehicle length: 282" minimum _____
307" maximum _____

Width: Exterior 96" minimum _____
Interior 91" minimum _____

Height Exterior 110" minimum _____
124" maximum _____
Interior 75" minimum _____

Wheelbase: 176" minimum _____
186" maximum _____

AIR CONDITIONING

Make and Model of Rear A/C Unit and Cooling Capacity of rear Unit BTU's/Hr.
Include literature on unit being proposed.

MAKE/MODEL _____

BTU/HR of Rear Unit only _____

HEATING

BTU/HR of Rear Unit only _____

OPTIONAL ITEMS**COST**

- | | | |
|-----|------------------------------------|--------------|
| 1. | CNG Conversion Ford Chassis | \$_____ /ea. |
| 1. | CNG Bifuel Conversion Ford Chassis | \$_____ /ea. |
| 2. | Propane Dedicated Conversion | \$_____ /ea. |
| 3. | Propane Dual Fuel Conversion | \$_____ /ea. |
| 5. | Back-Up Monitor System | \$_____ /ea. |
| 6. | Two-way radio (UHF) | \$_____ /ea. |
| 7. | Two-way radio (VHF) | \$_____ /ea. |
| 8. | Two-way radio (800 MHZ) | \$_____ /ea. |
| 9. | Driver's Shield | \$_____ /ea. |
| 10. | Painted lower skirts | \$_____ /ea. |
| 11. | Outside Passenger Door Switch | \$_____ /ea. |
| 12. | Bus Camera System: | \$_____ /ea. |
| 13. | Fabric Insert on Ceiling | \$_____ /ea. |
| 14. | Street Side Exhaust | \$_____ /ea. |
| 15. | Integrated Child Seats | \$_____ /ea. |
| 16. | Vinyl Seats (Price Deduction) | \$_____ /ea. |
| 17. | Public Address System | \$_____ /ea. |
| 18. | Passenger Signal System Pull Cord | \$_____ /ea. |
| 19. | Passenger Stop request Signs | \$_____ /ea. |
| 20. | Fare Collection Box | \$_____ /ea. |

- | | | |
|------------|---|--------------|
| 21. | Destination Signs | \$_____ /ea. |
| 22. | Bicycle Racks | \$_____ /ea. |
| 23. | Delete B pillar and copilot seat
(Price Deduction) | \$_____ /ea. |
| 24. | Delete Altro Chroma Flooring
(Price Deduction) | \$_____ /ea. |
| 25. | Delete Yellow Powder Coating on
Handrails, Grab Rails and Stanchions.
(Price Deduction) | \$_____ /ea. |
| 1. | 100% Nida-Core [®] structure | \$_____ /ea. |
| 27. | Composite floor | \$_____ /ea. |
| 28. | Side Door Slide Out Battery Box | \$_____ /ea. |
| 29. | Delete three foldaway seats
(Price Deduction) | \$_____ /ea. |
| 30. | Diesel Engine: | \$_____ /ea. |
| 31. | Rear Spare Tire Holder: | \$_____ /ea. |
| 32. | Adjustable Rear Suspension System: | \$_____ /ea. |

A list of optional equipment and/or accessories shall be provided. The list must contain:

- Item
- Description and functionality detail
- Cost of item installed in final delivery of vehicle
- Any changes to listed specifications as outlined above to accommodate options

RFP EXCEPTIONS:

Supplier must list any exceptions here to be used as a part of the Proposal evaluation and analysis. Please list the roman numerical on the standard specs or the number for the options when listing any Proposal exceptions.

SECTION “N”
SPECIFICATIONS FOR
26’ 20 PASSENGER, FRONT LIFT METAL
TRANSIT VEHICLES

GENERAL DESCRIPTION

It is the intent of these specifications to set forth minimum standards for the procurement of a light transit vehicle that complies with Title 49 Code of Federal Regulations, part 38, subpart B, entitled “Americans with Disabilities Act (ADA) Accessibility Specifications for Buses, Vans and Systems”. All dimensions and equipment shall comply with the standards as set forth within the 49 CFR. The vehicle shall be new, the most current production model available, and must be complete with manufacturer’s standard equipment and accessories, fully serviced and ready for operation. The vehicle shall be equipped to meet all Federal Motor Vehicle Safety Standards and Procedures (FMVSSP) that apply. If these specifications contradict any listed in the Federal Regulations, they are superseded by those of the Federal Regulations

To take advantage of administrative and cost savings and to ensure that all federal requirements are met, this procurement is assignable to other agencies, organizations and Tribal Governments funded by the Federal Transit Administration.

NOTE:

Any Brand names and specifications mentioned within this document are for reference only. Proposals will only be considered when brochures/specifications are included for each component provided with Proposal for evaluation.

I. DELIVERY:

Vehicle must be delivered at a maximum of 120 calendar days from the date a Purchase order is issued. Pre-delivery servicing and adjustments: prior to acceptance by the purchaser, the vendor shall service and adjust each vehicle for operation. This process shall include but not be limited to the following:

1. The vehicle must have a full tank of fuel when delivered.
2. Each bus shall be designed to facilitate the disassembly, reassembly, servicing or maintenance thereof by use of tools and items that are normal and available as commercial standard items. The body and structure shall be designed for ease of maintenance and repair.
3. All parts added, as part of the modification process shall be new.

4. Headlights properly aligned
5. Engine Tuned
6. All accessories properly adjusted
7. Electrical, braking and suspension systems inspected
8. Both batteries Charged
9. Front-end alignment must be done after body is put on chassis. Chamber, caster and toe must be adjusted to the center of OEM specs. Ford chassis buses must have adjustable caster, camber bushings installed. Standard OEM bushings will not be accepted. Each bus must come with documentation stating before and after actual alignment readings of bus.
10. All wheels balanced, including spare
11. All lubricants checked, and greased if needed
12. Cooling system serviced with permanent type anti-freeze and summer coolant for minus 20 degrees F (-28.888C).
13. Warranty papers and owner's guide
14. Exterior and interior cleaned and washed.
15. Odometer cannot exceed 3,000 miles at the time of delivery of completed buses to the purchasing agency. There will be a charge of one dollar (\$1.00) per mile for each vehicle with an odometer reading in excess of 3,000 miles payable to the purchasing agency at the time of delivery.
16. Under no circumstances are tow vehicles to be attached to any buses.
17. Each vehicle must be delivered to the agency submitting the P.O.

Copies of the all Certificate of Origins and signed invoices must be sent to the organization named on the purchase order before delivery is made and must be delivered with the vehicle: receipt of these after delivery **is not acceptable.**

NOTE:

- If these specifications contradict any listed in the Federal Regulations, they are superseded by those of the Federal Regulations.

II. NO PROTOTYPES:

Must be a Current production Model, B Pillar type bus that has been in Production for a minimum of one year.

III. BODY STRUCTURE:

The vehicle shall have a purpose-built body, which will provide for a minimum floor to ceiling distance of 76" at the center aisle.

- The floor frame must be welded or bolted to the sidewall frame, and the sidewall frame must be welded or bolted to the roof frame.

- Steel roll cage must form a complete Unitized body and a steel support cage behind front and rear cap to prevent flexing. All steel joints must have gussets for additional strength. All steel parts shall either be galvanized, powder coated or primed to prevent rusting.
- Composite construction is **not acceptable**.
- Construction methods utilizing double-sided tape to secure sidewall skin will **not be accepted**.
- If utilizing aluminum for the roof or sidewall skin it must be a minimum of .060" thick **with AZDEL SuperLite backing or equivalent**.
- All surfaces and hardware having sharp edges, corners, or angles that could cause injury shall be covered and padded with heavy-duty vinyl-foam type material.
- The roof will be constructed of the same reinforced materials as the body of the vehicle and of sufficient strength to prevent vibration, drumming and flexing.
- If exterior roof or sidewall skin is made of Fiberglass it must be a Minimum of 3/16" thick this is not including any FRP, Luan, plywood or foam backings.

Fiberglass Roof must be a one piece molded unit that has molded sides to connect to side walls. Bending a flat sheet of fiberglass to connect to walls is **NOT ALLOWED**.

If exterior roof or sidewall skin is made of Galvanized steel it must be a minimum of .024" thick with **AZDEL SuperLight backing or equivalent**.

- Roof design shall prevent pooling of water on the roof.

IV. OEM CHASIS FRAME

The rear overhang, measured from the center of the rear axle to the outer edge of the rear bumper, cannot exceed 1/3 of the overall vehicle length.

- Further, ODOT will not allow re-certification of the chassis OEM GVWR and GAWR.
- Any vehicle that exceeds the OEM GVWR and/or GAWR **will not be accepted**.

NOTE:

Supplier must provide detailed documentation if chassis modification must be made to accommodate length of wheelbase from OEM.

- This documentation shall include, but not limited to :(type of modification, frame supports, out sourcing of frame work, drive shafts, or quality control).

V. DOORS:

Passenger Entry Door:

Passenger entry door must have a Two (2)-panel door design providing a minimum 32" X 80" clear opening. **A&M door actuator, or equivalent.**

- Door is located in coach body and electrically power operated controlled by the driver.
- Each door panel shall be actuated together by a single electric powered overhead actuator.
- Actuator is equipped with an emergency manual release lever.
- Vertical door shafts shall be an integral part of the door panels.
- The top portion of the shaft shall be designed to prevent door panels from rotating out of alignment.
- Shafts shall pivot on a top-mounted, bronze thrust bushing and a lower stud-mounted alignment pivot, accommodated with a glass-filled molded bearing equal to **A&M door actuator, or equivalent.**
- Perimeter door edges shall be sealed with neoprene 2" leading edge seals.
- Seals shall overlap front and rear to provide an air and watershed.
- Upper and lower edges of doors shall be tightly sealed against entrance of air drafts and water, including spray from vehicle washing.
- Operating controls should be located within easy reach of the driver.

VI. PASSENGERS DOOR INTERLOCK:

Electric Passenger door in coach body will only work when transmission in Park.

VII. WHEELCHAIR LIFT DOORS:

A double door entrance shall be provided on the right (curb) side of the vehicle in front the vehicle's rear wheels.

- The door opening shall be at minimum width of 48" and height of 70" to accommodate the wheelchair lift specified within this document.
- Clearance between the top of the door opening and the raised lift platform shall be a minimum of 68".

- Each door shall be equipped with an **A.L. Hansen Type 23 Door Check or equivalent** which is a Top Mounted Spring Loaded Device that will securely hold the door in the open position while the wheelchair lift is in operation. (Sliding door is not acceptable).
- Each door must have a window which shall be the same height as the passenger windows.

VIII. COACH BODY DOOR LOCKS:

All doors shall be equipped with a lock.

IX. DRIVER'S DOOR AND CO-DRIVER'S DOOR:

- Must have Power windows, Power door locks

X. RUNNING BOARDS:

Extra Heavy-duty Running Boards that are bolted to Coach Body for added step strength

- Steps must be able to hold over 400lbs.

XI. HANDRAIL:

- Handrails (left and right) of the front passenger door shall be provided. Cross-sectional diameter of handrail shall be between 1 ¼" and 1½".
- Entrance handrails shall not be padded.
- Must have at minimum a wall thickness of 18 gauge steel.
- Two overhead ceiling-mounted handrails with mounting brackets at 24" on centers placed over the aisle shall be provided for the full length of the vehicle's passenger aisle way, except in wheelchair lift area and over passenger entry door.
- All handrails must be Powder coated Steel that will not rattle or Flex and mounting bolts shall be bolted into Structural steel.
- Color of Handrails shall be bright yellow (to assist the visually impaired),
- Wood mounting is not allowed.

XII. GRAB RAILS:

Must have grab rails with the following:

- Shall be installed in the entrance to the vehicle running parallel to the steps in a configuration which allows persons with disabilities to grasp while entering or exiting the vehicle.
- Cross-sectional diameter of grab rail shall be between 1 ¼" and 1½"

- Must be at minimum a wall thickness of 18 gauge steel.
- All Grab rails must be Powder Coated Steel that will not Rattle or Flex and mounting bolts shall be bolted into Structural steel.
- Color of grab rails shall be bright yellow_(to assist the visually impaired),
- Wood mounting **is not allowed.**

XIII. STANCHIONS:

- Must be at minimum a wall thickness of 18 gauge steel.
- All stanchions must be Powder Coated Steel that will not Rattle or Flex and mounting bolts shall be bolted into Structural steel.
- Wood mounting **is not allowed.**
- Color of stanchions shall be bright yellow_(to assist the visually impaired),
- A stanchion and vinyl padded modesty panel shall be provided at entrance door in front of first passenger seat.
- A stanchion from the floor to roof shall be installed on the interior left side of the front passenger door approximately 14 inches inside the vehicle.
- A horizontal handrail shall be installed between the stanchion and the right wall approximately 30 inches above the floor.
- A stanchion shall be located in the rear of the driver's seat at the edge of the aisle and a handrail shall extend from the stanchion to the side wall of the vehicle behind the driver's seat.
- The stanchion shall not interfere with a rearward travel of the driver's power seat adjustment.

XIV. MODESTY PANEL:

- A modesty panel shall be positioned at the rear edge of the step well.
- This will be made up of a stanchion at the inner rear corner of the step well with a rail running from that stanchion to the wall at windowsill height and the modesty panel installed therein.
- Panel shall have no less than 1 ½" between the bottom of the panel and the floor to facilitate cleaning of the floor.
- Fastening of the panel shall be by bolts or rivets.

Screws will not be acceptable.

XV. STEPWELL:

Must be made of minimum 14 gauge 304 Stainless steel to prevent rusting and powder coated white.

- Must have two steps covered with the same slip resistant floor covering as specified within this document.
- maximum 12" minimum 10" from ground to first step,
- 9" riser, Tread depth minimum 8½".

All steps to get up to floor level must be in step well area.

XVI. INTERIOR:

All interior panels shall be vinyl coated with **AZDEL SuperLite backing, vinyl coated metal, FRP or equivalent** with same durability and cleaning ease.

Vendor shall provide a list of available colors at their quoted price and may also include a list of colors available at additional cost.

- Interior shall be trimmed with an attractive molding, covering all seams.
- All surfaces and items or hardware in passenger compartment having sharp edges, corners, or angles that could cause injury shall be padded with heavy-duty vinyl covered foam-type material.
- Door and instrument panel is to be painted or otherwise finished to match overall tones of interior panels

XVII. DRIVERS AREA:

The drivers area shall consist of an ergonomically designed molded dash console, located conveniently to the driver's seated position and in full view of the driver.

- Supplemental control panels mounted above the driver's head or above windshield **are not accepted**.
- All switches are to be properly labeled and illuminated.
- The instrument control panel shall be painted or otherwise finished with non-reflective, anti-glare black finish.

XVIII. STORAGE COMPARTMENT:

Vehicle must have a large overhead driver storage compartment.

- This compartment must have a lip on the inside to protect objects from opening compartment door. Also shall provide easy access to clearance lights connectors through top of Storage Compartment. And provide a door latch to hold door open.

XIX. FLOOR ASSEMBLY:

The floor shall consist of **3/4 inch Advantech Engineered flooring or equivalent with Undercoating.**

- Construction of sufficient strength and support to not allow flexing of the finished or surface floor. The chassis, body and flooring shall be attached in such a manner as to act as one unit without any movement or flexing at the joints.
- **Shall have Floor Coving material at wall.**

XX. SLIP-RESISTANT FLOOR COVERING:

Floor covering shall be slip resistant vinyl flooring, constructed with aluminum oxide, silicon carbide and optional PVC chip blended throughout a high quality vinyl wear surface.

- Top coating **is not acceptable.**
- Backing to be polyester/cellulose material with fiberglass fiber reinforced center scrim for additional durability.
- Bacteriostats will be incorporated providing all exposed surfaces with excellent anti-bacterial properties.
- Must be **Altro Chrome with a minimum thickness of 2.2 millimeters or equivalent**
- Color to be selected from current Altro color range by each agency.
- The whole floor will be a uniform thickness throughout the vehicle, eliminating the need for ribbed surfaces, while exceeding the ADA minimum slip resistance standard rating of .06 static coefficient of friction under dry or wet conditions.
- Coving material is to be installed to support floor when rolling floor covering up the sidewall of vehicle to the seat track.
- Seams must be heat welded to provide a permanent waterproof seal against water penetration leading to premature sub-floor failure or curling leading to possible tripping hazards.
- Landing area and step edgings are to be Altro yellow safety vinyl edging.
- Edging is to heat welded to the main floor and step tread to provide for a long lasting seam.
- The floor must be installed according to manufacturer's directions using proper tools, accessories and adhesives.

NOTE:

If the flooring is not installed according to the flooring manufacture (heat welded and adhesives) specifications the bus **will not be accepted.**

XXI. GAUGES:

Vehicles shall be equipped with the following needle-type gauges (lights in lieu of gauges are not acceptable): and all shall be in easy view of driver. If OEM gauges are not available then Stewart Warner gauges or equivalent shall be used.

1. OEM chassis Voltmeter Plus a Auxiliary Voltmeter Gauge
2. Oil pressure
3. Temperature
4. Fuel level
5. Speedometer
6. Odometer
7. Tachometer
8. Engine hour meter

XXII. BUMPERS:

Front and rear bumpers shall be securely fastened to the chassis frame to adequately absorb shock from impact. In no case are the bumpers to be fastened directly to the vehicle body.

- Rear bumper must be an energy absorbing Romeo Rim with Heavy Duty bumper mounting brackets that use four 7/16 grade 8 bolts per bracket or equivalent.
- Front bumper and grille shall be chrome plated.

XXIII. INSULATION:

Insulation shall be provided in both walls, roof, front cap, rear wall and roof side radius area where roof meets walls.

- Adequate insulating properties shall be provided to ensure minimum heat, cold and noise penetration into the vehicle interior.
- Insulation may be accomplished through the use of **fiberglass, vacuum design or equivalent.**
- Must have a minimum R-value of 6, and fire resistant.

XXIV. AIR CONDITIONING

- Air conditioning efficiency is of paramount concern to the purchaser. Air conditioning shall be adequate to cool both the passengers and driver areas. Only vehicles offering top of the line commercial transit type air conditioning systems will be considered.

- The vehicle's electrical system shall be designed and integrated such that ample electrical supply is provided to maintain optimum air conditioning performance without battery discharge.
- The air conditioning system offered shall have a proven transit performance record and shall be provided by a nationally recognized manufacturer of bus air conditioning.
- The OEM Dash unit and Rear Air Conditioning unit shall be two separate stand alone systems. Tying into the front OEM dash system **is not allowed**.
- Rear evaporator shall have an easy accessible return air filter; having to remove evaporator cover housing to gain access to filter **will not be accepted**.
 - The rear air conditioning system shall provide a minimum cooling_capacity of 65,000 BTU/Hr.
 - **A Carrier model AC-833MAX System or equivalent.** The Combined Total cooling Capacity of the OEM dash unit and Rear Unit shall be a minimum of 78,000 BTU/hr.
 - Rear Evaporator shall have an easy accessible return air filter; having to remove the evaporator cover housing to gain access to filter will not be accepted.

The Rear A/C System must have the following specified components.

1. Carrier EM-3 Evaporator or equivalent
2. Carrier CM-3 Condenser or equivalent
3. Carrier TM-21 Compressor or equivalent
4. Carrier Flex CLICK SAE J-2064 Type E Color coded hoses or equivalent.
5. Service Ports for rear Air conditioning System must be easily accessible and located under the bus near the rear A/C Condenser.

A conventional dash mounted unit for the front of the driver's area of the vehicle. Both units shall be equipped with multi-speed fans (minimum 2 speeds).

- Evaporator fans shall produce a minimum of 1600 CFM.

The Rear system shall include a skirt mounted commercial condenser. Condenser fan(s) shall produce a minimum of 2400 CFM of airflow over the coils. All components of the condenser unit shall be coated or constructed with a corrosion resistant material to protect the unit from road salts other foreign substances that might be sprayed on the unit.

- Condenser unit shall be positioned so as not to draw air from under vehicle.

NOTE:

Air conditioning refrigerant lines, to include their foam covering, will not be exposed to road hazards or elements of the weather. All air conditioning refrigerant lines, which extend from the engine area to the rear evaporator, shall be protected from damage. And all drain lines, hoses and wiring from evaporator shall be covered from view.

XXV. VENTILATION:

Vents provided in driver area.

XXVI. HEATING:

- Front & rear heater core factory installed hot water type, of sufficient capacity to warm cabin area and clear windows of snow, ice and fog.
- An easily accessible clearly marked shut-off ¼ turn ball valves shall be installed in heater supply and return lines which will allow the water to be cut off to the rear heater core.
- The water lines for the rear heater core shall be protected from damage.

Rear heating unit shall provide a minimum of 65,000 BTU's/Hr. this is in addition to front dash unit..

XXVII. SAFETY EQUIPMENT:

All miscellaneous equipment must be secured to the vehicle and easily accessible.

1. First aid kit: (24M – National Standard School Bus Metal)
 - Must be Certified Safety Mfg. Model S203-045 or equivalent.
2. Fire extinguisher – Multi-purpose Stored Pressure Dry Chemical Extinguisher.
 - Must be a **5 lb. type 3A:40B: C Pro Line, Kiddie Model # FXBND9 or equivalent.**
 - Must have a gauge to indicate state of charge and mounted to vehicle using a bracket and having a heavy duty vinyl cover.

3. Triangle warning devices (3), with storage container.
 - must meet FMVSSP # 125
4. Bloodborne Pathogens infection control kit.
 - Must be Certified Safety Mfg. Model #FK200-931, **or equivalent.**
5. Seat belt cutter

XXVIII. MIRRORS:

Exterior:

Heavy Duty Heated Power Mirrors by **Velvac Model 2020 Deluxe Head with Turn Signals or equivalent.**

- Mirrors are to be mounted to the driver and copilot doors in the same position as the OEM mirrors.

Interior:

Vehicle must have the two (2) following mirrors.

- Must be OEM Day/night, 10" rear view mirror, confirming to FMVSS No. 111. (This mirror will be deleted if purchaser chooses backup camera as an option).
- Passenger viewing and backup mirror shall be made of safety glass, having rounded corners and protective edges, and a 6" x 16". This mirror is in addition to the mirror mounted on windshield.

Fresnel Lens: 11" x 14" Lens on rear window.

XXIX. SEATS:

Driver's Seat and Co-Driver's Seat:

1. The driver seat must be a deluxe bucket, OEM high back 6-way power seat.
2. The Co-Driver's Seat must be adjustable fore and aft.
3. Seats must be padded with allergy-free material and upholstered with a durable transit quality level 5-cloth fabric.
4. Both seats must have adjustable lumbar
5. Both seats must have a certified seat belt and shoulder harness with retractor shall be attached to frame.
6. Both seats must have reclining backs and padded armrests.

NOTE:

Supplier must supply seating diagram reflecting all listed dimensions for approval.

Passenger Seats:

Seating shall be provided for fourteen (14) ambulatory passengers with three (3) foldaway seats that will accommodate six (6) passengers for a total seating capacity of twenty (20) passengers.

- Wheelchair spaces will each be equipped with a wheelchair securement tie down and occupant restraint system, which meets the Americans with Disabilities Act requirements.
- All seats shall be “bucket” semi-contoured transit type.
- Seats are to be consistent with what is accepted as transit quality construction. School bus type seats **are not acceptable**.
- Seat frames are to be welded.
- Seats must be padded with allergy-free material and upholstered with a durable transit quality level 5-cloth fabric.

If the seating configuration being proposed is different than that shown in Figure 1, a diagram must be furnished.

- Aisle seats must have padded fold up armrests and Anti-Vandal grab handles on the seat backs.
- Seats must be **Freedman Seating Mid Back type bucket seat or equivalent**.
- Seat belts to be installed at each seat position, and must be a Retractable under Seat Retractor, type of seat belts.
- Must include Two (2) Seat Belt Extensions that will fit Passenger Seat Belts.
- A commercial quality seat belt knife fastened to bus in driver’s reach.
- All seats shall provide a minimum seat width of 17” per passenger, or 34” per two (2) -passenger seats.
- Minimum depth of seat (front to back contour) 18”
- All seats including any foldaway seats must be bolted to structural steel.

Bolting seats to plywood floor without bolting into structural steel under floor is **NOT ALLOWED**.

All seat tracks must be welded to steel sidewalls and steel floor sections. Riveting or bolting seat tracks to sidewalls **is NOT ALLOWED.**

- Seats shall be fully padded and shall be constructed with a no-sag spring bottom suspension. Plywood seat bottoms are unacceptable.
- Seats shall be covered with a durable transit quality level 5-cloth fabric.
- Seats shall be spaced on a minimum of 28 1/2" centers, allowing for a minimum of 10" between the front of the bottom cushion and the back of the next forward seat.
- Minimum aisle width shall be 16".
- All seats shall meet, as minimum, FMVSSP 302 207 requirements.

XXX. PRIORITY SEATING SIGNS:

Each vehicle shall contain sign(s), which indicate that, the row of forward – facing seats located in the front of the vehicle are priority seats for persons with disabilities, and that other passengers should make such seats available to those who wish to use them.

- The signs shall be located on the interior walls directly above the front row of forward-facing seats.
- Signs must follow FTA 49CFR38 Section 38.27 for the required lettering characters of the signs.

XXXI. LIGHTING:

All manufacturers' lighting added to the vehicle (both interior and exterior) shall be provided with light-emitting diode (LED) lights.

- Door activated 4 way flashers that are activated when passenger door is opened. This includes 2 additional amber LED flashing lights mounted high on each side of the rear wall.
- The location, type and hookup of all exterior lights and reflectors to conform to Federal Motor Vehicle Safety Standards and Procedures.
- The number of interior lights and their light output shall be determined by providing a minimum average of 7 foot-candles of illumination on a 1 square foot plane, at an angle of 45 degrees from horizontal, centered 33 inches above the floor and 24 inches in front of the seat back at each seat position.
- Floor surface in the aisles shall be a minimum of 10 foot-candles.
- Each vehicle shall be equipped with OEM daytime running lights.
- Must have Red LED lights over all emergency exits

- All interior lighting in the passenger area shall be mounted in the ceiling cove at the sidewall with a minimum of three (3) fixtures on each side of the vehicle. Lighting fixtures shall be installed on the interior walls and ceiling in a manner that does not present a head strike to the passengers.

NOTE:

All clearance lights front, rear and side shall have metal armored shields. This shall protect lights from tree limb damage.

- A.** Tail lights are to be recessed and shall not protrude more than 2 inches from the body; they shall include a pair of amber combinational hazard and signal lights. Rear tail-lamps shall also include a pair of red tail lights and red stop lights, which may be combinational. **(Ref.: Dialight 46121RB-Red, 46121AB-Amber or equivalent)**
- B.** Side signal lamps, with marker, shall be provided independently or be incorporated into the center of the vehicle. Location must be above and in front of the rear wheel opening and provide visibility from behind the rear wheel opening. **(Ref.: Dialight 18001AB811 or equivalent)**
- C.** Clearance marker lights shall be installed surface-mounted, facing the front, rear, and each side at rear. **(Ref.: Dialight 15001RB, 15001AB or equivalent)**
- D.** The third brake light shall be center-mounted above the rear window, minimum 18" in length. **(Ref.: Dialight 87121RB or equivalent)**
- E.** Two back-up lights, one mounted on each side of the body rear cap. **(Ref.: Dialight 46001CB or equivalent)**
- F.** Step lighting shall be mounted to provide light for the entire step-well and an area a minimum of three (3) feet beyond the first step on the ground area outside the bus **(Ref.: Dialight 170-81CB or equal)**.
Note: The step lights shall be extinguished when the front door has closed.
- G.** Raised floor step lighting shall be provided by one strip light mounted in the step riser. Light strip shall be a minimum of 18 inches

and recess-mounted to protect from accidental damage by passengers contacting light while using the step. (**Ref.: Dialight 87121CB or equivalent**).

H. Exterior step light shall be mounted away from wheel splash. (**Ref.: Dialight #VSW-CC-19B-35-801 or equivalent**)

I. Wheelchair lift area light shall be positioned in the manufacturer's standard location in order to illuminate the area in the immediate vicinity of the wheelchair lift platform for night operation. The light shall be automatically activated only when the wheelchair lift doors are open. (**Ref.: Dialight Light #46121CB or equivalent**)

XXXII. ELECTRICAL WIRING:

All wiring shall meet the requirements of SAE recommended practice J878a, Type SXL.

- Connections with 3 to 12 circuits shall be environmentally sealed high impact plastic connectors with pull apart locking tabs.
- All non-OEM connections containing one or two circuits shall be made with Posi-lick connectors.
- No butt connectors **will be allowed.**
- All added wiring shall be in a loom and securely clipped for maximum protection and routed in separate hangers from the heater hoses or air conditioning hoses.
- Clips shall be rubber or plastic coated to prevent them from cutting the wiring insulation.
- All electrical wiring shall be automotive stranded and sufficient size to carry the required current without excessive voltage drop and shall be color, number and function coded at a minimum of eighteen (18) inch intervals.
- No electrical, stationary or mechanical device may block the removal of the engine cover inside the bus.
- All wiring passing through the body metal shall have anti-chaffing grommets.
- Each vehicle shall contain a set of detailed system by system “as built” wiring schematics covering all electrical equipment and electrical circuits installed, complete with wiring codes for each vehicle ordered.
- Identification on the wiring diagram must tie the diagram to the bus.

XXXIII. WINDOWS:

- All windows to be of tempered safety glass and water and airtight.
- Window in driver's door, windshield and entrance door glass are all to be tinted.
- All the windows in the passenger area are to be factory-installed smoked glass with at minimum 30 percent tint. **No Add on Film**
- Windows must be a top horizontal sliding T- transit type that the ventilation openings are located at the top of the window.
- Must be constructed of corrosion resistant aluminum frames.

NOTE:

All windows and emergency exits must meet the performance and operational requirements as outlined in the Federal Motor Vehicle Safety Standards and Procedures.

XXXIV. EMERGENCY EXITS:

- At least one (1) window on each side at or near the rear of the vehicle shall be equipped with emergency release latches to provide emergency exits.
- Release instructions shall be provided at or near the release handles and an audible alarm shall be installed near the driver, which will be activated when the window is released.

XXXV. BACK-UP ALARM:

Alarm shall be waterproof **ECCO #530 or equivalent**.

- Must be mounted in the rear of the vehicle
- Must be readily audible outside the vehicle when the transmission is in reverse.

XXXVI. WHEELCHAIR LIFT:

An electric powered hydraulic wheelchair lift shall be installed inside the vehicle at the side door.

- Bus must meet FMVSS 403-404 lift installation requirements.
- Wheelchair lift shall meet the following MINIMUM requirements.

1. A Braun wheel chair Lift NL919FIB-2 (Millennium-2 Series) or equivalent. Ground cable from lift must be connected to vehicle frame. Connecting ground cable to lifts mounting bolts **is NOT ALLOWED.**

(a) 800 pound load capacity lifts assembly.

- (b) An electric hydraulic pump, powered by vehicle's electrical system.
- (c) Platform dimensions 34" wide by 51" long.
- (d) Platform to be constructed of 11 gauge expanded metal.
- (e) Platform shall be stored in an upright position within the vehicle.
- (f) Powered operation for (1) unfolding and folding the platforms and (2) raising and lowering the platform.
- (g) Emergency platforms release to permit the platform to be unfolded manually and lowered by gravity.
- (h) To prevent the wheelchair from rolling off, a barrier 1 ½" at minimum shall be provided on the outer edges of the platform and have an outboard roll stop that engages and locks before the platform leaves the ground to form a safety barrier when platform is raised or lowered
- (i) A free floating bridge plate will be replaced between the lift platform and the vehicle. This bridge plate will be hinged in a manner to permit upward movement should a person's foot become entangled.
- (j) Lift shall be securely bolted to the floor and floor reinforced as necessary to support the load.
- (k) To permit the lift platform to be raised without electrical power, a hand pump that allows the operator to raise the platform shall be installed.
- (l) An interior light shall be provided to illuminate the lift area;
- (m) All moving parts likely to cause personal injury shall be shielded.
- (n) Working parts, such as cables, pulleys, and shafts, which can be expected to wear, and upon which the lift depends for support of the load, shall have a safety factor of at least six, based on the ultimate strength of the material. Nonworking parts, such as platform, frame, and attachment hardware, which would not be expected to wear, shall have a safety factor of at least three, based on the ultimate strength of the material.
- (o) Lift shall be installed as specified by the manufacturer and shall be thoroughly tested prior to delivery.
- (p) Repair manual, parts list and instructions for adjusting hydraulic valves and electrical equipment shall be provided.
- (q) Lift controls shall be interlocked with the vehicle brakes, transmission, or door, or shall provide other appropriate mechanisms or systems to ensure that the vehicle cannot be moved when the lift is not stowed and so the lift cannot be deployed unless the interlocks or systems are engaged.
- (r) The left control cord must be secured in a manner not to interfere with the door being closed.

XXXVII. USE BY STANDEES:

Lift shall accommodate persons using walkers, crutches, canes or braces or who otherwise have difficulty using steps. The platform may be marked to indicate a preferred standing position.

XXXVIII. HANDRAILS

Platform on lift shall be equipped with handrails on two sides, which move in tandem with the lift, and which shall be graspable and provide support to standees throughout the entire lift operation.

- Handrails shall have a usable component at least 8" long with the lowest portion a minimum 30" above the platform and the highest portion a maximum 38" above the platform.
- Capability of withstanding a force of 100 pounds concentrated at any point on the handrail without permanent deformation of the rail or its supporting structure required.
- Cross-sectional diameter of handrail shall be between 1 ¼" and 1½", and shall have eased edges with corner radii of not less than 1/8".
- Handrails shall not interfere with wheelchair or mobility aid maneuverability when entering or leaving the vehicle.

XXXIX. WHEELCHAIR SECUREMENT:

- Wheelchair parking space shall have clear floor area of 30" wide by 52" long and be equipped with a four-point wheelchair securement tie-down.
- Occupant restraint system must be **Q'Straint Q-8306-SC or equivalent**. Shall have a Retractable lap/shoulder belt combo with a Retractable height adjuster that are anchored to floor and wall with L Tracks that meet SAE J2249 and ADA requirements.
- Tracks shall be recessed into the floor and not shift position under anticipated loads. Any tracks overlapping the access path must be flush with the floor to prevent passengers from tripping.

The L tracks and Slide N Click anchors must be bolted to structural steel.

- Bolting to plywood floor without bolting into structural steel under floor **IS NOT ALLOWED**.
- Wheel Chair Securement system must be **Q'Straint QRT MAX Automatic Retractor System Q-8306-SC with Slide N Click anchorage system and J-Hooks, or equivalent**.

- There must be 52” at minimum and 54” maximum measured from center to center between front and rear Slide N Click anchor points. And be fully assembled and ready to use.
- Must have securement pouches attached to wall to store wheelchair securement tie-downs.
- Must include eight (8) **Q’Straint Q5-7580 Webbing Loops or equivalent** for Securing Scooters. Wheelchair location must be in the rear of bus, one beside the other.

NOTE:

Each wheelchair securement location shall have sign designating it as such. Lettering size and type on these signs shall comply with the Americans with disabilities Act Regulations,

XL. WHEELCHAIR ACCESSIBILITY SYMBOL:

The vehicle will display the international wheelchair accessibility symbol of a person in a wheelchair that is outlined in white on blue background.

- This symbol will be placed on all four sides of the bus.

XLI. VEHICLE COLORS:

Body: Vendor to supply list of colors and prices available.

XLII. WINDOW BLACKOUT PAINT:

Bus must have window blackout paint.

NOTE: See Figure 2

XLIII. COLOR OF SEATS:

Proposal must include all colors available

- Successful vendor shall coordinate with the agency issuing this purchase order in the selection of material and color of the seats.
- Seats shall be fully padded.

XLIV. VEHICLE FLOOR PLAN:

A proposed floor plan including all pertinent interior dimensions such as overall length, width, distance between seats, etc.,

- Shall be submitted with the proposal.

XLV. CHASSIS SPECIFICATIONS:

Supplier must list chassis specs must be listed the spaces provided below.

Overall vehicle length: 300” minimum
324” maximum

Width: Exterior 95” minimum
Interior 91” minimum

Height Exterior 105” minimum
124” maximum
Interior 76” minimum

Wheelbase: 190” minimum
202” maximum

GVWR, axle, spring and tire:

14,500 lb. GVWR minimum

Front axle- 5,000 lb. GAWR minimum

Rear axle – 9,500 lb. GAWR minimum

(Dual wheel are required on rear axle.)

Front springs – heavy duty, 5,000 lb minimum

Rating combined at ground.

Rear springs – heavy duty, 9,500 lb minimum

Ratings each, at ground.

NOTE:

It is the supplier’s responsibility to calculate the actual loaded weight, spring and axle ratings so that the vehicle is engineered for safety.

XLVI. TIRES:

Tire size must meet 14,500 GVWR minimum and must be steel radial with “E” load rating.

- Steel or brass valve stems 1.5” in length shall be used on all wheels with elbow extensions on the inside rear dual for access.
- Stainless steel or brass valve caps with an inner air seal shall be used.
- One mounted spare tire and wheel to match existing tires/wheels to be shipped loose.

XLVII. ENGINE: GASOLINE:

Minimum – (6.8 liter) displacement.

- Must Have a CNG Capable Engine with hardened intake and exhaust valves with hardened intake and exhaust valve seats Ford Option # 91G.

XLVIII. RADIATOR:

Heavy Duty, with factory installed recovery system.

- The cooling system must be winterized with ethylene glycol for temperatures to –20 degrees F (-28.8889 C).

XLIX. TRANSMISSION:

At minimum, heavy-duty 5-speed automatic with overdrive, lock-up converter, lock in park and a heavy-duty auxiliary transmission cooler.

L. WHEEL WELLS:

The wheel housing shall be of sturdy heavy-duty construction of a minimum 14 gauge galvanized steel or stainless steel and provide ample tire clearance during all operating conditions.

- Fender and splash aprons (underskirt) of durable construction shall be provided so as to provide maximum deflection of the wheel splash.
- There shall be sufficient clearance to enable easy removal of wheels mounted with inflated tires.

LI. REAR FENDER FLARES:

Vehicle must have Rubber or Fiberglass Fender Flares.

LII. DRIVE SHAFT:

Drive shaft must be properly supported, balanced and guaranteed not to vibrate. Each drive shaft shall be equipped with a protective metal guard or guards to prevent whipping through the floor or dropping to the ground in the event of a tube or universal joint failure, or if the drive shaft breaks.

LIII. WHEEL COVERS:

Bright Metal Stainless Steel Wheel inserts.

LIV. BRAKES:

Two (2) braking systems are required. Service brakes shall be dual hydraulic, disc front and disc rear.

- The parking brake system shall be operated by a cable to the rear wheels, or Drive Shaft Drum Brake.

- The braking system shall be adequate for the GVWR of the vehicle.

LV. GEAR RATIO:

Must be a 4:56 gear ratio

LVI. FUEL CAPACITY:

Must be at minimum of 55 gallons

LVII. FUEL PUMP ACCESS DOOR:

An aluminum diamond plate access door shall be provided in the floor of the vehicle above the fuel tank to allow the fuel pump to be serviced without removal of the tank.

NOTE: Door must be Large enough and centered over fuel pump to allow easy removal of pump.

LVIII. SHOCK ABSORBERS:

- Must have heavy duty, front and rear shock absorbers.
- Rear Shock Absorbers upper mounting brackets **Shall Not be Covered** by any Body Braces that would prevent easy access to Upper Shock Mounting Bolts and Nuts.

LIX. SUSPENSION

Rear shall have Leaf Springs.

- Right rear shall have an extra leaf to compensate for weight of wheelchair lift.

LX. STEERING:

- Must have power-assisted steering
- Must have tilt wheel,
- Must have factory installed cruise control.

LXI. AIR CLEANER:

Must have a heavy duty, dry type air cleaner

LXII. OIL FILTER:

Must have a heavy duty, throw away type oil filter.

LXIII. ALTERNATOR:

Vehicle shall have Ford OEM 225-amp Alternator or equivalent.

LXIV. BATTERIES:

Two (2) heavy duty, maintenance free, minimum 650 CCA at 0 degrees F (-17.778 C) Batteries must be wired together in a parallel circuit to increase total battery capacity.

- Front OEM battery must have OEM type battery hold down brackets to securely hold battery in place.
- Instep Battery Box that is bolted down securely and must be sealed to keep mud and debris from getting on Rear Coach Battery.
- Battery must be bolted within this instep box. Cloth holds down straps are **not ALLOWED**.
- Battery box must be sealed to keep mud from getting on batteries.
SEE FIGURE 4 & 5

LXV. GROUNDS:

A ground of the battery cable size, shall be installed between the engine and chassis frame.

- The vehicle body shall be properly grounded to the chassis frame at least 2 (two) places.
- Engine and body grounds shall be installed to handle subsystem electrical capacity.
- Grounding wires fastened to the frame shall use a bolt with a nut installed in a proper sized hole with dielectric compound applied to the cleaned surfaces, bolt, and cable end.
- Lift pump motor shall be grounded directly to chassis frame using a cable of the same size as the pump motor feed wire.
- All exterior lights and accessories added by the body manufacture shall be grounded by an in harness ground attached at a fuse panel common grounding point.
- For all ground wire connections paint shall be removed at the grounding point to provide a surface, cable end, bolt, and nut where each positive or grounding cable is attached.

LXVI. STABILIZER BAR:

Heavy Duty Front and rear

LXVII. HORN:

Vehicle must have a dual, electric horn.

LXVIII. SIGNAL:

Directional and self-canceling with hazard warning flashers.

LXIX. TOW HOOKS

Shall have 2 tow hooks on Rear.

LXX. WINDSHIELD WIPERS:

Minimum two speeds with intermittent feature and washer.

LXXI. KEYS

Vehicle must include three (3) sets of keys for the entire bus.

LXXII. RADIO:

Must have an AM & FM CD radio

- Radio must be of same manufacture as chassis. Radio must be mounted in the Chassis OEM Location in dash.
- Must have a minimum of six speaker's two (2) OEM speakers in front chassis doors. The coach body's four (4) speakers shall be a **3-way Kicker KS Series Model KS6930 or equivalent.**

LXXIII. PAINTING, DECALS AND MONOGRAMS:

All signs required by State and federal law shall be affixed to each vehicle exterior and interior.

- It is up to the bus dealer/manufacture to add such signs and decals upon delivery of vehicle.
- No decals, name plates, or painted identification of the bus dealer/manufacture are to be added to the vehicle.

LXXIV. UNDERCOATING:

Floor and wheel housing, anti-rust factory installed.

LXXV. WARRANTY REQUIREMENTS:

The contractor warrants and guarantees to the original Procuring Agency each complete bus and specific subsystem and components for 100% parts and labor as follows:

- OEM standard factory warranties for chassis and engine.
- Complete bus body and body structure, exterior, wiring, flooring installation, and paint are warranted to be free from defects, related defects and to maintain structural integrity for a period of Five (5) year or 100,000 miles.

- Add-on components shall have component manufacture's standard warranty.
- Warranty shall begin on the date that the vehicle delivery is accepted by the agency issuing the purchase order.
- The wheelchair lift shall have a five (5) year unlimited mileage and unlimited cycles.
- The air-conditioning system shall have a minimum 2 years unlimited mileage.
- The Chassis powertrain should be warrantied for a five (5) years or 100,000 miles.

Any parts under warranty must be available and delivered to the purchasing transportation provider or their repair shop within 5 days of the time they requested/ordered them. The bus vendor/manufacture shall bear all reasonable financial costs of shipment of parts.

The warranty, as well as any recall notifications, shall cover each vehicle of the ultimate purchaser or recipient agency. The vendor shall provide a copy of any recall notice to the purchasing agency.

LXXVI. BUS TESTING:

Certification shall be provided that in accordance with 49 CFR Part 665,

- Bus Testing, the vehicle either does not need to be tested (with justification specified for exemption) or has been tested at the bus testing facility and a test report is included.

LXXVII. BUS WATER TESTING:

The roofs, windows, windshield and all doors of all coaches shall be water tested, as follows:

- The waster test shall consist of a series of nozzles that are strategically located around the perimeter of the vehicle so as to the nozzles spray water over the entire surface of the vehicle.
- The nozzles shall eject a volume of water no less than 2.6 gallons per minute under a pressure of no less than twenty-two (22) pounds per square inch measured at the nozzle tip.
- There shall be no less than twenty (20) nozzles installed in the water test area, each capable of directing a force of water as indicated above.
- The Vendor/Manufacture shall be required to water test each vehicle, under the conditions set forth above, for no less than five (5) minutes, in order to determine whether or not there are any body leaks at the window areas, door areas, roof panels, etc.

- The Vendor/Manufacture shall take the necessary corrective action when body leaks are found to exist as a result of the above test, and conduct a second water test to recheck for body leaks following corrective action.

LXXVIII. ALTOONA TESTING:

Vehicle must be tested in the 7-year/200,000 mile category at the Altoona Bus Testing Facility in Duncansville, PA. And a copy of the full report **must be submitted with the proposal.**

LXXIX. GENERAL:

All equipment cataloged as standard for the basic vehicle, unless superseded by these specifications, must be furnished and included in the purchase price of each vehicle. Complete printed specifications, published literature, and photos, or illustrations of the basic units that the supplier proposes to furnish with this proposal must accompany each proposal.

LXXX. QUALITY OF MATERIALS:

Welding procedures and materials shall be in accordance with standards of the American Society of Testing Materials and the American Welding Society. All visible welds shall be grounded smooth. Where metal is welded, the contact surface shall be free of scale, spatter, and grease and shall be treated to preclude rusting.

LXXXI. PUBLICATIONS AND PRINTED MATERIALS:

Each vehicle shall have a complete set of operation, quality assurance, and warranty publications.

The information shall be organized in a three ring binder format with each sections clearly identified.

1. As built wiring diagram and as built parts manuals for body and all auxiliary equipment.
2. Maintenance and inspection schedule incorporating the required maintenance and inspection of the basic vehicle and its sub-systems.
3. Operator's manual: A complete operations manual and troubleshooting guide with a detailed manufacturer's parts list that covers the conversion features on the vehicle as listed in this specification. The manual will provide complete, comprehensive instructions for the wheelchair accessories, wheelchair list deployment, air conditioning system, tie downs, heater, deployment of seats, wiring diagram and related equipment.
4. Warranty papers for chassis, body, and additional equipment.

5. Warranty Information: Each vehicle must have a published listing of contractor warranty repair locations, including address, telephone number, and contact names for the State of Oklahoma.

LXXXII. PRE-AWARD AUDIT:

The vehicles are not considered delivered to the purchasing agency until the required FTA documents are completed by a Government Official.

A Pre-Award Audit shall be conducted to determine if the proposal meets specifications. The supplier shall submit documents, which include certification of the manufacturer's compliance with the Federal Transit Administration (FTA) Pre-Award Buy America Audit Requirements. The document submitted shall include the following information for each major component used on vehicle:

1. Name and address of each supplier.
2. Cost of each major component and subcomponent. In order to protect proprietary information, the document may reflect the percentage of total cost each item represents instead of the actual cost.
3. Country of origin of each major component and subcomponent.
4. Name and address of company where final assembly occurs.
5. Cost of final assembly
6. Signature of authorized representative of vehicle manufacturer.

LXXXIII. POST- DELIVARY AUDIT:

A Post Delivery Audit of the vehicle(s) shall be conducted at the purchaser's facility, to determine that the completed vehicle(s) meets specifications.

Once this process has been satisfactorily completed, the vehicle(s) shall be considered acceptable.

LXXXIV. ACCESSIBILITY REQUIREMENTS:

When submitting a proposal for an accessible vehicle for the disabled, the vendor shall provide a list of the vehicle related equipment illustrating the component cost and related installation charges. The purpose of this list is to reflect an accurate cost for those vehicle related items, which are required to make the vehicle accessible to the disabled.

LXXXV. ACCEPTANCE OF VEHICLES:

Upon delivery at the designed location specified within this document the final acceptance will occur after the vehicles have been inspected, road tested and all FTA required post audit delivery requirements have been met.

- All vehicles shall be insured by the supplier until the post audit delivery has been conducted at minimum.

SPECIFICATIONS FOR OPTIONAL ITEMS:

1. CNG CONVERSION FORD CHASSIS

OEM engine shall be converted to operate on dedicated CNG. A WESTPORT/BAF Cal Comp System or approved equal shall be provided. System shall be CARB and EPA certified, OBDII compliant, and fully integrated into the OEM powertrain control system. No additional control module will be accepted. Dual fuel systems will not be accepted. System must comply with the following:

- a. Closed-loop fuel control
- b. Sequential fuel injection (SFI)
- c. Optimized ignition timing
- d. Must maintain original fault codes (DTCs)
- e. Diagnostics accessed through DLC using original scan tool or any generic OBD-II scanner
- f. CNG system shall be covered by 3 year/50,000 mile warranty and cannot void the OEM powertrain warranty.
- g. The minimum CNG tank capacity on the mini-buses should be 39 Gasoline Gallon Equivalent
- h. CNG interlock – Engine will not run when filling CNG tanks.
- i. Must provide a detailed floor plan of the placement of the CNG tanks.
- j. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

2. CNG BIFUEL CONVERSION FORD CHASSIS

OEM engine shall be converted to operate on CNG and Gasoline. System shall be CARB and EPA certified, OBDII compliant, and fully integrated into the OEM powertrain control system. No additional module will be accepted. System shall be capable of switching between CNG and Gasoline. The Gasoline fuel tank will be installed as per OEM specifications. The system must comply with the following:

- a. Closed-loop fuel control
- b. Sequential fuel injection (SFI)
- c. Optimized ignition timing

- d. Must maintain original fault codes (DTCs)
- e. Diagnostics accessed through DLC using original scan tool or any generic OBD-II scanner
- f. CNG system shall be covered by 3 year/50,000 mile warranty and cannot void the OEM powertrain warranty.
- g. The minimum CNG tank capacity on the mini-buses should be 29 Gasoline Gallon Equivalent
- h. Must provide a detailed floor plan of the placement of the CNG tanks.
- i. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

3. DEDICATED PROPANE AUTOGAS INJECTION

The system shall be a Roush CleanTech System or approved equal. The system must be CARB, EPA certified, and OBDII Compliant. The system shall have the following system components:

- a. PCM Calibration
- b. Billet aluminum high-pressure fuel rail.
- c. Appropriate fuel injectors
- d. Appropriate fuel lines
- e. Appropriate OEM engine prep package
- f. Coverage of Five (5) year/ 60,000 mile warranty.
- g. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

4. DUAL FUEL VEHICLE PROPANE AUTOGAS INJECTION

System shall be a Roush CleanTech System or approved equal. The system shall be a Roush CleanTech System or approved equal. The system must be CARB, EPA certified, and OBDII Compliant. The system shall have the following system components:

- a. PCM Calibration
- b. Billet aluminum high-pressure fuel rail.
- c. Appropriate fuel injectors
- d. Appropriate fuel lines
- e. Appropriate OEM engine prep package
- f. Coverage of Five (5) year/ 60,000 mile warranty.
- g. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.

5. BACK-UP MONITOR SYSTEM:

ASA Voyager AOM562A or approved equal with a 5.6" color LCD screen mounted on rear view mirror OEM Bracket. With a rear mounted outside backup camera and a second inside front mounted camera to view passengers.

6. TWO-WAY RADIO SYSTEM: UHF:

ICOM F221 UHF two-way Radio System with a PCTEL MUF4505 UHF antenna and coax or approved equal.

- Antenna shall be mounted on an L bracket on fender opposite of OEM AM/FM radio antenna.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for the agency issuing this purchase.

7. TWO-WAY RADIO SYSTEM:

ICOM F121 VHF two-way Radio System with a PCTEL MHB5800 VHF antenna and coax or approved equal.

- Antenna shall be mounted on an L bracket on fender opposite of OEM AM/FM radio antenna.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for the agency issuing this purchase.

8. TWO-WAY RADIO SYSTEM: 800 MHZ

Kenwood TK-980 800 mhz two-way Radio System with a PCTEL MUF8003 antenna and coax or approved equal.

- Antenna shall be mounted on an L bracket on fender opposite of OEM AM/FM radio antenna.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for agency issuing this purchase.

9. DRIVER'S SHIELD:

A clear Plexiglas barrier shall be erected behind the driver and extend from the stanchion crossbar behind the driver up to the ceiling.

- This shield start at the wall on the driver's left side (close enough to prevent a passenger from reaching through to the driver) and should extend 3 inches past the right side of the driver's seat, but shall not obstruct the view from the rear view mirror.
- This barrier shall consist of clear Plexiglas and shall be at least ¼ inch thick.
- A 1 ½ inch clearance between the stanchion and barrier should be provided to allow a hand hold on the right side.

10. PAINTED LOWER SKIRTS

Paint to purchaser's color specs.

NOTE: See Figure 2.

11. OUTSIDE PASSENGER DOOR SWITCH:

Outside keyed electric passenger door switch outside. Switch must be water proof.

12. BUS CAMERA SYSTEM:

- **REI Bus-Watch R4001 with 500GB Hard drive and four cameras or approved equal.** Successful vendor shall coordinate with the agency issuing this purchase for location of Camera's.

NOTE: See Figure 3 for camera type and location of cameras.

13. FABRIC INSERT ON CEILING

Must match seat fabric and pattern.

14. STREET SIDE EXHAUST

Exhaust to be turned out opposite side of Wheel Chair lift

15. INTEGRATED CHILD SEAT:

Integrated Child Restraint Seat must be a **Freedman Seating ICS-10 or equivalent**

- Must have an integrated 4-point safety harness. for children 22-78 Lbs with under seat retractor seat belts for adults

16. VINYL SEATS:

This will be a price deduction from the durable transit style level 5 cloth fabrics.

- Vinyl deduction is for passenger seats only
- Pilot and co-pilot seats shall be durable transit quality level 5-cloth fabric

17. PUBLIC ADDRESS SYSTEM:

A public address system shall be installed with a hand held microphone.

- The system shall include a solid-state amplifier of sufficient power and quality that the operator's voice can be clearly heard without distortion.
- The amplifier shall be firmly secured in a protective area.
- The PA system shall use the vehicles 6 speakers for sound.
- A power switch for the PA system shall be mounted on the dash to provide operation for the inside and amplifier off.
- Any noise suppression due to alternator, lighting, engine or other source is required of the contractor.

18. PASSENGER SIGNAL SYSTEM PULL CORD:

The Stop Request system shall have the following features:

- Separate provisions for W/C passengers and ambulatory passengers to signal a Stop request.
- Must use a yellow pull cord run below the windows for the ambulatory request and a large yellow push pad mounted at least 15" above the floor, but not more than 48". There must be a touch pad per W/C space for the passengers to signal a stop request.
- The driver should have a means of telling if a W/C passenger has signaled. There must be a Blue dash light to signal a W/C passenger request and a RED light to signal an ambulatory passenger request.
- The "Stop Request" lighted sign should show if a W/C passenger has signaled; the sign shall be a universal W/C symbol which lights in blue.
- There shall be an audible signal when a stop is requested and must be able to be heard by the driver.
- Once the pull cord is pulled, the sign will light, the driver's red light goes on, and a chime sounds. The sign will stay lit until the bus is stopped and the entry door is opened. The system automatically re sets itself
- When the W/C passenger signals a stop request, the W/C portion of the sign lights, the chime sounds, and the blue light on the dash goes on. The sign will stay lit until the W/C lift is deployed and then stowed and the W/C door is closed again.

19. PASSENGER STOP REQUEST SIGNS:

Passenger stop request sign must be **Transign, or equivalent**.

- The signs must be back-lighted stop requests and shall be mounted overhead on the front ceiling end closure.
- The sign shall be so designated as to remain illuminated when activated (by the passenger signal system) until it is extinguished by opening the door.

20. FARE COLLECTION BOX:

Fare collection box must be **GFI Genfare "Cents a bill" farebox or compatible**.

- With this option, the mounted fare box will eliminate the front passenger seat and make the bus a 14 passenger.
- Also must have the OEM Co-Driver seat covered with same fabric as the other passenger seats shipped loose with the bus. Co-Driver door shall have the same type of running board as driver's door.

21. DESTINATION SIGNS:

Destination signs must be **Twinvision, or equivalent**. The automatic electronic destination sign system shall be furnished on the front and on the right side near the front door of the vehicle. Display areas of destination signs shall be clearly visible in direct sunlight and/or at night. The sign system shall provide optimum visibility of the message display units for passengers and shall meet applicable ADA requirements defined in 49 CFR, Part 38.39. Destination signs shall be installed in such a manner as to facilitate easy access for replacement of the entire sign assembly, or components such as fluorescent lamps/LED's and electronic control modules, from inside the bus within 30 minutes by a mechanic. Lamps and associated parts shall be commercially available.

Destination messages, route designations, and public relations messages shall be independently selectable via a single Operator's Control Panel (OCP) which shall include a display monitor. The OCP display monitor readout shall show the exact information displayed on the destination signs. The OCP shall be conveniently located for the bus operator and mounted in such a manner that will not pose any safety hazard. The OCP shall utilize a durable weatherproof keypad with tactile feel for destination message control functions.

The destination sign system shall be capable of programming 10,000 message lines. The number of public relations messages shall be limited only by the remaining number of message lines not used for destination purposes. Sign displays shall have alternating message capability with programmable blanking time between message lines as may be required. Variable blanking times shall be programmable between 0.5 to 25 seconds in duration. Each line message or blanking time for each message shall be individually programmable. The message display units shall incorporate an automatic blanking feature that will cause the display area to blank within 30 seconds of the bus master power switch being turned off.

An emergency message shall be initiated by the closure, or opening, of a dry contact switch or relay. The emergency message shall be displayed on the exterior of the bus only. The OCP shall not display the emergency message. The destination sign shall automatically resume normal operation when the remote emergency switch is returned to its normal position.

Destination Sign Programming: The electronic sign system shall be programmable via an integral connector located in the front destination sign area. Software shall be furnished for programming the sign system via an IBM-compatible, laptop computer. Software shall be capable of providing a high degree of flexibility to create, or select preprogrammed, fonts and graphic displays. The sign shall have the capability of being programmed in the field using a PC or field programmer. Message program information shall be transferable to and/or from the field programmer device as specified by the transit system in attachments to Part 5: Technical Specifications.

The destination sign compartments shall be designed to prevent condensation and entry of moisture and dirt. Additional provisions shall be included, if necessary, to prevent fogging of both destination sign compartment window and glazing on unit itself. Access shall be provided to allow cleaning of inside of destination sign compartment window and unit glazing.

A complete listing of destination sign readings for initial sign programming by the manufacturer are provided in attachments to Part 5: Technical Specifications.

Front Signs:

Sign Size:

A 16 Row by 148 Column Spectrum Route Multi-Color Sign that shall have no less than 3,264 LEDs with a message display area of not less than 8.0 inches high by not less than 64.6 inches wide. The LEDs displays shall consist of red-blue-green LEDs and amber colored LEDs. The color LEDs shall be rated by their manufacturers for a life expectancy of 50,000 hours to 100,000 hours and shall support up to 27 colors.

Sign Readability:

The destination message shall be readable by a person with 20/20 vision from a distance of 250 feet. The sign shall have an equal readability at 65 degrees on either side of the line perpendicular to the center of the mean plane of the display. The entire display area of all signs shall be clearly visible and readable both in direct sunlight and at night.

Side Signs:

Sign Size:

An 8 Row by 96 Column Spectrum Route Multi-Color Sign that shall have no less than 768 LEDs with a message display area of not less than 2.8 inches high by not less than 36.3 inches wide. The LEDs shall be rated by their manufacturers for a 100,000-hour life expectancy.

Sign Readability:

The destination message shall be easily read from the sidewalk level. The entire display area of all signs shall be clearly visible and readable both in direct sunlight and at night.

System Control Console – Operator Display and Keyboard:

The system control console shall be used to view and update display messages. The system control console shall utilize a 28-key conductive rubber pad keyboard with tactile feel, designed especially for the harsh transit environment or approved equal.

The system control console shall contain a 16 x 128 pixel vacuum fluorescent display. The system control console shall contain an audio annunciator that beeps to alert the operator to view the display for a message, or beeps indicating that a key is depressed. The system

control console shall continuously display the complete message associated with the selected destination code.

Memory Transfer:

The sign system shall be reprogrammable through the system control console by either a PCMCIA flash card or a Memory Transfer Unit.

Emergency Message Display:

If required, a special emergency message can be activated by a switch. This message shall be displayed on signs, facing outside the vehicle, while the signs inside the vehicle, including the system control console, remain unchanged. The emergency message shall be canceled by entering a new destination code or by removing the emergency signal.

Programming:

A programming software package shall be furnished to generate message lists for the destination sign system. A PCMCIA flash memory card having a minimum of 8 megabytes of memory shall be provided to facilitate bus system programming. The software must be compatible with Windows NT, Windows 2000, Windows XP, Windows Vista and Windows 7

The programming software shall use techniques that require minimal operator training and that are intended for use by operators that are not trained in complex computer operations. All operator screens shall utilize pull down and pop-up menus.

22. BICYCLE RACKS:

Manufacturer/model should be **Sportworks Veloporter 2 or equivalent.**

- Racks must have a 2 (two) bike capacity, and follow the specs noted below.

1. The bike rack must meet OSHA requirements for lifting by a single individual and be capable of being raised or lowered with one hand
2. The bike rack must accommodate all bicycles with wheels 16" (for example, the Dahon folding bicycle series) or larger diameter,

excluding tandems and recumbent type bicycles. The rack must accommodate all bicycles 80" and longer.

3. The bike rack frame must be manufactured with 304 stainless steel tubing with a minimum wall thickness of 0.125 in., outside corners to be rounded, pinch joints minimized and welds smoothed.

4. All nuts, bolts and washers shall be either AISI Type 304 stainless steel or Grade 8 yellow zinc plated steel

5. The bike rack must be mounted to the front of the bus and accommodate two (2) bicycles. In the stowed position, folded up against the front of the bus, it shall protrude no more than 8" from the front bumper. The protrusion shall be no more than 36" when deployed.

6. The latching mechanism must automatically lock the bike rack in the stowed and deployed positions.

7. The bike rack, when stowed, shall not interfere with any access panels/doors, windshield wipers or driver vents.

8. The bike rack shall be designed for loading and unloading from the front, curbside, of the bus. The securement can only contact the bicycle's tires as to not do any damage to the bicycle's frame. The bike rack shall have a positive securement with a four (4) point locking system, contacting the wheel in such a way that greater than half the circumference of the wheel is captured. Straps, cords, and/or springs shall not be required to secure a bicycle.

9. The carrier shall not interfere with the ability of the driver to safely operate the vehicle. This includes, but is not limited to, the obstruction of the windshield view and the operation of the windshield wipers, turn signals, and headlights.

10. The carrier shall be compatible with automated bus washing systems and shall be capable of repeated use with automated washing equipment without sustaining damage to the carrier, vehicle, or the washing equipment. The carrier shall be designed as not to accumulate water internally.

11. The use of this rack shall not affect route scheduling. The bike rack shall have a design capability of being loaded or unloaded in 20 seconds or less.

12. The mounting bracket/ pivot plate assembly must be designed to fit all urban transit buses, both standard floor and low floor.

13. The bicycle rack shall be warranted against defects in materials and workmanship for a period of one (1) year from date of installation.

- 14. The bicycle rack manufacture is required to furnish all the complete parts and service (maintenance) books.
- 15. The bicycle rack should have a latching system in both positions, stowed and deployed; this will need to be explained in detail
- 16. The racks should be in a friendly design and a tire only mount.
- 17. The mounting brackets should be detailed at to what bus needs with brackets.

Product Standards:

Only first quality materials, workmanship and finish shall be acceptable.

All general materials and workmanship shall be guaranteed to be free of defects for a minimum of at least one (1) year from date of installation except as noted below. Any defects shall be rectified or replaced to meet specifications at the expense of the manufacturer, including freight, parts and labor.

Any exposed fasteners shall be colored to match the finish of the framework components.

Spare Parts:

The contractor will provide pricing and the delivery time on the available spare parts for each bicycle rack and maintain adequate stock levels.

23. DELETE COPILOT DOOR, SEAT AND B PILLAR :

This Moves the Passenger door from the coach Body to the chassis cab section. This delete's the Copilot door; seat and B pillar section of the cab. This will add 2 seats positions in Coach Body.

24. DELETE ALTRO CHROMA FLOORING:

This delete's the Altro Chroma Floor covering to install the Gray RCA Rubber Transit-Flor. The step well, entrance area, and center aisle floor area shall be overlaid with ribbed, slip resistant, oil resistant commercial 3/16" step tread thickness. The 1/8" thickness flooring under the seats and in the wheelchair area shall be smooth, slip resistant, and oil resistant. The flooring shall extend up the sidewall and rear wall to the seat rail line and shall be coved at the floor/wall joint to form a smooth water-tight transition. Flooring adhesive shall be oil resistant.

25. DELETE YELLOW POWDER COAT ON HANDRAILS:

This delete's the yellow powder coating on the stainless steel handrails, grab handles and stanchions. They will be the natural brushed Stainless steel Color.

26. 100% NIDA-CORE[®] STRUCTURE OR APPROVED EQUAL:

Resin Hardened Nida-Core[®] or approved equal Polypropylene Copolymer honeycomb (1" thickness, minimum) Throughout 100% of the entire body structure, walls, roof, front and rear caps must be used instead of Honeycomb Paper Vertical. This is to eliminate any possibility of rotting in any area of the body structure.

27. COMPOSITE FLOOR:

Composite Space-age Synthetics Thermo-Lite Board-Tough Series or approved equal Floor that will not rot and is lighter than the standard marine grade plywood floor.

28. SIDE DOOR SLIDE OUT BATTERY TRAY:

Must have an Extra Heavy Duty Stainless Steel slide out Battery Tray for all auxiliary batteries mounted under Bus. Battery Box must have OEM type battery hold down brackets to securely hold batteries in place. Cloth hold down straps is not ALLOWED. Battery box must be sealed to keep mud from getting on batteries.

29. DELETE 3 FOLDAWAY SEATS:

This delete's the three foldaway seats for a total seating capacity of fourteen (14) passengers.

30. DIESEL ENGINE:

Current Power plant for the make and model of chassis

31. REAR SPARE TIRE HOLDER:

A rear spare tire holder that shall be affixed to the vehicle in a way to allow easy removal of spare tire.

32. ADJUSTABLE REAR SUPSENIION SYSTEM:

System shall be a MOR/ryde suspension system or equal shall be used with the following:

- a. Installed as per the manufactures recommendations.
- b. Fully adjusted for each bus installed on.
- c. Warranty to be a 5 year 100,000 mile.

FIGURE 1:

Figure 1

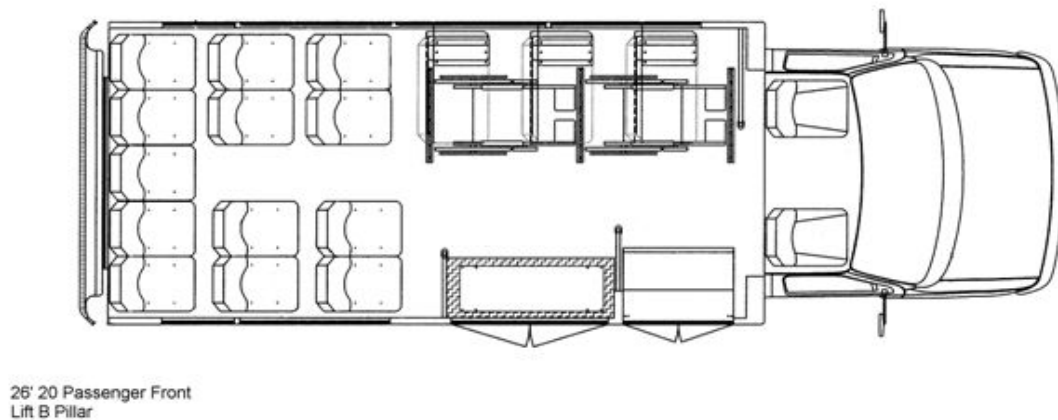


FIGURE 2:



FIGURE 3:

Figure 1

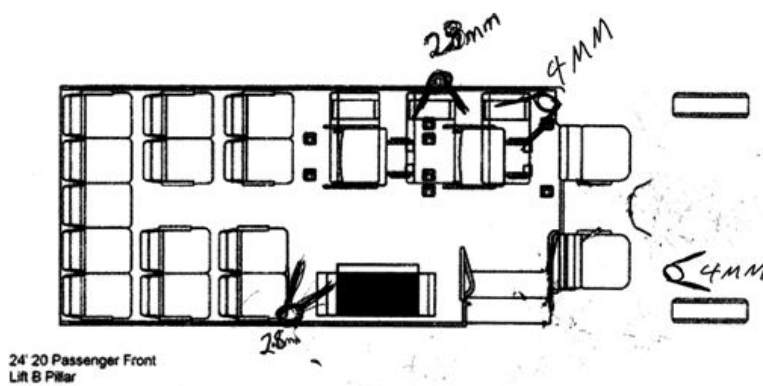


FIGURE 4:



FIGURE 5:



SECTION "N"
26' 20 Passenger Metal Bus
RESPONSE SHEET

BASE
VEHICLE

COST PER
UNIT

Transit Bus (gas engine)

\$ _____ / ea.

CHASSIS SPECIFICATIONS

Specify Overall Vehicle Length (outside of front bumper to outside of Rear bumper): _____

Overall vehicle length: 300" minimum _____
324" maximum _____

Width: Exterior 95" Minimum _____
Interior 91" minimum _____

Height Exterior 105" minimum _____
124" maximum _____
Interior 76" minimum _____

Wheelbase: 190" minimum _____
202" maximum _____

AIR CONDITIONING

Make and Model of Rear A/C Unit and Cooling Capacity of rear Unit BTU's/Hr.
Include literature on unit being proposed.

MAKE/MODEL _____

BTU/HR of Rear Unit only _____

HEATING

BTU/HR of Rear Unit only _____

OPTIONAL ITEMS**COST**

- | | | |
|-----|------------------------------------|--------------|
| 1. | CNG Conversion Ford Chassis | \$_____ /ea. |
| 1. | CNG Bifuel Conversion Ford Chassis | \$_____ /ea. |
| 2. | Propane Dedicated Conversion | \$_____ /ea. |
| 3. | Propane Dual Fuel Conversion | \$_____ /ea. |
| 5. | Back-Up Monitor System | \$_____ /ea. |
| 6. | Two-way radio (UHF) | \$_____ /ea. |
| 7. | Two-way radio (VHF) | \$_____ /ea. |
| 8. | Two-way radio (800 MHZ) | \$_____ /ea. |
| 9. | Driver's Shield | \$_____ /ea. |
| 10. | Painted lower skirts | \$_____ /ea. |
| 11. | Outside Passenger Door Switch | \$_____ /ea. |
| 12. | Bus Camera System: | \$_____ /ea. |
| 13. | Fabric Insert on Ceiling | \$_____ /ea. |
| 14. | Street Side Exhaust | \$_____ /ea. |
| 15. | Integrated Child Seats | \$_____ /ea. |
| 16. | Vinyl Seats (Price Deduction) | \$_____ /ea. |
| 17. | Public Address System | \$_____ /ea. |
| 18. | Passenger Signal System Pull Cord | \$_____ /ea. |
| 19. | Passenger Stop request Signs | \$_____ /ea. |
| 20. | Fare Collection Box | \$_____ /ea. |

21. Destination Signs \$_____/ea.
22. Bicycle Racks \$_____/ea.
23. Delete B pillar and copilot seat (Price Deduction) \$_____/ea.
24. Delete Altro Chroma Flooring (Price Deduction) \$_____/ea.
25. Delete Yellow Powder Coating on Handrails, Grab Rails and Stanchions. (Price Deduction) \$_____/ea.
1. 100% Nida-Core[®] structure \$_____/ea.
27. Composite floor \$_____/ea.
28. Side Door Slide Out Battery Box \$_____/ea.
29. Delete three foldaway seats (Price Deduction) \$_____/ea.
30. Diesel Engine: \$_____/ea.
31. Rear Spare Tire Holder: \$_____/ea.
32. Adjustable Rear Suspension System: \$_____/ea.

A list of optional equipment and/or accessories shall be provided. The list must contain:

- Item
- Description and functionality detail
- Cost of item installed in final delivery of vehicle
- Any changes to listed specifications as outlined above to accommodate options

RFP EXCEPTIONS:

Supplier must list any exceptions here to be used as a part of the proposal evaluation and analysis. Please list the roman numerical on the standard specs or the number for the options when listing any proposal exceptions.

SECTION "O"

SPECIFICATIONS FOR 45' CNG COMMUTER COACH

1.0 GENERAL

1.1 SCOPE

These specifications, in terms of performance, represent a coach ideally suited to public commuter transit operations.

1.2 DEFINITIONS

The following are definitions of special terms used in Part II.

1. **DBA** - Decibels with reference to 0.0002 microbar as measured on the "A" scale.
2. **Audible Discrete Frequency** - An audible discrete frequency is determined to exist if the sound power level in any 1/3-octave band exceeds the average of the sound power levels of the two adjacent 1/3-octave bands by 4 decibels (dB) or more.
3. **Standee Line** - A line marked across the coach aisle in line with the driver's barrier to designate the forward area which passengers may not occupy when the coach is moving.
4. **Free Floor Space** - Floor area available to standees, excluding ingress/egress areas, area under seats, area occupied by feet of seated passengers, and the vestibule area.
5. **Curb Weight** - Weight of vehicle, including maximum fuel, oil, and coolant; and all equipment required for operation and required by this Specification, but without passengers or driver.
6. **Seated Load** - One hundred fifty (150) pounds (68 kg) for every designed passenger seating position and for the driver
7. **Gross Load** - Total of curb weight, seated load and standees at 150 pounds (68 kg) per individual passenger
8. **SLW (Seated Load Weight)** - Curb weight plus seated load.
9. **GVWR (Gross Vehicle Weight Rated)** - Curb weight plus the maximum vehicle weight to which the bus can be safely loaded.
10. **Driver's Eye Range** - The 95th-percentile ellipse defined in SAE Recommended Practice J941, except that the height of the ellipse shall be determined from the seat at its reference height.
11. **Fireproof** - Materials that will not burn or melt at temperatures less than 2,000 degrees F (1,093 C)
12. **Fire-Resistant** - Materials that comply with Federal motor Vehicle Safety Standard (FMVSS) 571.302 - Flammability of interior materials, or having a flame spread index less than 150 as measured in a radiant panel flame test per ASTM-E162-75.
13. **Human Dimensions** - The human dimensions used are defined in SAE Recommended Practice J833.

1.2.1 ABBREVIATIONS

The following is a list of abbreviations (acronyms) used in these specifications:

ASTM:	American Society of Testing and Materials.
SAE:	Society of Automotive Engineers
ANSI:	American National Standards Institute.
ASHRAE:	American Society of Heating, Refrigerating, and Air Conditioning.
SPI:	Society of the Plastics Industry.
USDHEW:	United States Department of Health, Education, and Welfare
JIC:	Joint Industrial Council.
BMCS:	Bureau of Motor Carrier Safety.
FMVSS:	Federal Motor Vehicle Safety Standards
ABS:	Antilock Braking System

1.3 CLASSES OF FAILURES - *Classes of failures are listed below:*

Class 1:	Physical Safety. A failure that could lead directly to passenger or driver injury and represents a severe crash situation.
Class 2:	Road Call. A failure resulting in an en route interruption of revenue service. Service is discontinued until the coach is replaced or repaired at the point of failure.
Class 3:	Coach Change. A failure that requires removal of the coach from service during its assignments. The coach is operable to rendezvous point with a replacement coach.
Class 4:	Bad Order. A failure that does not require removal of the coach from service during its assignments but does degrade coach operation. The failure shall be reported by driver, inspector, or hostler.

1.4 LEGAL REQUIREMENTS

The coach shall meet all applicable Federal Motor Vehicle Safety Standards and regulations as established by the U.S. Department of Transportation.

The manufacturer shall comply with all applicable Federal and State regulations. In event of any conflict between the requirements of this Specification and any applicable legal requirement, then the legal requirement shall prevail.

1.5 OVERALL REQUIREMENTS

1.5.1 DIMENSIONS

1.5.1.1 PHYSICAL SIZE

With the exceptions of exterior mirrors, marker and signal lights, bumpers, flexible portions of the bumper, fender skirts, and rub rail, the coach shall have the following overall dimensions.

Length: 45 feet, 0 inches (+0 / -1 in.) (14 m – +0 / - 25.4 mm)
Width: 8 feet, 6 inches (+0 / -1 in.) (2.6 m – +0 / - 25.4 mm)
Height: 137 inches – maximum loaded or unloaded. (3.5 m)
First Step Height: 15.5 inches – Maximum (394 mm)

1.5.1.2 UNDERBODY CLEARANCES

The coach provided shall meet the following underbody clearances:

Approach angle 9.50°

Breakover angle 7.20° (*measured per SAE J689*)

Departure angle 6.20°

Ground clearance .. 10.00 inches (254 mm)

Axle clearance (as measured) 6.50 inches (165 mm)

1.5.2 WEIGHT AND AXLE LOADING

Each vehicle, at a capacity load, shall not exceed the gross vehicle weights or maximum axle weights specified. In no case shall the axle weight exceed 22,500 pounds on any axle. In the interest of economy in construction and operation it shall be the goal to manufacture the coach as light as possible without degradation of structure, performance, appearance, comfort and reliability. Total vehicle weight shall not exceed the gross vehicle weight rating nor axle weight rating at ground as specified. GVWR shall not exceed 50,000 pounds for a 45-foot bus. Combined load capacity weight on the drive and tag axles shall not exceed 36,500 pounds.

1.5.3 CAPACITY

Rated passenger capacity of the coach shall be as outlined below. Provisions to secure two wheelchair passengers shall also be provided. The overall seating capacity may be reduced when the securement positions are being utilized.

45 foot/102 inch (14 m/2.6 m) bus 57 seats

45 foot/102 inch (14 m/2.6 m) bus w/optional lavatory 55 seats

1.5.4 SERVICE LIFE AND MAINTENANCE

1.5.4.1 SERVICE LIFE

The coach shall be designed to operate in commuter service for at least 12 years or 500,000 miles (804,672 km) of revenue service whichever comes first.

1.5.4.2 MAINTENANCE AND INSPECTION

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 (9,656 km), except for routine daily service performed during the fueling operations. Higher levels of scheduled maintenance tasks shall occur at even multiples of mileage for lower level tasks.

The manufacturer shall provide a preventive maintenance schedule covering all components upon delivery of the first production vehicle. Each schedule shall be complete and shall adhere to frequency intervals considered normal industry standards.

1.5.4.3 MEAN MILEAGE BETWEEN FAILURES

The following are design goals for mean mileage between failures by failure class, provided that all specified preventive maintenance procedures are followed:

Class 1: Physical Safety. Mean mileage shall be greater than 1,000,000 miles (1,609,344 km).

Class 2: Road Call. Mean mileage shall be greater than 20,000 miles (32,187 km).

Class 3: Coach Change. Mean mileage shall be greater than 16,000 miles (25,750 km).

Class 4: Bad Order. Mean mileage shall be greater than 10,000 miles (16,093 km).

1.5.4.4 ACCESSIBILITY

All systems or components serviced as part of periodic maintenance or whose failure may result in Class 1 or Class 2 failures shall be readily accessible for service and inspection. Removal or physical movement of components unrelated to the specific maintenance and/or repair tasks involved shall be minimized

1.5.4.5 INTERCHANGEABILITY

Components with identical functions shall be interchangeable with the exception of windows and baggage bay doors. Components with non-identical functions shall not be, or appear to be, interchangeable.

1.5.5 OPERATING ENVIRONMENT

The coach shall achieve normal operation in temperature ranges of -10 to 110 degrees F (-23° to 43° C), at relative humidity between 5 percent and 100 percent and at altitudes up to 5,000 feet (1,524 m) above sea level. Degradation of performance due to atmospheric conditions shall be minimized at temperatures below -10 degrees F (-23° C) and above 110 degrees F (+43° C) or at altitudes above 5,000 feet (1,524 m). Special equipment or procedures may be employed to start the coach after a 12 hour or more exposure to temperatures below +30 degrees F (-1° C) without the engine in operation.

Speed, gradability, and acceleration performance requirements shall be met at, or corrected to, 85 degrees F (29 C), 29.00 inches (737 mm) Hg, dry air. Performance degradation at conditions other than the test standard shall not exceed 1 % for each 3 degrees F/C and 4 % for 1,000 feet (305 m) of altitude above the standard.

1.5.6 MATERIALS AND CONSTRUCTION

For economy in maintenance, it is essential that parts and units be arranged so that rapid assembly and disassembly will be possible for the coach being provided. The dimensions of all parts, unless particularly specified, will be in accordance with current standards of the Society of Automotive Engineers, or the metric equivalents. All units or parts not specified shall be Manufacturer's standard units or parts and shall conform in material, design and workmanship to industry standards and shall meet or exceed all Federal and State motor vehicle safety standards. During the manufacturing of the coaches all parts shall be new and in no case will used, reconditioned or obsolete parts be accepted. No advantages shall be taken by the Manufacturer in the omission of any parts or details that make the coach complete and ready for service, even though such parts or details are not mentioned in these specifications.

Workmanship throughout shall conform to the high standard of commercially accepted practice for the class of work and shall result in a neat and finished appearance. All exposed surfaces and edges shall be smooth, free from burrs and other projections, and shall be neatly finished. Exposed metal surfaces, prior to paneling or covering shall be properly prepared and coated with protective material to insure against corrosion or deterioration.

All lubrication points, unless otherwise specified, shall be capable of accepting a high pressure grease gun operated on fittings that permit grease to travel into the lubrication point but does not permit the grease to escape and designed so that when the grease gun is withdrawn, there is a positive barrier preventing dirt from entering the fitting. These fittings shall be of one manufacture and shall be accessible for a grease gun while the vehicle is being serviced on either a lift or a pit.

2.0 BODY

2.1 DESIGN

The coach shall have a clean, smooth, simple design, primarily derived from coach performance requirements and passenger service criteria. Body construction shall not be of a body on chassis type. The exterior and body features, including grilles and louvers, shall be shaped to allow complete and easy cleaning by automatic bus washers without snagging washer brushes. The retention of water and dirt in or on any of the body features or the freezing or bleeding out of this dirt and water after leaving the washer shall be minimized. Body and windows shall be sealed to prevent leaking of air, dust, or water under normal operating conditions and during cleaning in automatic bus washers for the service life of the coach. Accumulation of spray and splash on any window of the coach generated by its wheels on a wet road shall be minimized. The undercarriage of the coach shall be sealed off to the maximum extent practicable to significantly reduce the intrusion of road spray.

2.2 MATERIALS

Body materials shall be selected and the body fabricated to reduce maintenance, extend durability, and provide consistency of appearance throughout the life of the coach. Detailing shall be kept simple; add-on devices and trim shall be minimized and, where necessary, integrated into the basic design.

2.3 FINISH AND COLOR

All exterior surfaces shall be smooth and free of wrinkles and dents. Exterior surfaces to be painted shall be properly cleaned and primed as appropriate for the paint used, prior to application of paint to assure a proper bond between the basic surface and successive coats of original paint for the service life of the coach.

Paint utilized shall be DuPont Imron Elite SS white N5793EA polyurethane enamel or approved equal, that exhibits excellent color and gloss retention, chip, abrasion, stain and mar resistance, chemical and solvent resistance and excellent cleaning characteristics per industrial standards. Paint shall be applied smoothly and evenly with the finished surface free of dirt, runs, sags, "orange peel" type pebbled surface, and other imperfections.

All exterior finished surfaces shall be impervious to diesel fuel, gasoline, and commercial cleaning agents such as soaps, detergents and degreasing compounds. Finished surfaces shall not be damaged by controlled applications of commonly used graffiti-removing chemicals.

2.4 NUMBERING AND SIGNING

Monograms, numbers and other signing shall be applied to the inside and outside of the coach as required. Signs shall be durable and fade, chip, and peel-resistant; they may be decals, or pressure-sensitive appliques. Emergency exit information shall be provided in both English and Spanish.

2.5 PEDESTRIAN SECURITY

Exterior protrusions greater than 0.250 inch (6.0 mm) and within 80 inches (203 cm) of the ground shall have a radius no less than the amount of the protrusion. The left and right side rear view mirrors, windshield washer nozzles and required lights and reflectors are exempt from the protrusion requirement. Grilles, doors, bumpers and other features on the sides and rear of the coach shall be designed to minimize the ability of unauthorized riders to secure footholds or handholds.

2.6 STRUCTURE

2.6.1 STRENGTH AND FATIGUE LIFE

The structure shall be of a sufficiently strong and efficient design to withstand the conditions of commuter service throughout the service life of the coach.

2.6.2 DISTORTION

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 (152 mm) curb or in a 6 inch (152 mm) deep hole.

2.6.3 RESONANCE

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

2.6.4 MATERIAL

Reinforced fiberglass and plastic materials shall be excluded from structural body construction, except for replaceable panels or doors and for non-load bearing front and rear roof caps and the front lower panel below the windshield and the A-pillar covers and transom panels.

2.6.5 CORROSION

The coach 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 service manual. All exposed body panels above and below the floor line shall be aluminum or stainless steel except for the front end upper and lower panels, the rear end upper panels and the upper sidewall panel which are made of fiberglass or galvanized steel. Materials exposed to the elements and all joints and connections of dissimilar metals shall be corrosion-resistant and shall be protected from galvanic corrosion. All frame members below the passenger floor that are subject to road splash and are less than 0.06 inch (1.5 mm) shall be stainless steel for maximum corrosion protection. All other frame members exposed to splash are to be High Strength Low Alloy steel and are to be 0.06 inch (1.5 mm) thick minimum and shall be coated with Tectyl undercoating or approved equal, on all surfaces exposed to road splash for maximum corrosion protection.

Floor supports in the passenger and drivers area, the sidewall structures and roof structures that are not exposed to road spray shall be High Strength Low Alloy and primed prior to incorporation into the coach assembly.

Outer sidewall panels above the passenger floor and below the windows shall be galvanized steel, pre-primed. The roof panels shall be pre-primed aluminum both sides and the front and rear roof caps fiberglass.

The upper rear engine door and louvers may be fiberglass panels mounted to stainless steel frames with powder coated aluminum screens. The upper side corner panels may be fiberglass with powder coated aluminum screens.

The upper wheelchair lift door may be made of an aluminum frame or other acceptable lightweight material and aluminum exterior panel.

Non-structural underbody panels used for baggage bay floors and to retain insulation in other areas, shall be Tectyl or approved equal undercoated aluminum or stainless steel for maximum corrosion protection. In the wheel well areas, non-structural closeout panels shall be stainless steel.

Before assembling, all metal body parts must be given a thorough anti-corrosion treatment. Joints between dissimilar metals shall be properly insulated with an inert plastic tape to avoid corrosion due to electrolytic action. All nuts, bolts, clips, washers, clamps, and like parts shall be zinc plated, phosphate coated, black oxide coated, stainless steel, or nylon to prevent corrosion. All exterior joints and seams must be sealed.

Dissimilar metals must be separated by a non-conductive barrier.

Non-Conductive Barriers may consist of one of the following:

- ☐ Black elastic compound tape
- ☐ Mylar tape
- ☐ Double-sided structural adhesive tape

Where tape barriers are not feasible an appropriate sealant shall be used to provide a protective barrier and a water tight seal. This sealer must be used on all panels and assemblies that are susceptible to water leaks.

2.6.6 TOWING

Towing devices shall be provided and be permanently mounted on the front and rear of the coach. The coach may be towed from the front only, but can be recovered from the rear. Recovery shall mean to move the bus into the clear so it can be hooked up and towed from the front. Lift and tow is not required.

Front towing device shall withstand, without permanent deformation, tension loads up to 1.2 times the curb weight of the coach within 20° of the longitudinal axis of the coach. Towing device shall accommodate a crane hook with a 1-inch throat. A minimum of two steel rear skid plates measuring approximately 15.2 x 3.3 inches (386 x 84 mm) shall be welded to the underside of the engine rails. Skid design shall be durable construction to adequately protect mechanical or other body components from damage due to the coach bottoming out.

2.6.7 JACKING & HOISTING

It shall be possible to safely jack up the bus, at curb weight, with an 8.5 inch (216 mm) high hydraulic hand jack or a 10-ton (9,072 kg) floor jack when a tire or dual set is completely flat and the bus is on a level hard surface. Jacking from a single point shall permit raising the bus sufficiently high enough to remove and reinstall any wheel and tire assembly. The bus shall be fitted with jacking pads for each tire/wheel locations and shall permit easy and safe jacking with the flat tire or dual set on a 3.5-inch (89 mm) high run-up block not wider than a single tire. The bus will withstand such jacking at any one or any combination of wheel locations without permanent deformation or damage. The bus axles or jacking plates shall accommodate the lifting pads of a post hoisting system. Jacking plates shall be approximately 2.00 inches (51 mm) square, with a turned-down flange not less than 0.5 inch (13 mm) deep on each side. Other pads shall be provided to support the bus on jack stands independent of the hoist.

2.6.8 FIRE SUPPRESSION

An Amerex or approved equal modular vehicle fire suppression and overheat warning system will be provided to detect and extinguish fires in the engine compartment. The system will be electrically controlled. A 25-lb. (11-kg) dry-chemical extinguisher cylinder will be installed in the #3 baggage compartment. Three thermostats and four extinguisher nozzles will be installed in the engine compartment in strategic locations. If the thermostats detect excessive heat, then the cylinder will discharge a dry chemical agent into the engine compartment. A button at the end of the left-hand console will trigger the extinguisher. A control panel above the driver will monitor the system. Normally a green LED indicating "System OK" will be illuminated on the front of the monitor. When a fire is detected a red LED and buzzer on the control panel will warn the driver.

When the fire has been extinguished the green LED will light again.

The fire suppression system will be powered by the coach's electrical system, but an internal rechargeable back-up battery will be provided in case the coach's electrical system is interrupted.

2.6.9 FIRE PROTECTION

The passenger and engine compartments shall be separated by a bulkhead(s) which shall, by utilization of fire resistant materials in its construction, be a firewall. This firewall shall preclude or retard propagation of an engine compartment fire into the passenger compartment. Only necessary openings shall be allowed in the firewall, and these shall be fire resistant. Any passageways for climate control system air flow shall be separated from the engine compartment by fire resistant material. Piping through the center tunnel bulkhead shall be copper, steel, nylon air brake tubing (for air and fuel), PVC (closed conduit) or brass and shall be sealed with fire-resistant material at the firewall. Wiring may pass through the bulkhead only if connectors or other means are provided to prevent or retard fire propagation through the firewall. The conduit and bulkhead connectors shall be sealed with fire resistant material at the firewall. Engine access panels in the firewall shall be fabricated of fire resistant material and secured with fire resistant fasteners. These panels, their fasteners, and the firewall shall be constructed and reinforced to minimize warping of the panels during a fire that will compromise the integrity of the firewall. The coach body shall be adequately sealed to prevent the intrusion of smoke, fuel, and fumes into the coach interior.

2.6.10 LEAK DETECTION SYSTEM

A mobile gas leak detection system manufactured by Amerex Corporation or approved equal shall be provided. Methane detection capability shall be provided in the follow areas:

Engine compartment one detector minimum
Fuel storage area - as required.

Detectors are to be designed to prevent vandalism or damage from external sources.

The AMGADS III system, or approval equal, shall detect and quantify airborne concentrations of methane from 0 % LEL to 100 % LEL and shall continue to give the indication of the presence of gas at concentrations above 100 % LEL.

The system shall be integrated with the engine stop override system to permit the operator more time, if required, to stop the vehicle. The system shall be powered through the battery insulation switch(es) and be in full time sampling mode any time the master control switch is in the "on" position. The system shall be self-restarting following power interruption or have backup batteries to prevent interruption of function.

The system shall be capable of operating normally without failure from -65 degrees F to +185 degrees F, and at relative humidity levels from 0% to 99 %. Components operating within the engine compartment shall operate in temperatures up to 250 degrees F. Any single failure of a detection device shall cause an indicator light on the control panel to illuminate.

The system shall operate at supply voltages from 9 to 30 VDC as produced by the coach electrical system, and be designed to withstand positive and negative voltages spikes of 500 VDC, and electrostatic discharge of 15000 volts without failure. Total current draw of the system under normal operating conditions shall not exceed 750 mA. System design shall comply with SAE J1211 criteria for automotive electronic equipment as a minimum.

2.6.10.1 ALARM LEVELS

The system shall generate audible and visual alarms at two non-adjustable concentration levels. The system shall also supply one user assignable auxiliary shift relay for such functions as alarms and signal light actuation, fuel valve shut off and ignition interruption. Alarms shall provide audible notification of detector activation inside the coach.

2.6.10.2 CALIBRATION REQUIREMENTS

The system shall register and report zero drift as a dangerous situation requiring attention. Drifts in calibration at other than the zero level shall either always be such as to produce a failsafe (false high) reading or shall give notification of a reading as a dangerous situation requiring attention (false low).

2.6.10.3 MONITOR PANEL

The system shall have a supervision monitoring panel located in the operator's area. The monitor panel shall indicate operational status of the sensors, harness, and calibration with visual indicators provided on the operators indicator panel.

2.6.11 EXTERIOR AND APPLIED PANELS

Roof Panels - Front roof cap and rear crown panels shall be nominal 0.13 inch (3.17 mm) thick fiberglass-reinforced, molded plastic incorporating molded indentations for the marker, clearance and identification lights. Main roof panels shall be 16 gauge, nominal 0.05 inch (1.29 mm), high tensile primed aluminum. Roof panels shall be bonded to the roof structure with adhesive.

Front Panels - The front body panel below the windshield shall be of one-piece molded fiberglass. A fiberglass trim fascia shall be provided under the windshield. It shall include molded housings for the headlamp, turn signal and clearance lamp assemblies.

2.6.11.1 STRENGTH AND INSTALLATION

Exterior panels above and below the rub rail may be structural components. Panels shall be secured to structural members and shall have a smooth finish with no sharp edges.

2.6.11.2 REPAIR AND REPLACEMENT

Exterior panels below the rub rail shall be divided into sections that are repairable or replaceable by a mechanic. Baggage doors shall be two part with the joint at or below the rub rail.

2.6.11.3 RAIN GUTTERS

Gutters shall be provided to minimize water flowing from the roof onto the side windows and passenger doors.

2.6.11.4 LICENSE PLATES

A recessed mounting area shall be provided to mount a standard size U.S. license plate on the rear of the coach. This provision shall recess the license plate so that automatic coach washing equipment brushes will not catch on the license plate. Four fasteners shall be utilized to retain the license plate. The license plate shall be mounted to the left of the coach center. Provision shall be made to illuminate the surface of the rear license plate.

2.6.11.5 RUBRAILS

Rub rails shall have a minimum height dimension of 2.50 inches (64 mm) and shall be composed of flexible, resilient material to protect both sides of the coach body from damage caused by minor sideswipe accidents. The rub rail may be discontinued at doorways and the condenser intake grille. A damaged portion of the rub rail shall be replaceable without requiring removal or replacement of the entire rub rail.

2.6.11.6 MOLDINGS

Sash Moldings – Painted aluminum sash moldings shall be installed along the bottom length of the passenger windows.

Belt Moldings – Painted aluminum belt moldings shall be installed along the left and right hand belt lines of the coach.

2.6.11.7 PARCEL RACKS

A minimum 10 module parcel rack without dividers and compartment doors shall be furnished over all two-passenger seating positions except in the wheelchair door area. Retention cords shall run the length of the rack housing except where air conditioning components are housed. These compartments will have dividers and locking doors. The parcel rack edge, running along the full length of the aisle, shall incorporate a handhold for use by standees. Passenger headroom measured from the rack end to the top of the seat headrest, shall be a minimum 17 Inches (432 mm). Interior window post caps shall be ABS, thermo formed plastic, off-white in color to provide a clean finished appearance. The interior of the rack shall be vinyl covered aluminum to complement the interior. Parcel racks shall be supported by polycarbonate glass filled hangers spaced approximately 40 inches (1,016 mm) apart. Total capacity shall be a minimum 109 ft.³ (3 m³) to allow for ample storage space for carry-on items.

Passenger service modules mounted on the underside of the parcel rack shall include individually controlled and adjustable LED passenger reading lights, and an exit signal push button, red in color and individual air distribution outlets receiving air from the parcel rack HVAC system. These outlets shall be adjustable from fully closed to full open position. A minimum of twenty-six speakers shall also be provided in the cluster panels for the driver controlled public address system. Speakers shall broadcast, in a clear tone, announcements that are clearly perceived from all seat positions at approximately the same volume level. Passengers utilizing the securement systems shall be provided identical amenities as provided for all other passengers except that the parcel rack shall be deleted in the area of the wheelchair lift door. Separate and independent notification will be provided on the dashboard indicator panel for stop request notification from securement positions.

2.6.11.8 UNDERFLOOR BAGGAGE COMPARTMENTS

Full width under floor baggage compartments shall be provided between the front and rear axles. Each compartment shall be separated by an aluminum panel except the front and rear bulkheads shall be stainless steel. The compartment doors shall be a two part with the joint at or below the rub rail, fully sealed vertical lift pantograph type. Each door shall include an aluminum or composite frame with an aluminum outer panel. Doors shall be spring counter balanced for ease of operation.

The no. 1 right hand, curbside baggage door shall have a key lock. All other baggage doors shall be equipped with air locks. Each baggage door shall have a 4.0 x 10 inch (102 x 254 mm) flush mounted breakaway type latch handle located with a center point approximately 38 inches (965 mm) off the ground.

Each under floor compartment shall be pressurized and illuminated with two LED lamps when the doors are opened. The lamp fixtures shall be sealed to preclude the intrusion of dust and moisture into the fixture. The floor of the baggage compartments shall be corrugated aluminum.

2.7 INTERIOR

2.7.1 HEADROOM

Headroom above the aisle shall be no less than 78 inches (1,981 mm). If an engine brake is to be provided, then a “hump” ahead of the rear cross seat will decrease headroom to approximately 74 Inches (1,880 mm).

2.7.2 DRIVER'S BARRIER

A barrier or bulkhead between the driver and street side front passenger seat shall be provided. The barrier shall eliminate glare and reflections from interior lighting in the windshield directly in front of the barrier during night operation.

The driver's barrier shall be constructed of opaque .472 inch (12 mm) thick acrylic glazing. The barrier shall be a shatter-proof acrylic sheet that meets AS standards AS-4 or AS-5. The glazing shall be indelibly marked with the manufacturer's name and type of material.

The drivers barrier shall extend from below the level of the passenger or driver seat cushion, whichever is lower, to above the level of the seated driver's head and shall fit within 1.5 inches (38 mm) from the coach side window/wall to prevent passengers from reaching the driver or his/her personal effects. The barrier design shall accommodate a minimum of 9.05 inch (230 mm) fore and aft travel of the specified operator's seat.

On the aisle side, the barrier shall be cut out from the vertical stanchions to permit passengers to use the stanchion as a handhold. Any panels above and below the glazing shall be complementary in color to the sidewall material.

All controls, including the driver's dimmer switch for first two rows of reading lights will be relocated to the LH Console and the RH. Console deleted.

2.7.3 MODESTY PANELS

Sturdy modesty panels constructed of durable, unpainted, corrosion-resistant material complementing the interior trim shall be provided at the rear of the step well. The modesty panel and its mounting shall withstand normal kicking, pushing, and pulling loads of 200-pound (91 kg) passengers without permanent visible deformation.

2.7.4 REAR BULKHEAD

The rear bulkhead paneling shall be contoured to fit the ceiling, side walls and seat.

2.7.5 CONSTRUCTION

Interior panels may be integral with, or applied to, the basic coach structure. They shall be decorated in accordance with and compliment the interior specified. Use of moldings and small pieces of trim shall be minimized, and all parts shall be functional. Panels shall be of backed melamine, vinyl-clad aluminum or vinyl-clad steel. Front and rear closures shall be fiberglass with color molded in, and there shall be no painted surfaces. The lower sidewall shall be Melamine covered panels or approved equal, sectionalized for ease of repair.

2.7.6 FASTENING

Interior panels shall be attached so that there are no exposed edges or rough surfaces. Panels and fasteners shall not be easily removable by passengers. Interior trim fasteners, where required, shall be rivets, Phillips, or tamper-proof screws.

2.7.7 FLOOR

2.7.7.1 STRENGTH

The floor deck may not be integral with the basic structure but shall be mounted on the structure securely to prevent chafing or horizontal movement. Sheet metal screws shall not be used to retain the floor. All floor fasteners shall be secured and protected from corrosion for the service life of the coach. The floor deck shall be reinforced as needed to support passenger loads. At GVWR, the floor shall have an elastic deflection of no more than 0.375 inches (10 mm) from the normal plane. The floor shall withstand the application of 3.0 times gross load weight without permanent detrimental deformation.

2.7.7.2 EDGES

The floor shall be essentially a continuous flat plane, except at the step well. Where the floor meets the walls of the coach, the surface edges shall be blended with a circular section of radius not less than .5 inch and a molding or cover shall prevent debris accumulation between the floor and wall. Interior flooring shall be flat throughout except for an 8 ft. (2.4 m) long welded ramp in the aisle section at the front which is sloped 5.35 degrees and has a 3 inch (76 mm) riser under the #1 RH and #1 LH passenger seats except for a “hump” in front of the rear cross seat (when engine brakes are provided). The floor is attached to the underframe with adhesive and rivets. Wheel housings may not extend above floor line.

Access openings in the floor shall be sealed to prevent entry of fumes and water into the coach interior. Flooring material shall be flush with the floor and shall be edge-bound with stainless steel to prevent the edges from coming loose. Access openings may be symmetrical if the fasteners are arranged to ensure alignment of the flooring. Fasteners shall be flush with the floor when secured.

Rubber flooring adhesion procedure includes butt cut type edges that are securely bonded to the plywood floor with a waterproof adhesive. Flooring areas which are edge-bound with stainless steel shall include the sidewall on each side, the ramp in the center aisle, the base of rear cross seat, the step up under the number 1 seat, the driver’s modesty panel and the RH front passenger’s modesty panel.

2.7.7.3 FLOOR PROTECTION

The floor, as assembled, including the sealer, attachments, and covering, shall be waterproof, non-hygroscopic, resistant to heat, dry rot, mold growth, and impervious to insects. Plywood shall be no less than one half-inch thick 5 ply water resistant Douglas Fir per CSA 0121-M1978 or PS1-95 (APA) and shall be installed with all edges sealed. The floor in the aisle shall be no less than an overall thickness of one half-inch water resistant Douglas Fir per CSA 0121-M1978 or PS1-95 (APA).

2.7.8 STEPS AND STEPWELL

2.7.8.1 STEPS

There shall be no more than 4 steps and no step shall be located between the vestibule and passenger compartment. A ramp shall be provided in this area with the rate of rise not to exceed 0.75 inch (19 mm) per foot with a maximum vertical rise of 9.0 inches (229 mm).

All step treads shall be of uniform depth no less than 11 inches (279 mm) and a uniform height of no less than 9.5 inches (241 mm). Except for the first step, the plane of the step treads shall be parallel to the plane of the floor. Treads shall be covered with RCA flooring or approved equal that shall remain effective in all weather conditions. Color of the tread covering shall match the vestibule flooring. The edge of the vestibule floor shall have no overhang at the step riser. The edge of the vestibule floor and the edge of each of the step treads shall have a bright, contrasting white band, 2 inches (51 mm) wide, the width of the step. This band shall be uniform in width across the entire step and vestibule edge.

2.7.8.2 STEPWELL CONSTRUCTION

Step well shall be constructed entirely of stainless steel. The steps shall simultaneously support 300 pound (136 kg) loads evenly distributed over the center half of each step tread without permanent deformation and with elastic deflection of no more than 0.0625 inches (1.6 mm). Each step tread shall support a load of 500 pounds (227 kg) evenly distributed over the center half of the tread without permanent deformation. A minimum 1.0 inch (25.4 mm) thick Tuf-Coat or approved equal, self-adhesive insulation shall be provided behind the step well area for added control of interior temperature variances and to minimize road noise.

2.7.9 WHEEL HOUSING

2.7.9.1 CONSTRUCTION

Wheel housings shall be constructed of stainless steel. Wheel housing, as installed and trimmed, shall withstand impacts of a 2-inch (51 mm) steel ball with at least 200 foot-pounds (271 Nm) of energy without penetration.

2.7.9.2 CLEARANCE

Sufficient clearance and air circulation shall be provided around the tires, wheels, and brakes to preclude overheating. Interference between the tires and any portion of the coach shall not be possible in maneuvers up to the limit of tire adhesion with weights from wet to GVWR.

2.7.9.3 FENDER SKIRTS

Front and rear wheel wells shall be fully skirted with rubber to minimize spray and splash. The fender skirts shall be damage resistant and easily replaceable. They shall be flexible if they extend beyond the allowable body width. Wheels and tires shall be removable without disturbing the fender skirts.

2.7.12 SPLASH APRONS

Splash aprons, composed of 0.25 inch (6 mm) minimum composition or rubberized fabric or 0.188 inch (5 mm) nylon reinforced rubber, shall be installed behind all wheels and shall extend downward. Apron widths shall be no less than tire widths. Splash aprons shall be bolted to plates which are welded to the coach understructure. The plates shall support the splash apron across its entire width. Splash aprons and their attachments shall be inherently weaker than the structure to which they are attached. Splash aprons and their attachments shall not be included in the road clearance measurements. Other splash aprons shall be installed where necessary to protect coach equipment.

2.7.13 PASSENGER ENTRANCE DOOR

An electrically controlled, air-operated, power bi-fold door with keyed lock, will be located forward of the right front wheel. The non-symmetrical door will have a clear opening width of 30 inches (762 mm) up to a height of 44 inches (1117 mm). The clear door opening height will be 84.5 inches (2,146.3 mm).

The door shall be of composite material construction with a stainless steel kick panel for the lower portion. A molded fiberglass-reinforced panel shall be on the interior of the door. Upper and lower hinge assemblies shall be cast, with a stainless steel lower hinge pin pivoting inside a spherical bearing.

An upper – primary and lower – secondary window shall be installed in the entrance door. The primary double-glazed window in the upper half of the door shall be of AS-2 laminated heat-absorbing safety glass. The secondary window, located in the lower section of the door, shall be of 0.5-inch (12.7 mm) acrylic.

Door control shall be provided by a momentary switch, located to the left of the steering wheel. An exterior remote external control switch shall also be located in a side-wall pocket by the entrance door,. The door shall have positive automatic air lock with overrule. The air lock will be automatically actuated by a micro switch when the door is in the closed position.

An entrance door key lock shall be provided on each coach along with two spare keys.

2.7.14 SERVICE COMPARTMENTS AND ACCESS DOORS

2.7.14.1 INTERIOR

Access for maintenance and replacement of equipment shall be provided by panels and doors that appear to be an integral part of the interior. Removal of fixtures or equipment unrelated to the repair task to gain access shall be minimized. Access doors, if hinged, shall be hinged with props, as necessary, to hold the doors up and out of the mechanic's way with the exception of the destination sign box door which hinges down and is held by straps in the open position. Panel fasteners shall be standardized so that only two tools are required to service all special fasteners within the coach. These fasteners shall be captive in the panel except for the engine compartment and antenna access hatches. Access doors for the door actuator compartments shall be secured with hand screws or latches, and shall be sealed to prevent entry of mechanism lubricant into the coach interior. All hinges and props must be designed to preclude accidental closure when the panels are opened.

2.7.14.2 EXTERIOR

Vertically hinged doors shall be used for the engine compartment and for all auxiliary equipment compartments including doors for checking the quantity and adding to the engine coolant, engine lubricant, transmission fluid and the windshield washer reservoir. The upper engine radiator/C.A.C. compartment door shall be vertically hinged with a locking latch located behind the engine compartment doors. Access to these compartments shall be from outside the coach. Access openings shall be sized for easy performance of tasks within the compartment including tool operating space. Access doors shall be of rugged construction and shall be capable of withstanding severe abuse throughout the life of the coach. They shall close flush with the body surface. All service/maintenance doors, excluding baggage compartment doors, shall be hinged at the top or on the forward edge and shall be prevented from coming loose or opening during transit service or in coach washing operations. Doors with top hinges shall have props stored behind the door or on the door frame. All access doors (except vertically hinged access doors) shall be sufficiently retained in the open position by props or counterbalancing, as with baggage compartment doors. Springs and hinges shall be corrosion-resistant and shall last throughout the service life of the coach. Latch handles shall be sized to provide an adequate grip for opening. Large access doors shall hinge up and out of the way or fold flat against the coach body and shall be easily operable by one person. These doors, when opened, shall not restrict access for servicing other components or systems. Retention devices utilized to hold the engine compartment access doors in the open position shall be heavy duty and designed to last the service life of the coach.

2.8 OPERATING COMPONENTS

2.8.1 DOORS

2.8.1.1 CONTROL

Operation of, and power to, the passenger door shall be completely controlled by a switch located in close proximity to the driver to the left of the steering wheel. A control or valve in the driver's compartment shall shut off the power to, and/or dump the air from the front door mechanism to permit manual operation of the front door with the coach shut down. A toggle switch on the exterior of the coach shall permit opening of the front door. The switch shall be concealed behind an unmarked flip up cover. The door switch cover shall be spring loaded so as to be held in the closed position and be located rearward of the entrance door.

2.8.1.2 ACTUATORS

The nominal door opening and closing speed shall be in the 3-5 second range. The maximum door opening and closing speeds will be regulated using fixed, maintenance free orifices and airline sizes. If required, door speeds can be decreased with the addition of a flow-restricting device.

Actuators and the complete door mechanism shall be concealed from passengers, but shall be easily accessible for servicing.

2.8.1.3 MANUAL OPERATION

In the event of an emergency, it shall be possible to open the door manually from inside the coach after actuating an unlocking device. The nameplate for the entrance door air dump valve shall say: "Emergency Only – To manually open entrance door push knob." All references shall detail the "manual" operation of the door.

2.8.2 WINDSHIELD WIPERS AND WASHERS

2.8.2.1 WINDSHIELD WIPERS

The coach shall be equipped with three speed electric windshield wipers for each half of the windshield. Both wipers shall park along the center vertical edges of the windshield glass. Windshield wiper motors and mechanisms shall be easily accessible for repairs or service from outside the coach only and shall be removable as complete units. Mounting shall preclude cracking or damage to the windshield frame. Power supply to the wiper motors shall be provided through a dedicated circuit.

An intermittent operation feature for each wiper shall be provided with a variable time delay. After each pause, the wiper shall make one complete cycle across the windshield surface and return to the park position automatically.

2.8.2.2 WINDSHIELD WASHERS

The windshield washer system shall deposit washing fluid on the windshield and, when used with the wipers, shall evenly and completely wet the entire wiped area. Two separate washer pumps are to be provided.

The windshield washer system shall have a 3.9 gallon (15 liter) translucent reservoir, located for easy refilling. Reservoir pumps, lines and fittings shall be corrosion-resistant, and the reservoir itself shall be translucent for easy determination of fluid level. The windshield washer system shall be protected with an anti-freeze washer solution to -20°F (-29°C), regardless of season of delivery. The protected solution shall be tinted to provide easy visual indication that anti-freeze is present.

2.8.3 LIGHTING, CONTROLS, INSTRUMENTS

2.8.3.1 EXTERIOR LIGHTING

All exterior lighting systems shall be nominal 12V or 24V. The use of LED lamp assemblies shall be maximized to the extent practicable. All exterior lighting fixtures shall be sealed to prevent entry and accumulation of moisture or dust and each lamp shall be replaceable in less than 5 minutes by a mechanic. Lamps, lenses and fixtures shall be interchangeable to the extent practicable, and fixtures shall be corrosion resistant with sockets to be brass or stainless steel or plastic housings. Lamps at the rear of the coach, except the license plate lamp, shall be visible from behind when the engine service doors are opened. Sockets shall comply with SAE Standard J576C.

Visual and audible warnings shall inform following vehicles or pedestrians of reverse operation. Visual reverse operation warning shall conform to SAE Standard J593. Audible reverse operation warning shall conform to SAE Recommended Practice J994-Type C or D. Daytime running lights are to be provided.

Two light installation housings shall be located on each side of the coach front containing a single round halogen headlamp, a round LED daytime running light inboard of each headlight and an amber clearance/turn signal light located outboard of each headlight.

Amber colored turn signal lamps shall be provided on both the front and rear of the coach. All lighting shall meet Federal standards (including amended 49 CFR Part 571 effective December 26,

1984). The front right lamp shall be near the front wheel well, above the rub rail line and no higher than the wheel well. The front left side lamp shall be located at the same height and forward position as the right. The side signal lamps shall be of the armor protected type with unobstructed amber lens. The rear side signal lamps shall be generally located in the vicinity of the rear wheel well and shall have amber lenses.

LED roof marker lamps shall be provided at each end of the coach with amber front and red rear lens being provided. Intermediate LED marker lamps with amber lenses shall be provided on each side of the roof line at the center of coach.

Reflectors on the sides and rear of coach shall be provided. The front and center side reflectors shall be amber. The rear side and rear reflectors shall be red. The reflectors shall be permanently affixed to the coach; glue on or pressure sensitive mountings are not acceptable.

2.8.3.2 SERVICE AREA LIGHTING

Four lamps shall be provided in the engine compartment to generally illuminate the area for night emergency repairs or adjustments. The lamps shall be controlled by a switch located near the rear start controls in the engine compartment. These lamp assemblies shall be adequately sealed to prevent the intrusion of moisture or debris during coach operation or normal servicing operations such as steam cleaning. Necessary lights, also sealed, shall be located in other service compartments, and shall be provided with maintain contact switches on the light fixture or convenient to the light.

2.8.3.3 FLUSH MOUNTED CURB LIGHTS

Flush-mounted curb lights shall be installed on the right hand curbside of the coach. One light shall be installed in the no.1 baggage bay door, two shall be installed on the wheelchair lift door and one shall be mounted in the right hand rear engine service door.

The curb lights shall illuminate the curbside area the coach when the entrance door is opened, activated through the door control relay.

The lights shall extinguish automatically approximately 10 seconds after closing the entrance door. The curb light in the no. 1 baggage bay door shall extinguish when the baggage bay door is opened.

2.8.3.4 DRIVER'S LIGHTING

The driver's area shall have a lamp to provide general illumination of the driver's area and shall illuminate the half of the steering wheel nearest to the driver. This lamp shall be controlled by a switch that is conveniently located for access by the driver.

2.8.3.5 PASSENGER INTERIOR LIGHTING

Indirect interior illumination of the coach shall be provided by a minimum total of twenty-one (21) fluorescent tubes controlled by a switch on the driver's left hand control panel. Lighting intensity, measured at a vertical plane 24 inch (610 mm) above the seat cushion, shall be a minimum 15 foot-candles. LED lighting providing equivalent illumination may also be used.

All passenger seats except for center seat of rear cross seat shall have a flush mounted adjustable LED light. A minimum of 6 candlepower will be provided by each reading light cluster to insure adequate visibility with a button for passenger control. A switch to test the function of the reading lamps shall be provided and be labeled "Test." This switch shall be wired so as to override the function of all passengers reading lamp switches and illuminate all reading lamps when it is moved to the test position.

A minimum of six blue LED aisle lights shall be provided on the underside of the street side

passenger seats. These lamps shall be mounted in such a manner so as to prevent passengers from damaging the light's when they are illuminated.

Additional general lighting required to illuminate the interior for passenger exits and shall be interlocked to activate only when the passenger door is opened.

A step well lighting system shall be wired to illuminate when the front door is opened. The system shall provide no less than 2 foot-candles of illumination of the step treads with the doors open. These lights shall not glare in the passengers' eyes. Lamp fixtures shall be totally enclosed, splash-proof, designed to provide ease of cleaning as well as lamp and housing removal, and shall not be easily removable by passengers. Step well lamps shall be protected from damage caused by passengers kicking lenses or fixtures and shall not be a hazard to passengers.

Three lamps shall be provided; a dome at the top of the step well, one on each side of the step well with the bottom one to also provide illumination of the ground area located inside and above the entrance door.

2.8.3.6 DRIVER CONTROLS

All switches and controls necessary for the operation of the coach shall be conveniently located in the driver's area and shall provide for ease of operation. Switches and controls shall be essentially within the hand reach envelope described in SAE Recommendation Practice, J287, Driver Hand Control Reach. Controls shall be located so that boarding passengers may not easily tamper with control settings.

The door control, kneel control, windshield wiper/washer controls, and run switch shall be in the most convenient driver locations. They shall be identifiable by shape, touch, and markings. The passenger entrance door shall be operated by a single control, conveniently located by the driver's left hand on the control console. The location of this control shall be easily determined by position and touch.

All switches and controls shall be marked with easily read identifiers. All panel-mounted switches and controls shall be replaceable, and the wiring at these controls shall be serviceable from the vestibule or the driver's seat.

A momentary engine overrule switch shall be provided on the driver control console to permit the driver to move the coach off the road. All labeling of controls shall be permanent.

Left Hand Control Console

A control console shall be located immediately to the driver's left and directly under the driver's window. The console shall house the rotary master/run control switch, outside mirror touchpad controls, engine override switch, auxiliary heater switch, hazard light switch, entrance door switch, kneeling switch, engine brake switch, passenger chime switch, and hazard switch. All switches shall be multiplexed and LED back-lit wherever possible.

Transmission Shift Selector Control

The Allison Transmission Gen IV shift selector control shall be located on the left hand control console. Shifting is totally automatic using the touch pad on the shift selector control module. Fault codes are also displayed on the shift selector to identify potential problems detected by the transmission's built-in diagnostics.

Accelerator, Brake Pedals and Engine Controls

These controls shall be designed for ankle motion. Foot surfaces of the pedals shall be faced with wear-resistant, nonskid, replaceable material that is either slipped or glued for grip. Controls for engine operation shall be closely grouped within the driver's compartment.

2.8.3.7 INSTRUMENTATION

The speedometer, air pressure gauge(s), and certain indicator lights shall be located on the front dash panel immediately ahead of the steering wheel. The steering wheel spokes or rim shall not obstruct the driver's vision of the instruments when the steering wheel is in the straight-ahead position. Instrument panel gauges and switches shall be illuminated when the exterior marker lamps are turned on. Glare or reflection in the windshield, side window, or front door windows from the instruments, indicators, or other controls shall be minimized. Instruments and indicators shall be easily readable in direct sunlight.

Indicators/telltale immediately in front of the driver shall at a minimum include:

- ☐ *Headlamp High Beam*
- ☐ *Right Turn*
- ☐ *Left Turn*
- ☐ *Hazard Warning*
- ☐ *Parking Brake applied*
- ☐ *Service Brakes applied*

(may be common with parking brake indicator – Tell Tale labeled “Stop Lights.”)

The instrument panel shall include a speedometer indicating no less than 80 mph (130 kph) and calibrated in maximum increments of 5 mph (5 kph). The speedometer shall be a rotating point type, with a dial deflection of 240° to 120° and 45 mph (73 kph) near the top of the dial. The speedometer shall be sized and accurate in accordance with SAE Recommended Practice J678. A programmable electronic speedometer, or approved equal with odometer indicating vehicle speed in miles per hour, between 0 mph and 80 mph, shall be supplied. Speedometer speed and odometer mileage readings must be accurate within limits of plus nothing to minus 2% when coaches are equipped with new tires. The speedometer shall be equipped with an odometer with a capacity reading no less than 999,999 miles or kilometers.

The instrument panel shall also include air brake reservoir pressure gauge(s) with indicators for front and rear air tanks and voltmeter(s) to indicate the operating voltage across the coach batteries. The instrument panel and wiring shall be easily accessible for service from the driver's seat or top of the panel. Wiring shall have sufficient length and be routed to permit service without stretching or chafing the wires.

2.8.3.8 VISUAL AND AUDIBLE WARNING DISPLAY

Critical systems or components shall be monitored with a built-in diagnostic system. This diagnostic system shall have visual and audible indicators. The diagnostic indicator lamp panel shall be located in clear sight of the driver and shall incorporate LED telltale lights. The intensity of indicator lamps shall permit easy determination of on/off status in bright sunlight but shall not cause a distraction or visibility problem at night. An audible alarm shall sound when certain malfunctions are detected by the diagnostic system. The audible alarm shall be loud enough for the driver to be aware of its operation. Malfunction warnings and other indicators listed in **Figure 2** shall also be supplied on the coach. Space shall be provided in the telltale clusters for future additions of no less than 4 indicators as the capability of onboard diagnostic systems improves.

All diagnostic indicators shall be simultaneously tested by the activation of master switch.

FIGURE 2: Operator's Status Panel Indicators

VISIBLE INDICATOR	TYPE of ALARM
BACK-UP INDICATOR (A)	Back-Up Alarm
CHECK ENGINE INDICATOR	None
CHECK TRANSMISSION INDICATOR	None
ANTILOCK CONDITION LAMP	None
NOT GENERATING	None
HAZARD INDICATOR	Click
HEADLIGHT HIGH BEAM INDICATOR	None
HOT ENGINE INDICATOR (B)	Buzzer
KNEEL INDICATOR	Sonalert
LEFT TURN SIGNAL INDICATOR	Click
LOW AIR INDICATOR	Buzzer
LOW OIL PRESSURE INDICATOR (B)	Buzzer
LOW COOLANT INDICATOR (B)	None
PARKING BRAKE INDICATOR	None
RIGHT TURN SIGNAL INDICATOR	Click
STOP ENGINE INDICATOR	None
STOP REQUEST INDICATOR	Chime
WHEELCHAIR LIFT INDICATOR	Buzzer / Alarm
WHEELCHAIR STOP REQUEST INDICATOR	Chime
REAR RISE INDICATOR	Sonalert

NOTE: (A) This indicator may be located on the transmission control panel
 (B) These indicators may be combined with the CHECK ENGINE indicator provided by engine manufacturer.

2.9 INTERIOR TRIM

2.9.1 GENERAL REQUIREMENTS

The interior trim shall be generally pleasing, simple, modern, and free from superficial design motifs. It shall have no sharp depressions or inaccessible areas and shall be easy to clean and maintain. To the extent practicable, all interior surfaces more than 10 inches (254 mm) below the lower edge of the side windows or windshield shall be shaped so that objects placed on them fall to the floor when the coach is parked on a level surface. Handholds, lamps, air vents, armrests, and other interior fittings shall appear to be part of the coach interior design. There shall be no sharp, abrasive edges and surfaces and no unnecessary hazardous protuberances. All plastic and synthetic materials used inside the coach shall be fire-resistant.

Materials shall be selected on the basis of maintenance, durability, appearance, flammability, and tactile qualities. Trim and attachment details shall be kept simple and unobtrusive. Materials shall be strong enough to resist everyday abuse and vandalism; they shall be resistant to scratches and markings. Interior trim shall be secured to avoid resonant vibrations under normal operational conditions.

2.9.1.1 TRIM PANELS

Interior side trim panels and driver's barrier shall be textured stainless steel, anodized aluminum, plastic, melamine type material, vinyl-clad aluminum or fiberglass reinforced plastic. The material shall permit easy removal of paint, greasy fingerprints, and ink from felt tip pens. Panels shall be easily replaceable and tamper resistant. They shall be reinforced, as necessary, to resist vandalism and other rigors of commuter coach service. Interior mullion trim, molding, and trim strips shall be textured stainless steel, vinyl-clad aluminum, anodized aluminum or vacuum formed plastic.

The lower sidewall interior trim shall be fabric covered aluminum panels or approved equal, with fabric patterns running horizontally. Panels shall be sectionalized for ease of repair and joined by aluminum extrusion. Ceiling panels shall be vinyl-clad aluminum or approved equal.

2.9.1.2 HEADLINING

Headlining shall be supported to prevent buckling, drumming, or flexing and shall be secured without loose edges. Headlining materials shall be treated or insulated to prevent marks due to condensation where panels are in contact with metal frame members. Molding and trim strips, as required to make the edges tamper-proof, shall be stainless steel, aluminum, or plastic, colored to compliment the ceiling material. The access panel for the antenna base does not require to be hinged but shall be mounted with tamper-proof screws. Materials for the headlining shall typically be vinyl clad aluminum; the front interior cap shall be gray fiberglass or ABS.

2.9.1.3 FRONT END

The entire front end of the coach shall be sealed to prevent debris accumulation behind the dash and to prevent the driver from kicking or fouling wiring and other equipment with his feet. The front end shall be free of protrusions that are hazardous to passengers standing or walking in the front of the coach during rapid decelerations. Formed metal dash panels shall be painted and finished to exterior quality or may be ABS, fiberglass or vinyl-clad. All parts forward of the driver's barrier shall be finished with a dull matte surface. Colors shall match or coordinate with the balance of the coach interior.

2.9.1.4 REAR END

The rear bulkhead and rear interior surfaces shall be paneled with fiberglass reinforced plastic, trimmed with stainless steel, aluminum, vinyl-clad aluminum, or approved equal.

2.9.2 PASSENGER SEATS

2.9.2.1 ARRANGEMENTS

Passenger seats shall be arranged in a transverse, forward facing configuration. Ambulatory passenger capacity shall accommodate 57 seats. An option for a lavatory shall be provided, the lavatory should not displace more than 2 passenger seats. Both configurations will need an attached floor plan.

No more than twelve seated positions shall be lost on any bus configuration to accommodate two wheelchair passengers occupying the securement positions.

Each transverse, forward facing seat, except the rear seats, shall accommodate two adult passengers. Floor seat tracks shall be stainless steel and shall be welded to the coach frame and be nearly flush with the finished floor. The wall tracks shall be stainless steel or aluminum and shall be bolted or riveted to the sidewall.

2.9.2.2 STRUCTURE AND DESIGN

Seats shall be American Seating Model W2005SQ reclining seats or approved equal. Seat frames shall be constructed of high strength, fatigue resistant, welded steel with a durable powder coated, corrosion resistant colored finish which complements the coach interior. The seat frame shall be wall mounted with heavy gauge steel brackets and shall be attached to the coach floor with a heavy duty stainless steel T pedestal. The seat back shall recline five (5) inches (127 mm) maximum with an infinite number of stops. The reclining seat backs shall be provided with a dress up feature to facilitate coach cleaning. Seat width shall be nominal 40.50 inches (1,029 mm). Aisle shall not be less than 14 inches (356 mm) wide.

Seat cushions shall be supported by steel serpentine springs. Seat covering shall be Holdsworth, Lantal, or similar high quality wool fabric. Typical seat covering weight shall be 24 ounces (680 g)/square yard. Overall composition shall typically be 54% wool, 9% nylon and 37% cotton. Pile composition shall typically be 85% wool and 15% nylon. Backing composition shall typically be 100% cotton. Abrasion from a 28 ounce (794 g) loading shall not affect appearance with 60,000 rubs. The front face of the seat upright and side boxing of cushions shall be covered with Holdsworth, Lantal or other similar wool fabric to compliment the seat cushion. Backrest fabric shall be rugged carpet material. Seat armrest shall be dark gray in color.

Seat foam padding shall be polyurethane. Seat upholstery shall utilize zippers or Velcro which allows them be removed from the seat cushions for cleaning/replacement purposes.

2.9.3 DRIVER'S SEAT

2.9.3.1 DIMENSIONS

The driver's seat shall be a Recaro Ergo Metro or approved equal. The driver's seat shall be adjustable and shall have up to 9.05 inches (230 mm) of fore and aft adjustment. The seat back and cushion shall be adjustable. The seat shall have cushion depth adjustment, height adjustment (5.5 inches (140 mm) maximum), seat back adjustment, rear cushion adjustment and lumbar adjustment so that operators ranging in size from the 98th percentile male to the 5th percentile female may operate the coach. The suspension control shall be ergonomically designed so that the operator can adjust the seat without looking. The suspension height adjustment and lumbar switches shall be operated with a rocker switch, no rotating knobs are acceptable. The seat suspension shall be capable of dampening varying frequencies that are transmitted through the vehicle caused by varying road conditions. The seat shall be cushioned by a dual shock absorber design. One shock shall be adjustable to allow the operator to control the ride settings. A rubber bumper is required to prevent bottoming out of the seat.

A rubber boot shall be provided to cover the suspension to eliminate the potential for pinching. All air lines are to be 0.25 inch (6 mm) diameter and have a quick disconnect at the back of the seat.

The suspension shall have a minimum of 15 degrees of seat cushion tilt (rake adjustment). The rake adjustment shall be dual-sided and be accomplished without leaving the seat. The seat cushion shall adjust from 18-20 inches (457 – 508 mm) for varying size drivers. Double locking seat tracks with stainless steel bearings shall be provided. The seat tracks shall be located below the seat cushion and above the pneumatic suspension to enhance track durability and improve rearward travel. The seat shall come equipped with an air track release and a manual center release. All controls are to be on the right-hand side of the seat.

The seat shall be equipped with manual dual recliner gears. The seat back shall be adjustable with dual sided hand controls and include a 24.5 degree recline stop. Recline stop is to prevent the seat from interfering with the driver's barrier. The seat back shall be infinitely adjustable from 90 to 114.5 degrees. The seat back shall come with a full protective plastic back shell.

The back structure shall be constructed of steel and include a one piece stamped steel shell. The seat back shall be ergonomically designed and adjustable to provide exactly the right support to match the S-shaped curve of the operators back. The seat back foam shall be fully supported, no wires or spring support is to be provided. Solid steel bolster adjustment supports are required to provide strong lateral supports. Lateral supports will help hold the driver in place and reduce muscle fatigue while driving.

The seat cushion shall be adjustable in length and rake to accommodate operators of various heights. The seat cushion shall have a two inch extension for taller operators. To accommodate shorter operators, the front of the seat cushion shall rake down and retract.

A three cell air lumbar with right hand controls shall be provided for lower back support. Each air bag shall be individually controlled. Switch design and layout shall be positioned so that the operator can adjust without looking. A four way adjustable headrest with six position vertical adjustment shall be provided. The seat shall be provided with a two point 72 inch 72 inch (1.8 m) seat belt that is stored in plastic anti-cinch automatic retractors mounted on the left side of the seat. The seat belt buckle shall be located on the right hand side of the seat for easy access.

2.9.3.2 STRUCTURE AND DESIGN

The driver's seat cushion shall be made of polyurethane foam. The foam shall be constructed to provide lateral support to provide better operator stability in curves and turns. All exposed metal on the driver's seat, including the pedestal, shall be unpainted aluminum or stainless steel. Required seat belts shall be fastened to the seat so that the seat may be adjusted by the driver without resetting the seat belt. Seat belts shall be stored in automatic, inertia locking type retractors that do not tighten up during operation. The retractor shall be located to the left of the driver; the latch mechanism shall be located on the right. The seat belt shall be designed to allow the operator to "set" the tension on the belt. The belt shall be designed to not creep, making the belt tighter or loose. The seat belt shall be long enough to secure a 98% male driver.

Driver's seat covering weight shall be 24 ounces/square yard. Overall composition shall be 54% wool, 9% nylon and 37% cotton. Pile composition shall be 85% wool and 15% nylon. Back composition shall be 100% cotton. Seat cushions shall withstand 100,000 randomly positioned 3.50 inch (89 mm) drops of a squirming, 150 pound (68 kg), smooth surfaced, buttocks-shaped striker with only minimal wear on the seat covering.

2.9.4 FLOOR COVERING

2.9.4.1 VESTIBULE

The floor in the vestibule shall be covered with RCA flooring or approved equal. The floor covering shall remain effective in all weather conditions for a minimum of seven years. The floor covering as well as transitions of floor material to the main floor and to the step well area, shall be smooth and present no tripping hazards. The standee line shall be white and 2.0 inches (51 mm) wide and shall extend across the coach ramp aisle in line with the driver's barrier. The width of this line shall be uniform in width across its entire length. This line shall be white, same color as the edge of the steps. Color shall be consistent throughout the floor covering.

2.9.4.2 DRIVER'S COMPARTMENT

The floor in the driver's compartment shall be easily cleaned and shall be arranged to prevent debris accumulation. Floor covering material, dimensions and color shall match the vestibule area of the bus.

2.9.4.3 PASSENGER AREA

The floor covering in the passenger area shall be the same material, dimensions and color specified for the vestibule. Flooring shall be installed to minimize the quantity of seams. A one-piece aisle center strip shall extend from the rear cross seat running between the rows of transverse seats to the edge of the center ramp. The ramp will include a separate piece of flooring with a standee line imbedded next to the driver's modesty panel. The floor under the seats shall closely fit to the sidewall panels.

2.10 WINDOWS

2.10.1 WINDSHIELD

The windshield shall be designed and installed to minimize external glare as well as reflections from inside the coach. When the coach is operated at night with the passenger interior lighting on, essentially no reflections shall be visible in the windshield immediately forward of the driver's barrier. Reflections in the remainder of the windshield shall be minimized, and no reflection of any part of the coach interior behind the driver's barrier shall be visible in the windshield.

The windshield shall be easily replaceable by removing zip-locks from the windshield retaining moldings. Bonded windshields shall not be used. The glazing material shall have single density tint.

2.10.2 DRIVER'S SIDE WINDOW

The driver's side window section shall be divided vertically and the rearward section shall slide fore and aft in tracks or channels designed to last the service life of the coach. The driver's side window shall not be bonded in place and shall be easily replaceable. The glazing material shall be nominal 0.25 inch (6 mm) laminated, tempered glass with single density tint, the same as the windshield. The side window shall be rated AS-2.

2.10.3 PASSENGER SIDE WINDOWS

Eight large rectangular passenger side windows shall be provided on each side of the 45 foot coaches. The glazed panel outside dimension size will be 36.125 x 57.625 inch (918 x 1466.5 mm) x .188-inch (4.76-mm) thick. The windows will have a nominal 32 x 52-inch (813- x 1,321-mm) clear opening within the inner support frame structure. The side passenger windows will be single-glazed construction, hermetically sealed, AS-3 laminated float, 76% heat-absorbing laminated safety glass with light and solar transmittance of 24%. A painted aluminum sash molding will be installed along the bottom length of the passenger side windows.

All windows shall be top hinged with push out at the bottom, with the exception of the wheelchair

lift door and lavatory windows which do not open. All top-hinged windows shall be emergency escape type and include a single motion release bar running the entire width of the window at the lower edge to permit emergency egress. Emergency operating instructions printed on metal plates shall be provided at each seat position for operating the push-out window.

2.11 INSULATION

2.11.1 MATERIAL

2.11.1.1 PROPERTIES

The insulating materials may be of differing thicknesses and materials to achieve thermal insulating properties and low interior noise levels. These are described following:

- ☐ Roof: 2.0 inch (51 mm) thick, compressed at installation, resin coated, medium density non bagged fiberglass
- ☐ Sidewall: Rigid molded polyurethane foam of varying thickness.
- ☐ Driver's area: Minimum 0.50 inch (13 mm), high-density fiberglass under the floor in the driver's area.
- ☐ Step well area: 1-inch thick urethane foam insulation with stretched polyester film to minimize interior temperature variances during severe external climatic conditions and for sound deadening.
- ☐ Below windshield: 2.0 inch (51 mm) thick, high density fiberglass
- ☐ Complete rear lounge seat area shall be heavily insulated with fiberglass blankets and sound-dampened panels for both noise and heat protection as follows:
- ☐ Behind the rear cross-seat riser and rear cross seat back and cushion are a minimum total of 1.50 inch (38 mm) thick high-density fiberglass blankets.
- ☐ An additional 0.625 inch (16 mm) fiberglass blanket is added behind the rear cross seat back to further impede engine noise propagation to coach interior.
- ☐ Sound barrier with 0.250 inch (6 mm) urethane foam layered on either side of a 0.125 inch (3 mm) urethane elastomer loaded with barium sulfate.
- ☐ Cover panel behind rear cross-seat is 1.0 inch (25.4 mm) thick foamed polyurethane with stretched polyester film facing.
- ☐ Area behind and below this rear area is 2.0 inch (51 mm) medium density fiberglass with a 0.75 inch (19 mm) thick heavy density fiberglass batting cemented to the inner face of the fiberglass rear panel.

2.11.1.2 THERMAL INSULATION

The combination of inner and outer panels on the sides, roof, and ends of the coach, and insulating materials shall provide a thermal insulation sufficient to meet the interior temperature requirements. The coach body shall be thoroughly sealed so that drafts cannot be felt by the driver or passengers during normal operations with the passenger doors closed.

2.11.1.3 SOUND INSULATION

The combination of inner and outer panels and any material used between them shall provide sufficient sound insulation so that a sound source with a level of 80 dBA measured at the outside skin of the coach shall have a sound level of 60 dBA or less at any point inside the coach. These conditions shall prevail with all openings, including doors and windows, closed and with the engine and accessories switched off.

Bus generated noise level experienced by a passenger at any seat location in the coach shall not exceed 80 dBA and the driver shall not experience a noise level of more than 70 dBA under the following test conditions. The coach shall be empty except for test personnel, not to exceed 4 persons, and the test equipment. All openings shall be closed and all accessories shall be operating during the test. The coach shall accelerate at full throttle from a standstill to 35 mph on level commercial asphalt or concrete pavement in an area free of large reflecting surfaces within 50 feet of the coach path. During the test, the ambient noise level in the test area shall be at least 10 dB lower than the coach under test. Instrumentation and other general requirements shall conform to SAE Standard J366. If the noise contains an audible discrete frequency, a penalty of 5 dBA shall be added to the sound level measured.

2.11.1.4 REAR SEAT INSULATION

Special design consideration shall be given to insulation in the area above the engine compartment. Fiberglass or other suitable material shall be applied, together with adequate ventilation, to provide temperatures consistent with the remainder of the coach.

Seat cushions and seat backs shall be suitably insulated to prevent elevated temperature of the seat itself and no cushion or back shall be measurably hotter as compared to any other seat in the coach.

2.12 ANCILLARY FEATURES

2.12.1 DRIVER'S AREA

2.12.1.1 VISORS

Three roller type sunscreens shall be provided at the right and left hand windshield and at the driver's side window. Guide rods shall be located at each end of each screen to allow for infinite positioning. The sunscreens shall be shaped to minimize light leakage between the sunshades and windshield pillars. The sunscreens shall not obstruct air flow from the climate control system or obstruct the operation of other equipment such as the radio handset or the destination sign control. Sunscreen adjustments shall be made easily by hand.

2.12.1.2 STOP REQUEST SIGN

A passenger chime signal audible to the driver and to passengers anywhere inside the coach shall be provided. The chime shall be a push button convenient to seated passengers. A driver-controlled switch shall deactivate the chime system. A stop request sign shall be located in the front center of the coach and fastened to the coach ceiling to permit viewing by all passengers. The sign shall be illuminated when the passenger chime sounds and go off when the entrance door is opened. The passenger chime shall sound once when the sign's light comes on but will not sound again until after the system has been reset by the opening of the entrance door. A passenger chime circuit ON / OFF switch shall be provided in the drivers area.

2.12.1.3 DRIVERS STORAGE

A hook shall be provided for the drivers' coat in the driver's area.

2.12.2 MIRRORS

2.12.2.1 OUTSIDE MIRRORS

The coach shall be equipped with corrosion resistant, heated remote controlled outside rear view mirrors, on each side of the coach. The mirrors shall be mounted so as to permit the driver to view the highway along both sides of the coach, including the rear wheels. Mirrors shall be firmly attached to the coach to prevent vibration and loss of adjustment, but not so firmly attached that the coach or its structure is damaged when the mirror is struck in an accident. Outboard maximum overall mirror width dimension shall not exceed 122 inches while providing maximum visibility to the operator.

The roadside mirror shall be a corrosion-resistant, remote outside rear view mirror, adjustable from the driver's seat. Mirrors shall be split view flat and convex glass integrated in the same housing, overall measurement 10 inches by 13 inches (254 x 330 mm). Mirrors shall permit operator view of road surface as well as the rear wheels. Connections on mirror harness shall be Cannon Sure Seal all weather connectors or approved equal. Mirror head shall be attached to arm with ball/collet adjustment, for positive head location. Mirror arm shall be made to breakaway if struck in an accident or to eliminate damage in bus wash. Mirror arm shall be hollow aluminum for concealing wire.

The curbside mirror shall be a corrosion-resistant remote outside rear view mirror. Mirrors shall be integral flat and convex with overall measurements of 10 inches by 13 inches (254 x 330 mm) and permit driver view of roadway as well as coach rear wheels. Mirror arm shall be spring loaded to break away, should impact occur. Mirror arm shall be made to break away if struck in an accident or to eliminate damage in bus wash. Mirror arm shall be hollow aluminum for concealing wire. A mechanical stop shall be provided which prevents contact between the mirror arm and the entrance door. Mirror arm shall also have a five inch convex spot mounted on it to provide a clear view of the front of the coach.

Both mirrors in both housings shall be heated. A switch shall be provided. The switch shall control both mirrors and be provided with pigtail connectors to interface with the wiring harnesses of both remote mirrors. The switch shall be installed in a location that is within easy reach of the operator.

2.12.2.2 INSIDE MIRRORS

A mirror shall be provided for the operator to observe passengers throughout the coach without leaving his seat and without shoulder movement. With a full standee-load, including standees in the vestibule, the operator shall be able to observe passengers in the rear of the coach and anywhere in the aisle. Inside mirror shall be 6.0 inches x 10.50 inches mounted just below the destination sign box and above the driver's line of sight.

2.12.3 PASSENGER ASSISTS

2.12.3.1 GENERAL REQUIREMENTS

Passenger assists in the form of full grip, vertical stanchions or handholds shall be provided for the support and stability of standees and for ingress/egress. Passenger assists shall be convenient in location, shape, and size for both the 95th-percentile male and the 5th-percentile female standee. Starting from the entrance door and moving anywhere in the coach, a horizontal assist shall be provided at the aisle side of the luggage rack that runs the full length of the luggage rack so that a 5th-percentile female passenger may easily move the length of the aisle using one hand and then the other without losing support. Excluding those mounted on the luggage racks, the assists shall be between 1.25 and 1.50 inches (32 x 38 mm) in diameter or width with radii no less than 0.25 inches (6 mm). All passenger assists except for the luggage rack nosing shall permit full hand grip with no less than 1.50 inches of knuckle clearance around the assist.

2.12.3.2 FRONT DOORWAY

Front doors, or the entry area, shall be fitted with assists no less than 0.75 inches (19 mm) in width. Assists shall be as far outward as practicable, but shall be no further than 6 inches (152 mm) from the outside edge of lower step tread and shall be easily grasped by a 5th-percentile female boarding from street level. Door assists shall be functionally continuous with the horizontal front passenger assist and the vertical assist on the front modesty panel.

2.12.3.3 VESTIBULE

The aisle of the driver's barrier panel shall be fitted with vertical passenger assists that are functionally continuous with the overhead assists that extend to within 36 inches (91 cm) of the

floor. These assists shall have sufficient clearance from the barrier to prevent inadvertent wedging of a passenger's arm and shall be in complete compliance with ADA requirements.

A horizontal passenger assist shall be located in the front of the coach adjacent to the driver's area. The horizontal passenger assist maximum will be no more than 35 inches (89 cm).

The assists at the front of the coach shall be arranged to permit a 5th percentile female passenger to easily reach from the front door assist to the horizontal assist, then to the vertical assist.

2.12.4 PASSENGER INFORMATION SYSTEMS

2.12.4.1 DESTINATION SIGNS

The displays shall consist of Full Colored LED's. All Full Color LED's used for the destination signs shall be rated for a 50,000-hours. The entire display area of all signs shall be clearly visible and readable both in direct sunlight and at night with a viewing angle of at least 140 degrees. The characters formed by the LED's shall meet the requirements of the Americans with Disabilities ACT (ADA) of 1990 Reference 49 CFR Section 38.39. The software will give the end user the capability to select from a vast selection of custom fonts, pre-programmed fonts and the Microsoft TrueType Directory fonts for display on the LED Signs for the most customization possible to the desire of the end user's riding public.

All destination signs shall be supplied with an ambient light detection sensor that controls the LED intensity according to the exterior light conditions. This adjustment shall be continuously linear, not stepped, from 10-100% output.

2.12.4.1.2 Front Destination Sign:

160 Columns by 17 rows, Front Sign shall consist of a matrix of 160 Columns by 17 Rows and should have no less than 2720 LED's, with a maximum display height of not less than 8.75" and at least 64.75" wide. The outer housing should fit within an envelope of no more than 66 x 10.75 x 2". The sign should be readable from at least 250' with a viewing angle of not less than 140°.

2.12.4.1.3 Curb Side Destination Sign:

Not required

2.12.4.1.4 System Control and Programming

All system control and drive PC boards shall be enclosed in either the sign housings or in the System Control Console. The various destination signs can be programmed to display either one common message or each sign can display an independent message. The System Control Console shall incorporate a flexible keypad with no moving parts.

The system control console shall be used to view display messages and contain the destination sign database. The driver console shall utilize a tactile membrane keypad. The system control console shall be equipped with an LCD display.

Sign system shall be capable of sequentially displaying a minimum of one pre-selected destination message and one public relations message. The operator shall be able to quickly change between pre-selected destination messages without re-entering a message code. Public relations messages shall be capable of being displayed alternately with the regular destination.

The Master Coach Run Switch shall control power to the sign system. The signs shall operate in all positions of this switch except off. The signs shall be internally protected against voltage transients and RFI interference to ensure proper operation in a bus environment.

The system control console shall be used to view and update display messages. The system control console shall utilize a multiple function keyboard with tactile feel, designed especially for the harsh transit environment. The system control console shall contain an LCD display. The system control console shall continuously display the complete message associated with the selected destination

code. Diagnostics and/or maintenance and test features that indicate any sign defects shall be included.

The system shall be capable of integrating to on-board computer devices for message listing program via anyone of several possible protocols, including but not limited to J1708, RS485, RS232, RS422 or IBIS. The sign system shall be capable of wireless upload capability for receiving the messaging database. The sign system shall be reprogrammable through the system control console by either a standard USB Thumb Drive or via a 9-pin "D" type keyfob memory device.

2.12.4.1.5 Emergency Message Display

A pre-programmed emergency message may be activated using a customer-selected switch located in the driver area. This message shall be displayed on signs facing outside the vehicle, while signs inside the vehicle, including the driver console, remain unchanged. Removing the emergency signal or entering a new destination shall cancel this message.

2.12.4.1.6 System Level Diagnostics

The system control console shall provide, at a minimum, visual indication of system level errors with the destination signs. This shall include detection of communication failure, power supply failure on a particular sign and display board failure on a particular sign.

2.12.4.1.7 Programming

A PC-based software package will be furnished for creating the destination sign messages. The character shape and size shall be programmable and the software should allow the creation of personalized fonts. These may vary in pixel height and comprise single, double and triple stroke typeface. The program will allow an unlimited amount of special characters, logos or fonts to be displayed.

A programming software package shall be furnished to generate message lists for the destination sign system. It shall be a Windows compatible software package, using drop down menus and help screens. The software shall not require a standalone computer or a computer of a specific make or model. The software will allow, at a minimum, individual font selection, shape and choice of fonts, font creation and import, destination display management (right or left route numbers, pre-defined text fields, alternating screens and scrolling), as well as full system previews are available for all signs. The software shall also offer utilization of the TrueType font directory for programming. Graphic capabilities are available to allow personal logo creation as well as selection from pre-programmed pictograms.

The programming software shall use techniques that require minimal operator training and are intended for use by operators that are not trained in complex computer operations.

2.12.4.1.8 Warranty & Spares

All full color signs and components of the sign system shall be covered by a 5-year warranty. Free spare parts, (whole components), shall be provided to the end user free of charge for storage and use at the end users selected facility. The number of spares to be provided will be commensurate with the number of original systems purchased and shall be agreed to by all parties at the execution of a contract.

2.12.6 LIFT

A Braun model number NUVL855RM24 dedicated access extended travel lift, or approved equal with two forward facing mobility device securement areas to accommodate a maximum 30.0 inches (762 mm) wide mobility device shall be provided. The lift assembly shall comply with all current ADA and FMVSS 403 and 404 requirements. The lift shall be installed below the floor line at the number 2 right-hand luggage bay on the curbside of the coach.

The lift shall be controlled by a dash mounted toggle switch and a rear lift area toggle switch, and operated by up/down switches on a pendant mounted to the lift support bracket inside the number 2 baggage bay. The lift Restraint Belt must be buckled before the lift can be raised or lowered. The safety interlock circuit can be energized to operate the lift only if: the transmission is in neutral, the park brake is applied, engine Fast Idle is ON, the dash-mounted Master Switch is ON, the lift Secondary Switch is ON and the lift restraint belt is buckled.

The wheelchair loading system shall provide safe, comfortable and rapid ingress and egress for applicable passengers from the street level or a curb. When not in use, the lift shall stow in the luggage bay. The lift mechanism shall include a Threshold Warning device to provide "passenger on platform" information and prevent stowing the lift platform when a passenger is sensed. The outer barrier shall be automatically controlled and shall be such that it cannot be overridden by the loading system operator. A dash mounted indicator light shall be provided and shall be illuminated when the loading system is activated. The interlock shall apply, the bus shall not move and the engine throttle shall be disabled whenever the wheelchair loading system is activated. If the lift door is open or ajar, the interlock shall remain engaged. Brackets, clamps, screw heads and other fasteners used on the passenger assists shall be anodized aluminum or stainless steel and shall be flush with the surface and free of rough edges.

The lift control mounted on the lift structure shall have push button Up / Down switches. The toggle electrical supply switch shall be located in close proximity to the controller. This toggle switch must be turned "ON" prior to the lift operation. All lift control switches shall be permanently labeled. Decals shall not be permitted. The stow guard switch shall be red in color and the Stow / Deploy switch shall be black in color. These switches shall be incorporated in a hand held pendant

The Braun NUVL855RM24 or approved equal lift shall include the following specifications:

Lifting capacity (main platform)	700 pounds (317 kg)
Vertical travel.....	63" (1,600 mm) maximum
Platform width (chair capacity).....	30" (762 mm) minimum
Platform depth (chair capacity)	48" (1,219.2 mm) minimum
Platform side height.....	1.50" (38 mm)
height - two (2)	30" (762 mm) minimum
dimension (depth)	72.25" (1835 mm) total
Height.....	43.5" x 8.375" (1105 x 213 mm)
.....	3 pushbutton
source.....	Electro- hydraulic
.....	24 volts DC
.....	Back up system
.....	Emergency hand pump
.....	Construction
.....	Steel and aluminum
cycle time	12 seconds at 70 degrees (21° C) – no load
time.....	12 seconds at 70 degrees (21° C) – no load
.....	Hydraulic system fluid capacity
.....	1.0 quart (1 liter)
.....	Hydraulic system operating pressure
.....	2500 psi (17,238 kPa) minimum

Department of Transportation Regulations 49 CFR 38.

The lift shall include a hinged platform to bridge the coach floor to the lift platform. Bridge shall be hinged and locked in an upward position to act as a barrier when the lift is in use. Bridge shall also allow the lift passenger to ingress/egress easily from the platform. Lift travel speeds and lift operation shall be adjusted to the lift manufacturer's specifications upon completion of the lift installation into each coach and before coach delivery. The individual handrails shall incorporate a visual aid to insure that they are folded in the proper order.

The lift shall include an emergency system in case of driver operation malfunction. Should an emergency situation occur, the lift operator shall release the pushbutton switch on the controller to immediately stop the lift operation. Loss of electrical power shall also stop the lift operation regardless of switch position. An emergency auxiliary hydraulic hand pump shall be used to complete the lift cycle. The emergency hand pump handles and pump shall be located in an enclosed box at the rear wall of the number 1 right-hand baggage bay to prevent the accumulation of dust and dirt. The pump shall be easily accessible through baggage bay door. The handle shall be stored adjacent to the pump to allow immediate usage.

2.12.5.1 LIFT DOOR

The lift door shall be a single leaf design that operates in a sliding track mounted both above and below the door leaf. The door shall open by sliding to the rear of the coach and shall remain on a horizontal plane throughout the opening and closing process. No pin hinged doors shall be provided. The transmission must be in neutral and the parking brake activated for the lift to operate. The accelerator shall be automatically disabled and the fast idle system activated when either the lift master switch is turned "ON" or the lift door is open in order to provide maximum safety and security. These features shall be wired to the lift master switch to allow activation only when the transmission is in neutral. The coach directional (Hazard) lights will also flash on/off. After the lift operation is completed, the lift shall be properly stored and secured, with the access door closed and the lift master switch at the dash in the "OFF" position in order to move the coach.

The lift door shall have a window in line with the other passenger windows and shall not detract from the appearance of the coach. The door latch mechanism shall be located in the lower section of the door so that operators in the 5th percentile female range can operate the lift door.

The lift storage door shall not block the visual observation of the lift assembly while utilizing the manual override mode of the lift. A lift door design consisting of a horizontally hinged lift platform egress door mounted within a vertical motion pantograph baggage door is a preferred design.

2.12.5.2 LIFT INSTALLATION

The installation of the lift to the coach structure as well as the installation of the lift door into the sidewall of the coach shall not affect the structural integrity of the coach.

The parcel rack module above the wheelchair lift platform area shall be permanently removed to provide additional headroom. The modified rack shall be professionally finished at all ends.

A Threshold Warning module with a red warning light and acoustic sensor shall be mounted in the ceiling structure above the wheelchair lift entrance doorway.

The heating and air ducts shall be rerouted around the lift area to ensure proper interior air conditioning/heating airflow and distribution.

A passenger chime tape switch shall be mounted on the sidewall at the two (2) wheelchair securement positions.

Each coach shall have adequate information decals installed which details the proper lift operation in both the normal and manual modes of operation.

2.12.5.3 LIGHTING REQUIREMENTS

Lighting for the lift areas shall be designed to exceed ADA and FMVSS 404 standards. Lighting shall be provided to effectively illuminate the lift area. Light shall be wired through the lift master toggle switch on the driver's dash and shall automatically illuminate when this switch is in the "ON" position. The lighting design shall minimize the effect of glare on passengers entering the bus through the wheelchair lift door. During lift operation, the street surface shall be illuminated to a minimum of six candlepower a distance of 3 feet (.91 cm) beyond the external dimensions of the lift platform once deployed and lowered. Additional lighting shall be provided to insure illumination of the instruction placard and the manual override pump when it is in use.

2.12.5.4 SECUREMENT SYSTEM

The vehicle interior shall permit the securement of two (2) forward facing wheelchair passengers in which the primary position shall be on the street side of coach directly across from lift. Securement areas shall be a minimum 30 x 48 inches (762 x 1,219 mm) as required by ADA. Securement devices shall be QRT Deluxe Slide and Click or approved equivalent.

A separate three-point belt securement shall be provided to effectively secure wheelchair passengers.

To further secure the passenger during the lift operation, a retractable seat belt strap shall be provided at the ingress / egress area of the lift platform. This seat belt strap must be buckled to disengage the lift electrical interlocks to allow lift operation. A minimum 10.5 inches (267mm) high barrier shall also be provided at the rear of lift area for additional passenger protection.

2.6 ROOF VENTILATORS/ESCAPE HATCHES

Two roof ventilators shall be provided and designed to perform as escape hatches. One ventilator/escape hatch shall be located in the roof at the front of the coach, another in the roof at the rear of the coach.

3.0 CHASSIS

3.1 PROPULSION SYSTEM

3.1.1 VEHICLE PERFORMANCE

3.1.1.1 POWER REQUIREMENTS

The propulsion system and drive train shall provide power to enable the coach to meet the defined acceleration, top speed, and gradability requirements. Sufficient excess power shall be available to operate all accessories without jeopardizing coach performance or safety parameters.

3.1.1.2 TOP SPEED

The coach shall be governed at 72 mph (116 kph) road speed, for emergency and passing maneuvers, on a straight, level road at SLW.

3.1.1.3 GRADABILITY

Gradability requirements shall be met on grades with a surface friction coefficient of 0.3 and above at SLW with all accessories operating. The standard configuration power plant shall enable the coach to maintain a speed of 44 mph (71 kph) on a 2-percent grade and 7 mph (11 kph) on a 16-percent grade.

3.1.1.4 ACCELERATION

Vehicle shall accelerate from 0 to 20 mph (0 – 32 kph) in nine seconds, with the coach at S.L.W.

3.1.1.5 OPERATING RANGE

The operating range of the coach run on the design operating profile shall be at least 400 miles (644 km) on a single fill-up of compressed natural gas fuel.

3.1.1.6 OPERATING PERFORMANCE

Speed, gradability, and acceleration performance requirements shall be met at, or corrected to, 85 degrees F (29° C), 29.00 inches (74 cm) Hg, dry air. Performance degradation at conditions other than the test standard shall not exceed 1 % for each 3 degrees F/C and 4 % for 1,000 feet (305 m) of altitude above the standard.

3.1.2 POWERPLANT MOUNTING AND ACCESSORIES

3.1.2.1 MOUNTING

The power plant shall be mounted in a compartment in the rear of the coach. All power plant mountings shall be mechanically isolated to minimize transfer of vibration to the body structure. Clamps required for securing or supporting lines shall be rubber or plastic coated and properly sized for the line being clamped.

3.1.2.2 SERVICE

The power plant 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 power plant. The power plant shall be mounted on a cradle which can be slid into and out of the coach. Two mechanics shall be able to remove, replace and prepare the engine and transmission assembly for service in less than 25 total combined man-hours.

The muffler, exhaust system, air cleaner, air compressor, starter, turbocharger, alternator, radiator, including charge air circuit, all accessories, and any other components requiring service or replacement shall be installed in or above the engine compartment.

The turbocharger, alternator, air compressor, and starter shall be replaceable without dismounting or removing other coach parts and without gaining access through the coach interior.

The cooling system filler caps shall be removable from the filler neck and be held closed with spring pressure or positive locks. The transmission filler tube shall employ a combination dipstick and cap and shall be the minimum length permissible to make fluid checking easier. All fluid fill locations shall be properly labeled to help ensure correct fluid is added and all shall be easily accessible with standard funnels, pour spouts, and automatic dispensing equipment. All lubricant sumps shall be fitted with drain plugs of a standard size except for the transmission which uses a recessed square socket type plug. The power plant shall be equipped with digital, computerized diagnostic capability using laptop or PC-based available diagnostic software for displaying engine and transmission data.

The engine and transmission shall be equipped with sufficient heavy-duty fluid filters for efficient operation and to protect the engine and transmission between scheduled filter changes. To the extent practicable, the filters shall be of the spin-on, disposable type. All filters shall be easily accessible and the filter bases shall be plumbed in a manner so as to assure correct reinstallation.

CNG fuel lines within the engine compartment shall be rigidly supported and shall be composed of stainless steel tubing where practicable. Flexible fluid lines shall be kept at a minimum and shall be as short as required. CNG fuel lines shall be routed or shielded so that failure of a line shall not allow CNG fuel to be released, spray, or drain onto any component operable above the auto-ignition temperature of natural gas.

Flexible lines shall be individually supported and shall not touch one another or any part of the

coach.

3.1.2.3 AIR CLEANER

The air cleaner shall be a dry type, horizontally mounted. Airflow through the filter element shall be from the outside in. To service the filter shall take less than 5 minutes, disconnecting an engine air intake duct, air compressor intake duct, or filter housing shall not be necessary. The access cover of the air filter assembly shall be retained to the filter housing with a single wing nut. A Filter Minder air filter restriction indicator, part number 135501-00920, manufactured by Engineered Products Co. or approved equal, shall be provided and calibrated to 20 inches (51 cm) of water/vacuum.

3.1.2.4 ACCESSORIES

Powertrain accessories shall be unit mounted for quick removal and repair. These accessories shall be driven at speeds sufficient to assure adequate system performance during extended periods of operation. The power steering pump and air compressor shall be flange mounted and gear driven from engine. The power steering reservoir shall be remotely mounted to the bus chassis and shall not be mounted on the drivetrain. Alternators shall be Leece Neville or approved equal. Only the 24 volt alternators, A/C compressor and cooling system fans may employ belt drives. Tension on the belt driven A/C compressor shall be maintained by an automatic tensioner. The alternator and the fan drive shall be automatically tensioned as well.

3.1.2.5 HYDRAULIC DRIVE

Hydraulic system service tasks shall be minimized and scheduled not more frequently than scheduled tasks for other major coach systems. All elements of the hydraulic system shall be easily accessible for service or unit replacement. All lines shall be compatible with the hydraulic fluid and maximum pressures of the system. Flexible lines shall be minimized in quantity and length. Lines of the same size and with the same fittings as those on other piping systems of the coach, but not interchangeable, shall be tagged or marked for use on the hydraulic system only. Hydraulic lines shall be individually and rigidly supported to prevent chafing damage, fatigue failures, and tension strain on the lines and fitting. Hydraulically driven radiator and charge air cooler fan drive systems are not acceptable.

The hydraulic system shall be configured and/or shielded so that failure of any flexible line shall not allow hydraulic fluid to spray or drain onto any component operable above fluid auto-ignition temperature.

3.1.3 POWERPLANT

3.1.3.1 CUMMINS ISL G ENGINE

The Cummins ISL G 8.9 Liter (543 cu. In.) engine, or approved equal will be four-cycle, six-cylinder, turbo-charged with an operating range of 1200 rpm to 2200 rpm. The engine power rating will be 320 HP (239 kW) with a Maximum Torque Curve of 1000 lb.-ft (1356 Nm) at 1,300 rpm. The engine will have a cylinder bore of 4.49 in (114 mm), a piston stroke of 5.69 in (1457 mm), and a 12:1 compression ratio. The air induction system will be air-to-air charge cooled for maximum efficiency and power. The engine meets the latest EPA emissions requirements.

The engine shall have Idle Control that manages idling time and improves fuel economy. The engine shall also have a starter Lockout system that provides additional engine/starter protection by preventing the starter to engage when the engine is running.

The engine will have built-in diagnostics to ensure that all components are operating properly. If a system component fails, the operator will be alerted to the condition via a dashboard mounted "Check Engine" and/or "Stop Engine" light. The Engine Protection system shall regulate engine rpm to reduce the risk of progressive damage when a severe fault code is logged.

The electronic hardware and software on the engine shall use a common architecture with all the latest diagnostics, maintenance monitoring and engine protection features with customer selectable

shutdown.

The entire system shall be capable of communicating with the electronically controlled transmission. The primary objective of the system is to provide the capability for the electronic engine controls to reduce power by command of the transmission in the event of transmission malfunction (low oil level/pressure; coolant temperature; etc.).

The engine electronic control module shall be constructed as a weatherproof enclosure on the engine that is protected from the environment. Engine mounted components (excluding wiring connectors) may be exposed to steam cleaning and pressure washing.

The engine shall be outfitted with the Probalyzer, or approved equal, brass Mini-gauge plug to permit oil analysis sampling. The plug shall withstand 2200 psi (105 kPa) and contain triple seals to eliminate potential leakage. Each plug shall be tested individually for control against leakage. Location shall be accessible through the rear engine compartment access door, and be installed on a main or bypass filter oil line ahead of the filter.

The engine shall be equipped with fast idle (950 RPM) and be driver controlled. The devices shall activate only with the transmission is in neutral and parking brake applied. This device may be used to help meet the requirements of coach air conditioning cool down. The engine starter shall be protected by an interlock that prevents its engagement when the engine is running. The starter shall be prevented from engaging when the transmission selector is in any position other than neutral.

3.1.3.2 COOLING SYSTEM

The cooling system shall be sized to maintain fluids at safe, continuous operating temperatures during the most severe operations possible with the coach loaded to GVWR and with ambient temperatures up to 110 degrees F (43 C). Sufficient reserve capacity shall be provided by the cooling system to provide efficient cooling for the coolant and engine charge air in a degraded condition. Radiator(s) shall be Modine, or approved equal. Radiator(s), complete with charge air cooling circuit shall be provided, mounted above the engine compartment. The charge air cooler and the radiator shall be mounted at least 60 inches (1.50 m) above the road surface. The physical size and heat rejection capacity of the radiator along with the charge air cooling capacity shall be tested and approved by the engine manufacturer for this application. The radiator system shall be easily serviced through the rear doors. The radiator and charge air cooler shall not be stacked in front of one another. Door shall include hinges which hold the doors in the open position.

The charge air cooler (CAC) / radiator assembly shall be primarily of durable corrosion-resistant aluminum construction. Heat exchanger fin spacing shall not exceed 14 fins per inch. Necessary hoses shall be premium, silicone rubber type that are impervious to all coach fluids. All coolant hoses shall be secured with constant tension hose clamps. Fan speed shall be regulated to minimize fan noise. No heat producing components or climate control system components shall be mounted between the engine cooling air intake aperture and the heat exchangers. All cooling system fittings are to be cast iron, brass or copper.

A single fan, belt driven from the engine shall pull outside air through an exterior panel and across the radiator / charge air cooler at a minimum rate approved by the engine manufacturer for maximum cooling efficiency. Belt tension shall be maintained by an automatic belt tensioner to minimize belt slippage and ensure longer belt life. A Linnig fan clutch or approved equal shall control fan operation.

Radiator surge tank shall be made of heavy-duty steel. A sight glass to determine satisfactory engine coolant level shall be provided and shall be accessible by opening the radiator access doors. A spring-loaded radiator cap shall also be provided to safely release pressure or vacuum in the cooling system. An engine alarm system will be included in the engine electronic control. Cooling fan logic shall be controlled electronically through the engine control system. An automatic coolant

recovery system will also be provided.

Engine thermostats shall be easily accessible for replacement. The engine cooling system shall be equipped with a properly sized or approved equal cooling system filter with a spin-on, disposable element. The engine coolant shall be extended life Power Cool Plus using Organic Acid Technology (OAT) or approved equal. Shutoff valves shall be provided on the coolant filter base which allows filter replacement without coolant loss. Quarter turn valves shall also be provided and installed in the entire cooling system which permits complete shutoff of both lines for the heating and defroster units.

All low points in the water-based cooling system shall be equipped with drain cocks. Air vent lines shall be fitted at high points in the cooling system. Oil and water temperature gauges will be provided in the engine compartment.

3.1.3.3 TRANSMISSION

The transmission shall be an Allison B500 six speed transmission, equipped with Allison Transmission Electronic Controls (Gen. IV) or approved equal. Maximum input horsepower shall be 550 horsepower. Maximum input torque capability shall be 1650 pound feet of torque. The transmission shall have a one stage, three element, polyphase torque converter and a lock up clutch with a torsional damper. The transmission shall be fully automatic with six forward gear ratios. Shift calibration shall be set so that shifts shall be smooth under all operating conditions. The transmission shall only have one maintenance dipstick, and no other secondary service lane dipsticks. The transmission will also include a Probalyzer, or approved equal, brass Mini-gauge plug to permit transmission fluid analysis sampling.

If an Allison B500 Gen IV transmission is equipped it shall be filled with synthetic transmission fluids that meet Allison TES-295 specification and have a TES-295 approval number and the Allison approval logo. Mobil Delvac Synthetic Automatic Transmission Fluid can be used or Allison TES-295 approved equals such as Castrol Transynd. Allison Transmission extended warranty plans require synthetic transmission fluids meeting the TES-295 specification with an approval number and the Allison approval logo to be used.

The gearing shall be of the constant mesh, helical, planetary type with the following ratios:

<i>RANGE</i>	<i>RATIO</i>
First	3.51:1
Second	1.91:1
Third	1.43:1
Fourth	1.00:1
Fifth	0.74:1
Sixth	0.64:1
Reverse	4.80:1

A function of the electronic controls shall be provided to prevent premature engagement and operation of the automatic transmission reverse gear.

The transmission shall be governed by electronic controls, which contain a programmable read-only memory (PROM) that will provide basic transmission control functions. All cabling and electronic devices utilized by the electronic transmission control system shall be adequately shielded against interference.

The transmission electronic module shall be capable of communicating with the engine electronic module to maintain maximum efficiency. The control module shall be equipped with a self-diagnostic system. A failure shall be retained by the control module for evaluation by garage personnel using a Allison DOC software and J1939 / RS232 translation device or approved equal.

Modified diagnostics shall provide timely information on transmission oil and filter change

requirements and transmission rebuild timeframes.

The electronic controls shall be completely sealed from the environment. The transmission electronic control unit shall be located in a weatherproof box that is protected from environment or potential damage from under floor baggage.

3.1.3.4 ELECTRIC STARTER

A Mitsubishi 105P70 24 volt starter motor, or approved equal shall be provided as a basic installation. Planetary gear reduction drive technology produces greater starting torque, rotating the armature at a higher rpm. The starter will have “Soft Start” positive pinion gear meshing technology, which will engage the pinion gear into the ring-gear before the starter begins to turn. The starting system shall be inoperable whenever the master control is in the OFF position, and whenever the emergency shut-off switch is activated or the engine is running. A starter interlock shall be provided that shall prevent the starter motor from engaging the flywheel after the engine is started.

3.1.3.5 ALTERNATOR

A 24-volt, 270 amp, brushless, oil-cooled, self-rectifying alternator will be mounted on the engine at the curbside of the coach. The alternator will be belt-driven off an engine-mounted accessory drive pulley. An automatic tensioner will maintain the required belt tension adjustment.

Alternator output at various engine speeds will be: idle (700 rpm) - 210 amperes, fast idle (950 rpm) - 240 amperes, full speed (2,100 rpm) - 270 amperes.

3.1.3.6 BOOST PUMP

A MP Boost Pump, or approved equal shall be provided as the basic coolant boost pump for coach heating requirements. The pump motor shall be a magnetic drive coupled pump operating at 24 volts DC. Coolant flow rate shall be a minimum of eight (8) gallons (30 liters) per minute. The pump operates on demand according to the driver’s heat control valve.

3.1.4 EMISSIONS

3.1.4.1 MOTOR VEHICLE POLLUTION REQUIREMENTS

The manufacturer shall provide in writing that:

The engine being provided complies with the Clean Air Act when operated on diesel fuel.

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 all auxiliary power equipment.

3.1.4.2 EXHAUST SYSTEM

A stainless steel exhaust system shall be provided. The system shall be located at the left hand (roadside) rear corner of the coach under structure and shall be accessed through the left rear service door. Exhaust piping shall not restrict underbody clearances. The muffler tailpipe shall direct exhaust gasses downward, toward the road surface and not up through a stack in the body of the coach.

The exhaust system shall include a DPF (Diesel Particulate Filter), designed to reduce particulate emissions. The DPF accumulates soot and residual engine oil, which are the product of combustion. A telltale light shall illuminate when the DPF needs cleaning. A “Regen” (Regeneration) switch located in the right rear corner service bay, accessed through the right rear corner service door, shall activate an internal element within the DPF that burns off the trapped soot and engine oil ash.

3.2 FINAL DRIVE

3.2.1 GENERAL REQUIREMENTS

The two rear axles shall have a load rating sufficient for the coach loaded to GVWR. Transfer of gear noise to the coach interior shall be minimized.

3.2.1.1 DRIVE AXLE

The drive axle shall be a Meritor World Axle or approved equal rated at 22,500 lbs (10,206 kg). The bearing journals on each spindle shall be induction hardened for greater durability. Ring gear shall be bolted to case. The drive axle hub end wheel bearings shall be oil lubricated. Default rear axle ratio shall be 3.73:1.

3.2.1.2 TAG AXLE

A tag axle shall be located behind the drive axle. The tag axle will be a solid beam type with fixed steering. The tag axle shall have single tires the same size as the tires on the front and drive axles. Tag axle weight shall not exceed 14,000 pounds. With full passenger seating capacity, load on any axle shall not exceed 22,400 pounds. Combined load capacity weight on the drive and tag axles shall not exceed 36,500 pounds.

A tag axle unloading feature will allow full or partial unloading, or dumping of air from the tag axle air spring bellows. This feature enables weight to shift to the drive axle for more traction. Manual unloading valves are located inside the RH rear curbside service door.

3.2.1.3 HUBS

The front and tag axle hubs shall feature unitized wheel ends (UWE) complete with factory pre-load bearing/hub assemblies, lubricant and seals.

The drive axle shall have nodular cast iron hub assemblies incorporating Pre-Set tapered roller bearings lubricated by differential oil at each axle end.

3.2.1.4 DRIVE SHAFT

The drive shaft shall be a minimum 3 inches (76 mm) outside diameter, heavy-duty type Meritor 1810 series or approved equal. The drive shaft shall be guarded to prevent it from striking the floor of the coach or the ground in the event of a tube or universal joint failure. U-joint end cap retaining bolts shall be retained by metal locking plates. Both half-round yoke ends shall be attached using self-locking bolts.

3.3 SUSPENSION

3.3.1 GENERAL REQUIREMENTS

The front and rear axle suspension shall be pneumatic and equipped with straight side lobe air suspension bellows. Four suspension bellows shall be provided on the drive axle and two suspension bellows on the front axle. The tag axle shall be equipped with two straight side lobe type air springs, 9.5 inch (241 mm) nominal in diameter. Pressure in the tag axle suspension shall be automatically adjusted as required by the load-sharing system. Manual air dump valves for unloading the tag axle air suspension bellows shall also be provided in the engine compartment.

The basic suspension system exclusive of bellows, height control valves, bushings and shock absorbers, shall last the life of the coach without major overhaul or replacement. Four (4) heavy-duty rubber bushed silent block sleeve type radius rods shall be provided at both the front and rear drive axles to control lateral, longitudinal, and torsional movement. Radius rod bushings shall be Clevite or approved equal. One transverse stabilizing rod shall be provided on front axle for additional support during coach lane changing or turning of corners. The coach shall be equipped with a sway bar designed to reduce body lean and increase bushing life. Items such as bushings and air springs shall be easily and quickly replaceable. Adjustment points shall be minimized and shall

not be subject to a loss of adjustment in service. Necessary adjustments shall be easily accomplished without removing or disconnecting the components.

3.3.2 SPRINGS AND SHOCK ABSORBERS

3.3.3 TRAVEL

The suspension system shall permit a minimum wheel travel of 3.5 inches (89 mm) in jounce and 3 inches (76 mm) in rebound. Elastomeric bumpers shall be provided at the limit of jounce travel. Rebound travel may be limited by elastomeric bumpers or hydraulically within the shock absorbers.

3.3.4 KNEELING

A driver-actuated kneeling device shall lower the coach floor 3.0 to 6.0 inches during loading or unloading operations regardless of load to a floor height of 42 inches (1.07 m) measured at the longitudinal centerline of the front door. The park brake shall prevent movement when the coach is kneeled. The coach shall kneel and rise at a maximum rate of 1.5 inches per second at essentially a constant rate. A flashing indicator visible to the driver shall be illuminated until the coach is raised to a height adequate for safe street travel. An audible warning device that operates with the kneeling system shall be provided. A visual indicator meeting ADA requirements shall be provided on the curbside of the coach and shall activate during the kneeling operation. This indicator shall be appropriately marked and visible to the boarding passenger.

3.3.5 DAMPING

Vertical damping of the suspension system shall be accomplished by hydraulic shock absorbers mounted to the suspension arms or axles and attached to an appropriate location on the chassis. Damping shall be sufficient to control coach motion to 4 cycles or less after hitting road perturbations. Shock absorbers shall maintain their effectiveness for at least 50,000 miles (80,467 km) in normal service. The coach shall be equipped with four shock absorbers on the drive axle and two on each side of the front axle and one on each end of the tag. Shock absorbers shall be interchangeable on each axle, side to side.

3.3.6 LUBRICATION

All elements of steering, suspension, and drive systems requiring scheduled lubrication shall be provided with grease fittings conforming to SAE Standard J534. These fittings shall be located for ease of inspection, and shall be accessible with a standard grease gun without flexible hose end from a pit or with the coach on a hoist. Each element requiring lubrication shall have its own grease fitting with a relief path. Lubricant specified shall be standard for all elements on the coach serviced by standard fittings. All fittings shall be standard pipe thread.

3.3.7 UNDERCOATING

Tectyl undercoating, or approved equal, shall be applied to the underside of the body, frame, and wheel wells. Undercoating overspray on the exterior of the coach shall be removed prior to delivery. Underbody components such as air suspension bellows and height control valves, shock absorbers, lubrication fittings, air brake system valves, brake lining, muffler and exhaust system components, drive shaft, and engine and transmission sumps shall be protected from undercoating overspray.

3.4 STEERING

3.4.1 STRENGTH

Fatigue life of all steering components shall exceed 1,000,000 miles (1,609,344 km). No element of the steering system shall fail before suspension system components when one of the tires strikes a severe road hazard. Inadvertent alternations of steering as a result of striking road hazards are steering failures. The steering column shall be manufactured by TRW or approved equal and shall provide both tilt and telescope features. The steering wheel shall be a wrapped, molded polypropylene. Finger grips shall be provided on the wheel, down and away from the driver.

Steering systems that utilize an intermediate shaft to connect the main axle mounted steering box to the steering column shall utilize intermediate steering shafts manufactured by Dana Corporation or approved equal.

The front axle shall be rated at 16,000 pounds (7,257 kg) and shall be equipped with disc brakes and brake chambers with a load rating sufficient for the coach loaded to GVWR. Front axle shall be a standard, drop center type. Kingpins shall be the low friction, "Easy Steer" type for longer maintenance intervals.

3.4.2 TURNING EFFORT

The steering wheel shall be not less than 18 inches (457 mm) in diameter and shall be shaped for firm grip with comfort for long periods of time and shall not be padded. The steering wheel shall be removable with a standard or universal puller. Hydraulically assisted power steering shall be provided. The steering gear shall be an integral type with flexible lines eliminated or the number and length minimized. Steering torque applied by the driver shall not exceed 10-foot-pounds (13.6 Nm) with the front wheels straight ahead to turned 10 degrees. Steering torque may increase to 70-foot-pounds (95 Nm) when the wheels are approaching the steering stops. Steering effort shall be measured with the coach at SLW, stopped with the brakes released and the engine at normal idling speed on clean, dry, level, commercial asphalt pavement and the tires inflated to recommended pressure. Power steering failure shall not result in loss of steering control. With the coach in operation, the steering effort shall not exceed 55 pounds (25 kg) at the steering wheel rim and perceived free play in the steering system shall not materially increase as a result of power assist failure.

Caster angle shall be selected to provide a tendency for the return of the front wheels to the straight position with minimal assistance from the driver.

3.5 BRAKES

3.5.1 SERVICE BRAKE

3.5.1.1 ACTUATION

Service brakes shall be controlled and actuated by an air system. Force to activate the brake pedal control shall be an essentially linear function of the coach deceleration rate. The angle of the pedal shall be ergonomically designed to minimize fatigue. At least 6.0 inches (152 mm) of slack in the airlines shall be available to allow for change out of the brake treadle valve and pedal assembly. The brake pedal shall be slightly higher than the accelerator. Provisions at the front shall be made to activate the brakes from the towing vehicle. Release of the emergency/parking brake shall require one full application of the service brake once the emergency/parking brake release valve is depressed.

3.5.1.2 FRICTION MATERIAL

Brake pads shall be non-asbestos, and must be designed and approved for use on the vehicle being proposed. Brake pads must provide optimum performance with the brake system being used and shall minimize brake noise under all weather conditions.

3.5.1.3 ANTILOCK BRAKE SYSTEM

The coach shall be equipped with a Meritor Wabco or approved equal antilock brake system or approved equal electronic controller assembly that will provide full vehicle wheel control braking for the coach. The system shall utilize an antilock brake system with disc brakes. The design of the digital electronics shall provide a high degree of protection from radio and electromagnetic interference.

The antilock brake system shall provide individual wheel control by using a wheel speed sensor and

modulator at the front axle, drive axle and tag axle. The drive axle brakes shall be controlled completely independent of each other and therefore brake application pressure at an individual wheel shall be adjusted solely on the basis of its behavior on the road surface on which it is traveling. Wheel speed sensors shall be provided on the drive axle and will simultaneously control the wheels on the tag axle. A single modulator shall be provided that controls both rear curbside wheels and another modulator shall control the rear roadside wheels.

Inputs to the electronic control unit (ECU) equal shall be generated from a tone ring (exciter) by wheel sensors, which generate a signal, which varies in voltage and frequency as the speed of the wheel increases or decreases. The wheel sensor shall provide wheel speed information at the rate of 100 pulses per wheel revolution. The unit shall simultaneously receive, and individually interpret speed signals from four wheel sensors.

Outputs from the unit shall be provided to Meritor Wabco or approved equal brake modulator. The modulator shall be capable of receiving signals from the ECU and shall be designed to modify operator applied air pressure to the service brakes. The modulator shall be located near the service actuator(s) it controls and shall be the last air valve through which air passes on its way to the brake actuator. A wiring harness shall connect each modulator to the ECU. Solenoid valves contained in the modulator shall provide the electrical interface between the controller electronics and the air brake system. The ECU shall be capable of simultaneously and independently controlling four individual modulator assemblies.

The antilock brake system logic shall be designed to respond to component equipment failure using a conservative fail safe philosophy. Any single electrical failure of a component devoted to antilock braking shall result in simultaneous illumination of the antilock condition lamp on the dash, a disabling of all or part of the antilock system, and reversion to standard braking on wheels no longer under the control of antilock. The ECU is divided into two separate parts, each equally controlling a pair of diagonal brakes. When a failure or damage occurs to one half of the ECU, ABS braking function shall be maintained in the wheels that are controlled by the working part of the ECU.

The wires that carry information and power into and out of the controller shall be terminated with a weatherproof connector with the wiring sealed to the connector with the exception of the ECU connectors. The wire gauge used shall be sized specifically for the task which it is designed to perform. A dashboard mounted antilock condition lamp shall be provided which shall be controlled by the ECU via the multiplex system and shall serve as a means of providing the operator with the operating condition of the antilock brake system. All electrical connections on the antilock system shall be Meritor molded connectors, or approved equal. The ECU shall utilize 4 amp "JUNIOR-POWER-TIMER" series connectors, or approved equal.

The Data Link function shall be provided which enables the ECU to report its operating condition to an external source. The controller data link configuration shall conform to SAE standard J1708 and the coded language used shall conform to SAE J1587. Two connections in the controller shall be provided.

3.5.1.4 ELECTRONIC STABILITY CONTROL (ESC)

ESC (Electronic Stability Control) shall be integrated with the ABS braking system to provide improved vehicle stability. Sensors within the brake system monitor coach sideways movement and rotation, steering angle and brake application pressure to maintain coach directional stability.

The Electronic Control Unit (ECU) containing directional sensors shall be located in baggage compartment #3. A steering angle sensor shall be located in the steering column. These systems feed information that interacts with the ABS system providing directional and braking control.

The ESC/ATC telltale shall be located in the driver's instrumentation and control center in the right

hand telltale cluster. This telltale, along with the ABS telltale, monitors Electronic Stability Control (ESC) and Automatic Traction control (ATC) functions.

Automatic Traction Control (ATC) shall be integrated with the ESC (Electronic Stability Control) to improve traction on slippery surfaces by reducing drive wheel over-spin. ATC shall automatically switch ON and OFF as required by road conditions. If drive wheels spin during acceleration, the ATC telltale will come on, indicating ATC is active. It will go out when the drive wheels stop spinning and traction control is regained.

ATC Mud/Snow Feature

ATC shall include a deep snow and mud feature. This function increases available traction on extra soft surfaces like snow, mud, or gravel by slightly increasing the permissible wheel spin.

The deep snow and mud feature is not automatic. A switch shall turn this function ON and OFF. While this feature is selected, the ESC/ ATC telltale blinks continuously. Once the feature is no longer required, the switch shall turn the deep snow and mud feature off and the telltale will extinguish.

3.5.1.5 AIR SYSTEM

The coach air system shall operate all accessories and the braking system with reserve capacity. The engine drive Wabco SS636 37.4 cfm air compressor, or approved equal shall be sized to charge the air system brake reservoir from 0 psi. to the governor cutoff pressure of 125 psi. \pm 2psi (862 kPa \pm 14 kPa) in less than 3 minutes while not exceeding the engines rated speed. The air compressor shall be set to cut in at 105 psi (724 kPa).

Regardless of the systems air pressure, idle up to the rated engine speed shall be available to the driver with the transmission in neutral and the parking brake applied.

With the air system fully charged and the engine shut off, the reservoir capacity shall be sufficient to permit four full brake applications to maintain 60 psig (414 kPa). The pressure relief valve shall be mounted in the compressor cylinder head. The muffler or ping tank shall be mounted in the engine compartment relative to the air compressor discharge port. A drain mounted on the muffler or ping tank shall be directed or piped so as to discharge below the engine cradle or bulkhead level.

Air lines, except necessary flexible lines, shall conform to the installation and material requirements of SAE Standard J844-Type 1 or ASTM B-75 for copper tubing with standard, brass, flared or ball sleeve fittings, or SAE Standard J844-Type 3B for nylon tubing or ASTM

D-1248, Type 1, Class C Grade E5 for polyethylene tubing if not subject to temperatures over 200⁰ F. Accessory and other noncritical lines may use Type 3A tubing. Nylon tubing shall be installed in accordance with the following color coding standards:

<i>HOSE COLOR</i>	<i>AIR SYSTEM INSTALLATION</i>
<i>Green</i>	Indicates primary brakes and supply
<i>Red</i>	Indicates secondary brakes
<i>Brown</i>	Indicates parking brake
<i>Yellow</i>	Indicates compressor governor signal
<i>Black</i>	Indicates accessories
<i>Blue</i>	Indicates suspension

Line supports shall prevent movement, flexing, tension strain, and vibration. Copper lines shall be supported by looms, grommets, or insulated clamps to prevent the lines from touching one another or any component of the coach. To the extent practicable and before installation, the lines shall be pre-bent on a fixture that prevents tube flattening or excessive local strain. Copper lines shall be bent only once at any point, including pre-bending and installation. Rigid lines shall be supported

consistent with standard automotive practice. Nylon lines may be grouped and shall be continuously supported.

The compressor discharge line between power plant and body mounted equipment shall be flexible extruded PTFE tube with stainless steel wire braid, Aeroquip 2807, or approved equal. Other lines necessary to maintain system reliability shall be flexible hose with a braided stainless steel jacket. End fittings shall be standard SAE or JIC brass or steel, flanged, reusable, swivel type fittings. Flexible hoses shall be as short as practicable and individually supported. They shall not touch one another or any part of the coach except for the supporting grommets. Flexible lines shall be supported at 2 foot intervals or less. Airlines shall be installed to minimize air leaks. Each coach shall not leak down more than 1.5 psi as indicated on the instrument panel mounted air gauges, within 15 minutes from the point of governor cut-off.

All reservoir supply and delivery airlines shall be sloped toward reservoirs and routed to prevent water traps. Grommets shall protect the airlines at all points where they pass through understructure components. Provision shall be made to apply shop air to a convenient location in the engine compartment and at the front of the coach and shall include a standard bore valve. The engine compartment valve shall be located ahead of a quarter turn valve. Air for the compressor shall be filtered through the main engine air cleaner system. All air reservoirs shall meet the requirements of SAE Standard J10 and shall be equipped with clean-out plugs and quarter-turn drain valves. These valves shall be protected from road hazards by major structural members. The air system shall be protected by a pressure relief valve set at 200 psi (1,379 kPa) at the air dryer and 150 psi (1,034 kPa) at the compressor. The air system shall also be equipped with check valves and pressure protection valves to assure partial operation in case of line failures.

The main airline check valve located between the air compressor and the first reservoir must be accessible for maintenance. Means shall be provided to establish the check valve to be in working order.

A Wabco SS1200 Plus or approved equal air dryer shall be provided and installed according to component manufacturer recommendations.

3.6 GENERAL CHASSIS

3.6.1 WHEELS AND TIRES

3.6.1.1 WHEELS

Hub-piloted 9" aluminum Alcoa or approved equal wheels shall be provided. All wheels shall be interchangeable and shall be removable without a puller. Wheels shall be compatible with tires in size and load-carrying capacity. All wheels and tires shall be balanced as an assembly. One spare wheel, complete with mounted tire shall be provided.

The wheel nuts shall meet all physical property requirements defined in ASTM A 194-2H, ISO and SAE standards. The nut shall be coated for corrosion resistance. The bench testing requirements for the lug nuts shall satisfy MIL-STD 1312 vibration test 7 and the Junkers dynamic test. Front and tag axle lugnuts shall be standard Meritor or approved equal components.

3.6.1.2 TIRES

The tires shall be supplied by the vehicle manufacturer. Tires, including spare, shall be Firestone FS-400, 315/80R-22.5, 20 ply, load range L or approved equal. Tires shall be suitable for the conditions of commuter service and sustained operation at the maximum speed capability of the coach. Load on any tire at GVWR shall not exceed tire supplier's rating. Tires shall provide the ride, noise, and handling characteristics associated with the demands of commuter service.

3.6.2.1 COMPRESSED NATURAL GAS FUEL SYSTEM

A compressed natural gas fuel system consisting of fuel cylinders, filler provisions, fuel lines, pressure reduction, and auxiliary equipment necessary to safely operate under all operating conditions to meet the performance requirements of this specification, shall be provided. The system shall be capable of refueling from 0 to 125 % of working pressure in a maximum of five minutes. Fitting used in the fuel system shall be Swagelok, or approved equal. The fuel system shall be compliant with NFPA-52 "Compressed Natural Gas Vehicular Fuel Systems" most recent edition, including amendments and all U.S. title 13 requirements applicable to CNG fueled vehicles.

3.6.2.2 PRESSURE REGULATORS

A primary fuel pressure regulator shall be supplied and mounted in an accessible location for servicing. Coolant lines shall be routed in a manner to prevent trapping air or draining coolant when the regulator is removed for service.

3.6.2.3 FUEL CYLINDERS

The fuel cylinders shall have a capacity to operate the bus for minimum range of 400 miles per fill-up when operated on FTA ADB duty cycle operating at 3600 psi working pressure. The fuel cylinders shall be mounted in such manner that replacement of one cylinder shall not require removal of additional cylinders. Fuel lines shall be routed to permit replacement of individual lines and fittings.

3.6.2.4 FUEL CYLINDER CONSTRUCTION

Fuel cylinder construction shall be in accordance with DOT Standard 304, ANSI NGV-2 design and test criteria. Cylinder shall be designed for lightest weight possible which does not require a hydrostatic requalification. Tanks shall be certified for refueling pressures to 125 percent of working pressure during temperature compensating fueling. A manual or electric solenoid shut off valve shall be installed on each individual fuel cylinder. Ends of the fuel cylinders shall have a protective shield surrounding the fittings and the valves.

3.6.2.5 SERVICE VALVES

A quarter turn valve shall be accessible through the fuel door which shall isolate the high pressure manifold and fuel storage system from the rest of the engine fuel system. The valve function and open and closed positions shall be clearly marked. An additional ½" valve shall be provided for draining the high pressure manifold and any fuel cylinder (s) through a service port. All fuel system service valves shall be accessible from the curbside of the coach.

3.6.2.6 FUEL PRESSURE GAGE

An oil filled gauge shall be located in the high pressure manifold which shall indicate fuel system pressure. The fuel gauge shall have minimum 100 psi increments with 0-5000 psi range and shall be visible during fueling operations. A pressure transducer shall be incorporated into the high pressure fuel manifold which shall provide the operators low fuel light indicator with an accurate fuel quantity reading. The low fuel warning light shall be at approximately 500 psi.

3.6.2.7 FUEL FILLER ASSEMBLY

A single fuel filler receptacle shall be located on the right side of the bus, 15-20 feet behind the center line of the front door and 35 to 45 inches from the street surface. The filler receptacle shall be mounted so that its center line is between 5 and 25 degrees from horizontal (face of the receptacle pointing slightly up). The fill receptacle shall accept a Sherex CT-5000 nozzle or approved equal and shall incorporate a dust cap permanently affixed to the receptacle. The fuel fill access door shall incorporate a magnetic switch that will deactivate the engine starting system if the fuel door is open.

3.6.2.8 CNG DEFULING SYSTEM

The coach shall be capable of being defueled. The defueling system shall have the following characteristics as a minimum:

1. Receptacle compatible with a “SHEREX CT 5000 series” nozzle.
2. Receptacle dust cap tethered to prevent loss.
3. Access shall be located on the curb side of the coach through the fuel access door.
4. Explosion-proof interlock switch to prevent engine starting when access door is open.
5. Decal on exterior of access door: CNG DEFULING RECEPTACLE
Decal on interior of access door: CNG DEFULING RECEPTACLE
BE SURE VEHICLE IS
GROUNDED BEFORE DEFULING

A PRD vent line, manufactured from stainless steel and adequately sized to accommodate the total on board fuel capacity shall be installed and shall vent any natural gas release to the rear of the coach at the roof line.

3.6.3 BUMPERS

3.6.3.1 LOCATION

Bumpers shall provide impact protection for the front and rear of the coach up to 26 inches above the ground. The bumpers shall wrap around the coach to the extent practicable without exceeding allowable coach width.

3.6.3.2 FRONT AND REAR BUMPERS

The **front bumper** assembly, nominally 20 inches (508 mm) high, shall consist of three energy absorbing modules that are self-restoring black urethane with minimum 1700 psi (11,721 kPa) tensile strength, 250 % elongation, and 350 psi (2,413 kPa) tear strength. The hollow ribbed black urethane cover will have excellent resistance to tears, abrasion, salt, hydro-carbons, detergents, sunlight, and will be repairable. An inner support structure constructed of aluminum or high strength steel shall provide a single, full length structural support for bumper the modules. The bumper assembly shall be hinged at the bottom for access to the spare tire, with the bumper release lever located at the top of the front roadside service compartment.

The **rear bumper** will be nominally 11 inches high (279 mm) consisting of a rigid steel and aluminum inner support structure with a repairable hollow ribbed black urethane cover. The bumper shall be shaped to wrap around the coach rear corners to protect the engine compartment doors and will also incorporate an anti-ride, or pinning feature to prevent unauthorized riders.

The complete assembly will be self-contained, self-restoring and maintenance-free.

3.6.4 ELECTRICAL SYSTEM

3.6.4.1 GENERAL REQUIREMENTS

The basic coach electrical system shall utilize multiplexed Power Management Modules (PMMs) from Actia, or approved equal. Versatility and future expansion of the system shall be provided for by expandable system architecture. The system shall be SAE J1939 compatible. A gateway used to interface between different communications protocols shall be built directly into the PMMs.

The system components shall be capable of reliable operation in an environment of between minus 30C to plus 80C while encountering mobile shock and vibration. Each module shall be adequately shielded to prevent interference by EMI. The multiplex power source shall be isolated, thereby

minimizing any ground signal noise. A built in self-test system shall be utilized to check for module communication failures or output feedback problems within the system, and shall display faults on the LCD Diagnostic Interface

The components of the multiplex system shall be of modular design thereby providing for ease of replacement by field maintenance personnel. Power management modules will have the ability be re-programmed from existing PMMs on the coach. Four PMMs shall be distributed throughout the coach (one under the front junction box, one in baggage bay #1, and two in baggage bay #3). Each module shall have 29 programmable inputs and 44 programmable outputs.

An optional 7" diagonal color LCD touch screen with 800 x 480 screen resolution shall be incorporated to provide system status and diagnostics.

Two Leece Neville 24 volt 140 amp alternators, or approved equal shall be provided. All circuits shall be protected by circuit breakers, fuses or solid state devices. Only the bus body and framing shall be used to attach ground studs. Grounds shall not be carried through hinges, bolted joints (except those specifically designed as electrical connectors), or power plant mountings. Wiring and electrical equipment necessarily located under the coach shall be insulated from water, heat, corrosion, and mechanical damage.

3.6.4.2 MODULAR DESIGN

Design of the electrical system shall be modular so that each major component, apparatus panel, or wiring bundle is easily separable with standard hand tools or by means of connectors. Each module, except the main body wiring harness, shall be removable and replaceable in less than 30 minutes by a mechanic. Power plant wiring shall be an independent wiring module. Replacement of the engine compartment wiring module(s) shall not require pulling wires through any bulkhead or removing any terminals from the wires.

3.6.4.3 JUNCTION BOXES

All relays, controllers, and other electrical components shall be mounted in easily accessible junction boxes. The boxes shall be sealed to prevent moisture from normal sources, including engine compartment cleaning, from reaching the electrical components and shall prevent fire that may occur inside the box from propagating outside the box. A rear start and run control box shall be mounted in an accessible location in the engine compartment. No electrical controls shall be located where spillover from the surge tank can wash over the electrical controls or enter junction boxes.

Care shall be taken to route electrical harnesses from junction boxes to facilitate troubleshooting and to reduce defects. Terminal strips not blocks shall be used to make connections. Wiring under the coach floor in the baggage area shall be routed in an enclosed trough.

3.6.4.4 WIRING AND TERMINALS

All wiring between major electrical components and terminations, except battery wiring, shall be waterproof, and shall meet specification requirements of SAE Recommended Practice J555 and J1128 Type GXL or TXL. All wiring harnesses manufactured for buses purchased under this contract shall be designed and manufactured for the operation of all sub components installed on the buses. Harnesses shall be properly designed and sized to the bus. Battery wiring shall conform to specification requirements of SAE Standard J1127-Type SGX, SGT or SGR and SAE Recommended Practice J541.

All wiring shall be properly grouped, numbered, and color-coded full length. Numbering shall be stamped at least every two (2.0) inches (50.8 mm). Installation shall permit ease of replacement. All wiring harnesses over 5-feet (1.50 meters) long and containing at least five (5) wires shall include at least 2 or 10 percent excess wires whichever is greater for spares, excluding the battery cables. In

addition, twelve (12) spare wires (excluding battery cables) shall be provided between the front and rear junction boxes. Wiring harnesses shall not contain wires of different voltages unless all wires within the harness are sized to carry the current and insulated for the highest voltage wire in the harness.

Wire insulation shall be maintained as close to the terminals as practicable. The requirements for double insulation shall be met by wrapping harnesses with plastic electrical tape or by sheathing all wires and harnesses with nonconductive, rigid or flexible conduit. Grommets of elastomeric materials shall be provided at points where wiring penetrates the metal structure. Wiring supports shall be nonconductive. Precautions shall be taken to avoid damage from heat, water, solvents, or chafing. Wiring length shall allow replacement of end terminals twice without pulling, stretching, or replacing the wire.

Except for those on large wires such as battery cables, terminals shall be crimped to the wiring. Terminals shall be full ring type or interlocking and corrosion-resistant. T-splices may be used when it is less than 25,000 circular mills of copper in cross-section: a mechanical clamp is used in addition to solder on the splice; the wire supports no mechanical load in the area of the splice; and the wire is supported to prevent flexing.

3.6.5 ELECTRICAL COMPONENTS

3.6.5.1 GENERAL REQUIREMENTS

All electrical components, including switches, relays, and circuit breakers, shall be heavy-duty designs. To the extent practicable, these components shall be designed to last the service life of the coach and shall be replaceable in less than twenty five (25) minutes by a mechanic. Sockets of plug-in components shall be polarized where required for proper function and the components shall be positively retained. Any manual reset circuit breakers critical to the operation of the coach shall be mounted in a location best suited to the application with visible indication of open circuits. The electric motor shall be heavy-duty either wound field type or permanent magnet, as listed below. Electric motors shall be located for easy replacement and except for the cranking motor the brushes shall be replaceable in less than fifteen (15) minutes without removing the motor. Provision shall be made to ensure that the lubrication line for alternator bearing is secured to prevent lubricant leaks.

SYSTEM MOTOR	TYPE
<i>Main Evaporator</i>	Brushless DC
<i>Condenser Motors</i>	Brushless DC
<i>Driver's Heater and Defroster</i>	Permanent Magnet
<i>Windshield Wiper Motor</i>	Permanent Magnet
<i>Windshield Washer Motor</i>	Permanent Magnet

Dual electric horns shall be provided. Horns shall be positioned to be protected from road hazards and the elements. The horn trumpets shall be down turned to assure drainage of any moisture that may have entered.

3.6.5.2 BATTERIES

Batteries shall be easily accessible for inspection and serviceable only from outside the coach. Batteries shall be of premium construction and shall be fitted with threaded stud terminals. Batteries shall be 8D with 1350 cold cranking amp capacity with 450 CCA reserve minimum. Positive and negative terminals shall have different size studs, and the battery terminals and cables shall be arranged to prevent incorrect installation. Battery terminals shall be located for access in less than thirty (30) seconds with jumper cables. No less than two conventional lead-acid batteries conforming to SAE Standard J537-Type 20T8 shall be provided. Battery cables shall be

flexible and sufficiently long to reach the batteries in extended positions without stretching or pulling on any connection and shall not lie on top of the batteries. Battery cables are black with red heat shrink on the end for 24V (+), blue heat shrink for 12V (+) and white heat shrink for ground (-). A slave connection to the batteries shall provide a direct connection to the batteries for jump starting.

3.6.5.3 MASTER BATTERY SWITCHES

A master battery switch shall be provided near the batteries to provide complete, simultaneous disconnecting of the batteries from all bus 12 & 24 volt electrical systems. The master switch shall be a “rotary” style switch. The master switch shall be located behind a dedicated access door and shall be accessible in less than ten (10) seconds for operation. The master switch shall be capable of carrying and interrupting the total circuit load. Opening the master switch with the engine operating shall not damage any component of the electrical system.

3.6.5.4 RADIO NOISE SUPPRESSION

Proper suppression equipment shall be provided in the electrical system to eliminate interference with radio and television transmission and reception. This equipment shall not cause interference with any electronic system on the coach. Suppression shall be in accordance with SAE Practice J1708 and FCC standards.

3.7 INTERIOR CLIMATE CONTROL

3.7.1 CAPACITY AND PERFORMANCE

The climate control system shall be highly reliable since most failures are Class 2. Manually controlled shut-off valves shall be installed in the refrigerant lines before and after the filter dryer to allow isolation of the dryer for service. Manually controlled shut-off valves in the refrigerant lines shall allow isolation of the receiver and compressor for service. Self-sealing couplings or manual shut-off valves shall be used to break and seal the refrigerant lines during removal of major components such as the refrigerant compressor or condenser. Condenser and evaporator fans shall have a protective guard to prevent contact between mechanics and rotating fan blades. The appropriate safety warning labels shall be permanently affixed at this location.

Interior climate control system shall be provided and operate on refrigerant 134a. It shall maintain the interior of the coach at a level suitable for climate conditions found in the continental United States. The heating, ventilating, and cooling systems shall maintain an average passenger compartment temperature between 60°F (16° C) and 80°F (27° C) with a relative humidity of 50 percent or less. The system shall maintain these conditions in a ambient temperature range of 10°F to 100°F (12° C to 38° C), with a ambient humidity range of 5 to 100 percent while the coach is running. In ambient temperatures of 95°F to 115°F (35° C to 46° C) with relative humidity greater than 50 percent, the system shall maintain a temperature gradient of 20°F (7° C) while the coach is running. In ambient temperatures of 10°F to -10°F (12° C to - 23° C), the average interior temperature shall not fall below 55°F (13° C) when the coach is running with no passengers.

The air conditioning (AC) compressor shall be a four cylinder, short stroke – 1.65 inch, 2.76 inch bore, 39.4 cubic inch (.65 liter) displacement with a 500 – 3500 RPM range MCI 003 (Bitzer 4NFC), or approved equal. The compressor head and body shall be of rust proof aluminum construction, providing a light weight, compact and efficient unit. The connecting rods shall be of one piece construction for easy, long-life maintenance. Exchangeable cylinder liners shall be used in the cylinder bores for long service life and easy and efficient maintenance. The compressor shall be belt driven through a bi-directional & maintenance free magnetic clutch. Modern, environmentally friendly chlorine free refrigerants can be used with the compressor.

Compressor drive belts shall be manufactured from Kevlar[®] material to provide longer service life.

A manually adjustable belt tensioning device shall be provided to maintain proper belt tension.

The main air conditioning system capacity shall be at least 90,000 Btu's/hr. (26,376 W) with R134a. Driver's A/C capacity shall be at least 10,800 Btu's/hr. (3,165 W).

The condenser fan motors with shrouded axial fans shall be brushless type with totally enclosed grease lubricated bearings. Motor shall be 24 volt, minimum 2 horsepower (1.5 kw) and operate only when the A/C is on for maximum efficiency. The condenser core shall be located to the rear of the number 2 baggage bay and include copper tubes and e-coated aluminum fins and have approximately 1,200 in² (7,742 cm²) of condensing surface. The receiver tank shall be equipped with a refrigerant sight gauge to be viewed through a window in the left-hand number 3 baggage compartment.

The evaporator shall be mounted under floor in the same compartment as the heater core for "Reheat Cycle" and humidity control and shall include copper tubes and aluminum fins.

A separate control shall be provided for the front dash heating and air conditioning, as well as for the main under floor unit. A HVAC system control panel is required for the main under floor system. Control shall be within easy reach of the operator. The system shall allow the driver to set a specific interior coach temperature between the range of 60° F (16°C) and 80° F (27°C). The outside temperature can be displayed by switching between interior and exterior on the control panel. The HVAC controller shall monitor the temperature so that the interior temperature selected is maintained consistently. Where practicable, all controls shall be of a solid state design.

The system shall be designed with return air ducts at both front and rear of coach for balanced airflow. The system shall introduce a minimum of 10% fresh outside air when the fresh air intake is open.

Heat shall be applied to the front step tread to prevent accumulation of snow, ice, or slush. Step well heat shall be supplied and controlled by the driver's heater and defroster system. The manufacturer shall provide and install two valves with caps near the air conditioning compressor.

All electric motors which are part of the climate control system shall be permanent magnet type, except the Condenser and Main Evaporator motors, which shall be brushless type. Motors shall have double sealed, pre-lubricated anti-friction, replaceable ball bearings with moisture resistant grease. 3/8 inch (10 mm) and 5/16 inch (8 mm) diameter zinc terminal studs with bonded internal motor leads and anti-rotation insulators shall be used except driver's evaporator and parcel rack evaporators.

3.7.2 CONTROLS

The heating, cooling, ventilating and off operational modes of the interior climate control system shall be controlled by switches or displays conveniently located to the driver. In the heating and cooling modes, the system shall be governed by an electronic control that regulates the amount of cooling and heating capacity available to the passenger area. The temperature will be adjustable between 60°F (16°C) and 80°F (27°C). The temperature sensors used must be suitable for transit service and accurate to +/- 1°F.

3.7.3 AIR FLOW

3.7.3.1 PASSENGER AREA

The cooling mode of the interior climate control system shall introduce air into the coach up along the sidewall at a minimum rate of 25 cubic feet (0.71³ m) per minute per passenger based on the standard configuration coach with full standee load. This air shall be composed of no less than 10 percent outside air. Airflow shall be evenly distributed throughout the coach with air velocity not

exceeding 60 feet (0.305 meters) per minute on any passenger.

Airflow may be reduced to 15 cubic feet (0.43³ m) per minute per passenger when operating in the heating mode with full standee load. Heated air introduced into the coach shall contain no less than 10 percent outside air. In the heating mode, the fans will activate immediately to assure an air outlet temperature of 70 degrees F (21° C). Outside airflow may be cut off during initial warm up/cool down, provided that manual adjustment is not required.

3.7.3.2 DRIVER'S AREA

The coach interior climate control system shall deliver at least 200 cubic feet (6.0³ m) per minute of air to the driver's area when operating in the ventilating and cooling modes. Adjustable nozzles shall permit variable distribution or shut down of the airflow. A separate heater or windshield defroster unit shall be capable of diverting heated air to the driver's feet and legs. The defroster motor shall be a permanent magnet type motor. The defroster or interior climate control system shall maintain visibility through the driver's side window. A separate evaporator, fan and control shall supply conditioned air to the driver's area.

3.7.3.3 AIR INTAKE

Outside openings for air intake shall be located to ensure cleanliness of air entering the climate control system, particularly with respect to exhaust emissions from the coach and adjacent traffic. All intake openings shall be baffled to prevent entry of snow, sleet, or water. Outside air shall be filtered before discharge into the passenger compartment. More efficient air filtration may be provided to maintain efficient heater and/or evaporator operation. The air filter shall be easily removed for service. Moisture drains from air intake openings shall be located so that they will not be subjected to clogging from road dirt, but shall be accessible for cleaning and inspection.

3.8 RADIO AND PUBLIC ADDRESS

3.8.1 MOBILE RADIO SYSTEM

A radio compartment, antenna, conduit, electrical and other requirements shall be provided to support a mobile radio system as and if required by the end user. The location, materials, and installation of all items installed on the coach in support of the mobile radio equipment is subject to approval by the end user. Any special tools required such as, but not limited to, security screwdrivers and latch handles shall be supplied.

3.8.2 PUBLIC ADDRESS SYSTEM

A public address system shall be installed that enables the driver to address passengers either inside or outside the coach. A total of at least 20 interior speakers shall broadcast, in a clear tone, announcements that are clearly perceived from all seat positions at approximately the same volume level. Speaker shall be provided outside above the entrance door so that announcements can be clearly heard by passengers standing near the door(s). A driver controlled switch shall select inside or outside announcements. The system shall be muted when not in use. The microphone shall not interfere with the operation of the mobile radio system.

3.9 EMERGENCY EQUIPMENT

On board emergency equipment, per Federal Motor Carrier Safety Regulations Part 393, shall be provided with each coach. The equipment shall be mounted out of the way of passengers but shall be readily accessible:

Fire Extinguisher - 5 pound (2.3 kg) capacity, Underwriter's Laboratories rating of A, B, C or more, marked as such with charge indicator, mounted in a cradled bracket.

Emergency Warning Triangles - Three bi-directional emergency reflective triangles conforming to the FMVSS 125 in a case and mounted in the battery compartment.

4.0 OPTIONAL EQUIPMENT

A list of optional equipment and/or accessories shall be provided. The list must contain:

- Item
- Description and functionality detail
- Cost of item installed in final delivery of vehicle
- Any changes to listed specifications as outlined above to accommodate options

SECTION "O"
45' CNG Commuter Coach
RESPONSE SHEET

BASE
VEHICLE

COST PER
UNIT

Commuter Coach (CNG engine)

\$ _____ / ea.

LIST OPTIONAL ITEMS

COST

A list of optional equipment and/or accessories shall be provided. The list must contain:

- Item
- Description and functionality detail
- Cost of item installed in final delivery of vehicle

RFP EXCEPTIONS:

Supplier must list any exceptions here to be used as a part of the proposal evaluation and analysis. Please list the roman numerical on the standard specs or the number for the options when listing any proposal exceptions.

SECTION “P” SPECIFICATIONS FOR ADA SIDE RAMP ACCESSIBLE MINIVAN

The following specifications shall apply to the purchase of a ramp accessible passenger conversion mini-van by transit providers receiving State of Oklahoma and/or Federal Transit Administration (FTA) funds.

All ramp-accessible passenger conversion minivans purchased under this Proposal must comply with FTA Buy America Guidelines. Any vehicles that are proposed or delivered that do not comply with the Buy America Guidelines will not be accepted unless a waiver from (FTA) was issued.

The ramp-accessible minivans must comply with all applicable Federal Motor Vehicle Safety Standards (FMVSS) for this type of vehicle. In addition, the vans must comply with Title 49 Code of Federal Regulations, part 38, subpart B, dated September 6, 1991, entitled “Americans with Disabilities Act (ADA) Accessibility Specifications for Buses, Vans and Systems”. Written certification that the vehicles to be supplied through this proposal will be in compliance with FMVSS must accompany this Proposal as well as the Special Provisions supplied by ODOT.

Vehicles shall be of the latest model year in standard production and of which parts are stocked and warranty service is available at one or more points in Oklahoma or border cities.

The Supplier agrees, if their proposal is awarded, they guarantee that the design, materials and workmanship throughout the vehicle will conform to the highest standards of the vehicle proposed according to the standard factory warranty.

To take advantage of administrative and cost savings and to ensure that all federal requirements are met, this procurement is assignable to other agencies, organizations and tribal Governments funded by the Federal Transit Administration.

NOTE:

Any Brand names and specifications mentioned within this document are for reference only. Proposals will only be considered when brochures/specifications are included for each component with Proposal for evaluation.

Unless otherwise specified, all items listed below as OEM parts or equipment means that those items were made by the Chassis Manufacturer, not the conversion company.

ACCESSORIES:

All safety items and air pollution controls required by statute or regulation in effect at the time the vehicle is produced, dual sunshades, horn, prismatic type day/night mirror, power point, parking brake with warning light, factory standard electronic AM/FM/CD stereo with clock, undercoating, factory tinted glass in all windows, jack and tire tool, full size spare tire, and all other accessories or optional items which may be shown in the proposal shall be installed in each vehicle. In addition three sets of keys shall be provided with the vehicle.

AIR BAGS:

Driver side and passenger side shall be equipped with Generation II air bags.

AIR CONDITIONER:

The air conditioning system shall be factory installed and shall be designed to adequately cool the interior of the vehicle with a full load of passengers.

- The system shall consist of two evaporators, one installed in the front area with integral dash outlets and the second installed in the rear with outlets designed to direct the air throughout the vehicle
- Both evaporators shall be equipped with multi-speed fans. On/Off switches and fan controls shall be within easy reach of the driver.
- Air conditioning efficiency is of paramount concern to the purchaser.
- The Vehicle's electrical system shall be designed so that an ample electrical supply will be provided to maintain optimum air conditioning performance without battery discharge.
- All lines and hoses shall be sufficiently fastened, protected, and insulated to ensure against wear from friction and the elements.
- The lines must be mechanically attached, with OEM clamps, to the vehicle structure at no greater than 18 inch intervals and must be routed so as not to be exposed to wheel spray and not pass within 2 inches of any part of the exhaust system.
- Conversion shall not impede access to front and rear air conditioning components.

ALTERNATOR:

12 Volt, 90 Amps. (Minimum), or maximum allowed by manufacturer.

BACK-UP WARNING DEVICE:

The vehicle shall be equipped with an audible warning device that is activated when the vehicle transmission is engaged in reverse and continues as the vehicle is being backed.

- This should be located behind the rear axle of the vehicle and all wires should be enclosed and secured.

BATTERY:

A Heavy duty, minimum 600 CCA, 12 Volt, maintenance free or OEM maximum.

- The location and installation of the battery shall ensure easy access for replacement and maintenance.
- In case, a battery is installed under the chassis or body, a roll out tray shall be provided to allow battery to be rolled out beyond the chassis so that it is accessible for maintenance.

BRAKES:

4 wheel anti-lock brake system (ABS) with disc brakes.

- The converted vehicle must have been tested to comply with FMVSS 105. You cannot shift the automatic trans-axle out of Park unless brake pedal is depressed.
- Brake warning light and ABS malfunction warning light shall be supplied.

BUMPERS:

Front and rear. Bumper height shall provide proper ground clearance.

CRUISE CONTROL:

Must have OEM cruise control.

DRIVER/FRONT PASSENGER DOOR:

Standard factory equipment.

SLIDING PASSENGER DOORS:

The vehicle shall be equipped with manually operated single, left and right-side mounted (behind left and right-side front passenger doors) doors.

- Doors must maintain OEM fit, finish and seal to prevent the entrance of air, water and other elements.
- Doors must have a minimum opening of 31.5" and a minimum door clearance height of 56".
- There must be no modification to the OEM roofline to achieve the 56" entry height.
- The door shall be equipped with an interlock system so that the door cannot be opened from the inside or outside when the fuel door is open.
- Both doors shall also have a mechanism to securely hold doors in the open position when opened on an incline.
- The door must be capable of being opened from the inside of the vehicle and the opening handle shall not be impeded by the ramp when it is folded to the inside of the vehicle.
- Passenger doors must be aligned correctly and able to open and close smoothly.

SLIDING PASSENGER DOOR TRACKS:

Sliding doors must have reinforced glides with an added stop brace to prevent doors from sliding off track.

- Door tracks shall be reinforced or strengthened beyond OEM standards as needed in all areas of contact with sliding arms.
- Door tracks must have a stopping device to prevent falling off.

SLIDING PASSENGER DOOR ARM BRACKETS:

Reinforcement of the sliding door components shall at a minimum be adequate to support the excess weight created by the door extensions.

- These arms if extensions are needed must be constructed of stainless steel.
- Under normal closure conditions, there should be no evidence of door track flexing or wobbling.

DOORS AND WINDOWS:

Fit and finish standards must include that the doors and interior panels shall be painted or otherwise finished with a non-glare finish in order to match the other interior panels.

STEPS:

Vehicle must have a step for the driver and passenger front seats. This will assist driver and front passenger to enter and exit the vehicle.

EMERGENCY EQUIPMENT:

All miscellaneous equipment must be secured to the vehicle and easily accessible.

- First aid kit: (24M – National Standard School Bus Metal
 - Must be Certified Safety Mfg. Model S203-045 or equivalent.
- Fire extinguisher – Multi-purpose Stored Pressure Dry Chemical Extinguisher.
 - Must be a **5 lb. type 3A:40B: C Pro Line, Kiddie Model # FXBND9 or equivalent.**
 - Must have a gauge to indicate state of charge and mounted to vehicle using a bracket and having a heavy duty vinyl cover.
- Triangle warning devices (3), with storage container.
 - must meet FMVSSP # 125
- Bloodborne Pathogens infection control kit.
 - Must be Certified Safety Mfg. Model #FK200-931, **or equivalent.**
- Seat belt cutter

ENGINE:

Minimum 3.8 liter V6 gasoline engine with electronic fuel injection and shall include: oil filter, air cleaner and heavy duty radiator capable of providing sufficient cooling capacity for the operation of all air conditioning equipment.

- Engines that are E-85 flexible fuel capable are preferred if available at no additional cost.
- Engine cooling system shall be protected with permanent type antifreeze to minus 20 degrees Fahrenheit.
- The Coolant used shall meet or exceed the engine manufacture's specification.
- A permanent label listing protection level shall be supplied and riveted or screwed to the close proximity to the radiator.
- Engine warning system with light indicated oil pressure below 6 psi and with a light to indicate water temperature above 210 degrees Fahrenheit.

- Engine shall meet the latest applicable emission control standards.

ENTRANCE RAMP LIGHTING:

Must meet all ADA requirements as stated in the Federal Register, Part IV, Department of Transportation, 49 CFR Parts 27, 37 and 38, Transportation for Individuals with Disabilities; Final Rule, published Friday, September 6, 1991.

- Ramp area lighting shall illuminate automatically when door is opened.
- Overhead and step well lights shall be activated when the passenger doors are open.
- Adequate interior lighting shall be installed throughout which provides a minimum of two foot-candles at a seated level.
- Interior lighting fixtures shall be reasonably flush with the interior walls and ceiling to prevent a hazard to passengers.

FLOOR ASSEMBLY:

Floor assembly shall be at minimum the following.

- Floor drop shall be from the front firewall back to just forward of the rear axle, run the full width of the vehicle, and measure thirteen (13) inches maximum and allow ground clearance of at least 5 inches including exhaust.
- Floor should be constructed of stainless steel, and shall be ‘ramped’ or ‘notched’ where necessary to provide adequate clearance for underbody components, such as to allow for full suspension travel.
- All modifications to the OEM floor plan shall be of the highest quality of construction.
- These modifications to the vehicle floor and frame must provide reinforcement to ensure that the structural integrity of the OEM vehicle is not compromised.
- All modifications must be properly sealed to prevent the entrance of exhaust fumes, moisture and dust into the vehicle.
- The exhaust pipes should have the necessary heat shields.
- Rust inhibitors other than undercoating shall be applied to all conversion materials.

SUB FLOOR:

The interior floor shall be insulated with 3/8” (minimum) marine grade plywood to provide a smooth surface for flooring attachment and to minimize interior noise.

- The proper insulation should be used to prevent the exhaust from making the floor so hot that it would be uncomfortable for the passengers.

FLOOR COVERING MATERIAL:

Shall be at minimum 3/16" thick continuous piece of fire retardant, nonskid transit-type flooring.

- The floor covering shall be butt jointed and cemented to the floor with a waterproof adhesive in order to prevent bubbles and blisters which could create a safety hazard.
- Mobility air restraint tracks and seat locks shall be beveled, with no sharp edges and will protrude no more than 1/4" above floor surface.

FRONT AXLE:

Minimum 2400 lbs. capacity or OEM maximum.

FUEL TANK:

Largest available, but no less than 20 U.S. gallons.

- Tank, fuel lines, and hardware must meet all current FMVSS, including FMVSS 301, as well as all current CARB and EPA requirements.
- Tank shall be calibrated with the OEM dash fuel gauge.

GUAGES:

Fuel, water-temperature, oil pressure light, alternator light, speedometer, and odometer.

HORN:

Dual, electric

HEATER:

Both a deluxe front heater and a heavy-duty auxiliary rear heater are required.

- Front and rear coils shall be factory installed hot water type, of sufficient capacity to warm cabin area and clear windows of snow, ice and fog.
- The water lines for the rear heater coil may be housed within the conduit used for the air conditioning refrigerant lines.
- All lines and hoses shall be sufficiently fastened, protected, and insulated to ensure against wear from friction and the elements.

- The lines must be mechanically attached, with OEM clamps, to the vehicle structure at no greater than 18 inch intervals and must be routed so as not to be exposed to wheel spray and not pass within 2 inches of any part of the exhaust system.
- Conversion shall not impede access to front and rear heater components.

INTERIOR INSULATION:

All side walls and areas around the windows shall be insulated and finished with matching trim and color.

- Entire ceiling shall be insulated.(Batt **is not acceptable**)
- Insulation shall consist of a polystyrene composite and shall be nontoxic.
- A polyurethane foam or honeycomb resin is also acceptable.
-

INTERIOR HEIGHT (at center):

Minimum 57 ½"

INTERIOR LENGTH:

Length measured from back of driver's seat to back window of vehicle at seated shoulder height.

- Shall be a minimum of 90".

INTERIOR TRIM:

Shall match factory original material.

- All interior panels shall be OEM material or equal. Material and treatments shall be flame retardant to meet FMVSS 571.302 and be surface treated for efficient cleaning.
- Panel fastening devices shall match the color of the panels with smooth finishes without any unprotected sharp edges.

LAMPS:

Automatic daytime running lamps, if available.

EXTERIOR MIRRORS:

Dual folding power

- heated factory installed,
- low mount

INTERIOR MIRROR:

10" automatic day/night rear view mirror.

MUD FLAPS:

Front and rear, securely mounted, standard.

FLOOR MATS:

Must have front OEM floor mats.

KEYS:

Must have 3 sets of keys

OVERALL HEIGHT:

Measured from front to highest point of vehicle.

- Minimum 66", Maximum 83".

OVERALL LENGTH:

Minimum of 195 inches.

OVERALL WIDTH-EXTERIOR:

Maximum 72".

OVERALL WIDTH-INTERIOR:

Minimum 55".

PRIORITY SEATING SIGNS:

Each vehicle shall contain sign(s) which indicate that the seats in the front of the vehicle are priority seats for persons with disabilities, and that other passengers should make such seats available to those who wish to use them.

RADIATOR:

Heavy-duty, with factory installed coolant recovery system.

- Vehicle's cooling system must be winterized with ethylene glycol for temperature to 20 degrees F below zero.

REAR WINDOW:

Defogger/defroster.

ROOF GUTTERS:

Shall be installed over all windows and doors. OEM rain channel is fine if not obstructed during conversion.

DRIVER'S SEAT:

Must be a power seat with power lumbar and be high backed with multi-positional fore and aft adjustment, reclining seatback, etc.

FRONT PASSENGER SEAT:

Standard quick-release manual-adjustment seat. Seat shall be high backed with multi-positional fore and aft adjustment, reclining seatback, etc.

REAR (3rd ROW) SEAT:

Standard two (2) passenger capacity, with fold-down seatback, and folding footrests.

- The footrests shall be a type that when installed and not in use, can be completely stowed away when not in use.
- All passenger seats shall be forward facing made of durable type materials that can be cleaned easily, fully padded for occupant comfort and retention.
- All materials used in seats (including driver seat) shall comply with FMVSS burn resistance requirements.
- All seat colors shall match the vehicle color and be aesthetically pleasing.
- All seats will comply with FMVSS seat anchorage requirements.
- The floor plan must comply with the current American with Disabilities Act standards such as axle width, knee room, etc.

SEAT BELTS:

Passenger restraints (seat belts) shall be furnished for all passenger seating positions and for the driver.

- Restraints shall consist of lap belts and/or shoulder seat belts.
- Belts shall comply with FMVSS belt requirements and be of sufficient length for adults, and include two (2) Seat Belt Extensions.
- There needs to be a commercial quality seat belt knife fastened to vehicle in driver's reach.

STEERING:

Power assisted, with Tilt column

SUSPENSION:

The minivan shall have factory OEM installed front and rear independent suspension (load leveling and height control) system adequate to support the rated weight capacity of the individual axle.

- Must have heavy-duty front and rear shock absorbers and a front stabilizer bar shall be supplied (OEM).
- Note that even though floor on vehicle has been altered (dropped) to accommodate wheelchair position(s). The suspension must still be capable of enough range of travel to avoid suspension, frame, or component problems that would result in ruined bushings, bump stops, etc.
- OEM rear control (track) arms may not be altered.
- Making a 'notch' in the floor pan or wheel well is permissible in order to better provide a full range of suspension travel.

TRANSMISSION:

6 speed minimum automatic including overdrive.

- Transmission shall be capable of transmitting the torque and horsepower listed on the engine.

UNDERCOATING:

All exposed floor seams shall be sealed **with an industrial grade butyl sealant or equivalent** that conforms to ASTM C920.

- The entire surface of exterior lowered floor shall have a rust inhibiting coating, such as an epoxy primer base, applied to cover all welded areas, and then a fresh application of undercoating over the entire surface.
- Undercoating shall comply with current Federal and State flammability standards.
- The entire body-frame understructure of each vehicle is to be fully undercoated with high quality anti-rust protection material.

VEHICLE COLORS:

Body: Vendor shall supply available colors and prices.

Interior/Seats: Supplier shall include interior color options for review.

- Successful vendor shall coordinate with the agency issuing the purchase order in the selection of interior and seat color.

WARNING LIGHT:

A warning light shall be in the driver's area, for the rear door, indicating "door ajar".

WARRANTY:

Warranty must be as follows

- A Bumper-to-Bumper Warranty 36,000 miles or three (3) years on body construction, modification, and add-on components. (This includes any and all conversion made to OEM vehicle).
- Vehicle shall have a 60 months or 100,000 mile manufacture power train warranty.
- These warranties shall begin on the date that vehicle delivery is accepted by the agency issuing the purchase order.

WHEEL BASE:

Minimum of 119 inches.

WHEELS AND TIRES:

Tire size must be compatible with each vehicle and must meet 5,357 lb. GVWR minimum.

- Tires shall be steel-belted radial all season type tires.
- The rims need to be OEM aluminum or comparable.
- Wheel covers **will not be acceptable**.
- Spare wheel and tire shall be of the same size as all the other wheels and mounted at an accessible location.

WHEELCHAIR ACCESSIBILITY SYMBOL:

The international wheelchair accessibility symbol depicted on sign D9-6 in the "Manual of Uniform Traffic Control Devices" published by the federal Highway Administration shall be affixed to the outside of each vehicle on all four sides.

- No vendor/dealer advertisements shall be on the symbols.
- Symbols shall be between 3" and 4" in overall height.

WHEELCHAIR POSITIONS:

2 Wheelchair positions shall be provided as standard equipment: a center behind driver placement (straight in from the ramp entrance), and a right front passenger placement.

- Tie-downs shall be located in these right front passenger positions and the center left and center right passenger positions.
- The right front passenger placement should be located as far forward as possible.
- This multiple tie-down configuration allows for up to two (2) wheelchair passengers and three (3) ambulatory passengers. Wheelchair positions must be forward facing.

WHEELCHAIR RAMP:

Vehicle will be equipped with a manually deployed ramp.

- The fold and unfold motion of the ramp must be counter balanced so that the force exerted by the operator does not exceed 15 lbs.
- The ramp shall have a minimum usable width of 30" and slope meeting the requirements of ADA, 49 CFR.
- The ramp shall be designed to swing-away when in the upright position to allow access for non-wheelchair passengers.
- When in the upright position, the ramp must not interfere with the front passenger seat. If this occurs, there must be something added to protect the back and side of the seat, and must be of quality material and look as OEM as possible.
- The ramp must fold up completely below the window line for unobstructed visibility.
- The ramp surface shall be continuous, with the surface being either expanded or solid metal. If solid metal, it shall be covered with (Armstrong Crosswalk, or equivalent) slip-retardant flooring.
- The surfaces of the boarding edge of the ramp and door threshold shall have a bright yellow finish running the full surface, in order to contrast with the finish on the rest of the ramp.
- Vinyl tape **is not acceptable**.
- Ramp shall have a rated capacity of 600 lbs. with a safety factor of at least three (3) based on the ultimate strength of the material.
- Each side of the ramp shall have protective barriers at least two (2) inches high to prevent mobility aids from rolling off of the ramp edge and must have yellow tape on them.
- Ramp must meet all ADA requirements as set out in the Federal Register, Part IV Department of Transportation, 49 CFR Parts 27, 37 and 38, Transportation for Individuals with Disabilities; Final Rule, published Friday, September 6, 1991.

WHEELCHAIR SECUREMENTS SYSTEM:

The securement system shall be, **Q'Straint QRT MAX Automatic Retractor System Q-8309-L with L-Track anchorage system and J-Hooks, or equivalent.**

- They must be fully assembled and ready to use.
- Shall include securement pouches store wheelchair securement tie-downs.
- Shall include four (4) Q5-7580 Webbing Loops for Securing Scooters. Belt system shall be of sufficient length to accommodate a motorized wheelchair.
- A minimum of two tracks, (pads), each of sufficient length for proper attachment and positioning of the belts, shall be placed parallel to each other and perpendicular to the direction in which the wheelchair faces.
- The anchors must be bolted to structural steel.
- Bolting to plywood floor without bolting into structural steel under floor **is NOT ALLOWED.**
- The tracks shall be securely mounted to the vehicle, flush from the floor and ramps, to insure that the track will not pull away from the van floor or shift position under anticipated loads.
- Any tracks overlapping the access path must be recessed into the floor to prevent passengers from tripping.
- All attachment hardware and anchorages shall meet or exceed the 30 mph/20 Impact Test criteria per SAE J2249, 36 CFR Part 1192 and CFR Part 38, and all applicable Federal Motor Vehicle Safety Standards, as amended.

WHEELCHAIR OCCUPANT RESTRAINT:

The wheelchair occupant restraint system **shall be Q'Straint Q8-6325-**

- A shall have a standard manual lap/shoulder belt combo or equivalent to.
- That meets SAE J2249 and ADA requirements.
- The L tracks must be bolted to structural steel. Bolting to plywood floor without bolting into structural steel under floor **is NOT ALLOWED.**

NOTE:

Each wheelchair securement location shall have a sign designating it as such. Lettering size and type on these signs shall comply with the Americans with Disabilities Act regulations.

Price proposed should be for 2 sets of wheelchair restraints (which would cover both wheelchair placements).

VENDOR WILL SUPPLY WRITTEN OR VIDEO INSTRUCTIONS ON THE USE OF THE RESTRAINT SYSTEM.

WINDOWS:

Factory tinted safety glass all around, (1) window on each side capable of being opened.

- Shall be at least 30% smoked glass windows throughout passenger area that is be factory installed.
- After market add on films is not acceptable.

NOTE:

All windows and emergency exits shall meet the performance and operational requirements as outlined in the Federal Motor Vehicle Safety Standards and Procedures.

WINDSHIELD:

Tinted safety glass.

WINDSHIELD WASHER:

Windshield washer must be protected with winter-strength solution.

WIPERS:

Must have a dual intermittent wiper system.

WIRING:

Schematic of non-OEM wiring shall be included with the vehicle at the time of delivery.

- Each vehicle shall have a 12-volt electrical charging system as supplied from the OEM.
- All electrical wiring shall be automotive stranded copper, of sufficient gauge to handle the load, color-coded to match the OEM.
- All harnesses that are modified or added to the vehicle will be secured to the frame/body at a maximum of two feet intervals with insulated clamps.

- All exposed terminals and wiring shall be protected from the elements using sealed terminals or heat shrink where necessary. Exposed wires will be wrapped or loomed in corrosion/moisture-resistant material.
- Must be continuous wiring with OEM type pin connectors at harness connections, **butt connectors are not allowed.**

MISCELLANEOUS TECHNICAL SPECIFICATIONS:

1. There shall be no sharp corners on the unit. All corners shall be slightly rounded and filed smooth.
2. All weld joints shall have been cleaned, primed, be free of slag intrusions, undercut, roll, blow holes, craters and porosity.
 - Welds shall be properly fused, of ample penetration and smoothly finished on exposed surfaces.
 - Sheet metal fit-up must be properly executed and concealed by a finish-coat of paint.
 - Finish and all glass must be free of any defects due to welding, welding slag, heat, war page, or assembly damage.
3. All materials installed shall be new and free of rust.
4. No wires shall be visible on the exterior or interior of the unit.

DELIVERY:

Vehicle must be delivered at a maximum of 120 calendar days from the date a Purchase order is issued. Pre-delivery servicing and adjustments: prior to acceptance by the purchaser, the vendor shall service and adjust each vehicle for operation. This process shall include but not be limited to the following:

1. The vehicle must have a full tank of fuel when delivered.
2. Each vehicle shall be designed to facilitate the disassembly, reassembly, servicing or maintenance thereof by use of tools and items that are normal and available as commercial standard items. The body and structure shall be designed for ease of maintenance and repair.
3. All parts added, as part of the modification process shall be new.
4. Headlights properly aligned
5. Engine Tuned
6. All accessories properly adjusted
7. Electrical, braking and suspension systems inspected

8. Both batteries Charged
9. Front-end alignment must be done after body is put on chassis. Chamber, caster and toe must be adjusted to the center of OEM specs. Ford chassis buses must have adjustable caster, camber bushings installed. Standard OEM bushings will not be accepted. Each bus must come with documentation stating before and after actual alignment readings of bus.
10. All wheels balanced, including spare
11. All lubricants checked, and greased if needed
12. Cooling system serviced with permanent type anti-freeze and summer coolant for minus 20 degrees F (-28.888C).
13. Warranty papers and owner's guide
14. Exterior and interior cleaned and washed.
15. Odometer cannot exceed 3,000 miles at the time of delivery of completed buses to the purchasing agency. There will be a charge of one dollar (\$1.00) per mile for each vehicle with an odometer reading in excess of 3,000 miles payable to the purchasing agency at the time of delivery.
16. Under no circumstances are tow vehicles to be attached to any buses.
17. Each vehicle must be delivered to the agency submitting the P.O.

Copies of the all Certificate of Origins and signed invoices must be sent to the organization named on the purchase order before delivery is made and must be delivered with the vehicle: receipt of these after delivery **is not acceptable**.

ALTOONA TESTING:

Proposal must include a copy of Altoona Test Report for this vehicle.

VEHICLE TESTING:

Certification shall be provided that in accordance with 49 CFR part 665, Bus Testing, the vehicle either does not need to be tested (with justification specified for exemption) or has been tested at the bus testing facility and a test report is included.

INFORMATION TO BE FURNISHED WITH EACH VEHICLE

MANUALS:

Must include OEM Repair service manuals and wiring diagram manual for the chassis. And as built wiring diagram and parts manual for body and for all auxiliary equipment.

1. Maintenance and inspection schedule incorporating the required maintenance and inspection of the basic vehicle and its sub-systems.

2. Operator's manual for vehicle and all add-on equipment.
3. Warranty papers for chassis, body, and additional equipment.

PRE-AWARD AUDIT:

A Pre-Award Audit shall be conducted to determine if the proposal meets specifications. The Supplier shall submit documents, which include certification of the manufacturer's compliance with the Federal Transit Administration (FTA) Pre-Award Buy America Audit Requirements. The document submitted shall include the following information for each major component used on vehicle:

1. Name and address of each supplier.
2. Cost of each major component and subcomponent. In order to protect proprietary information, the document may reflect the percentage of total cost each item represents instead of the actual cost.
3. Country of origin of each major component and subcomponent.
4. Name and address of company where final assembly occurs.
5. Cost of final assembly
6. Signature of authorized representative of vehicle manufacturer.

Once the preceding steps have been completed, the contract shall be awarded.

POST- DELIVERY AUDIT:

A Post Delivery Audit of the vehicle(s) shall be conducted at the purchaser's facility, to determine that the completed vehicle(s) meets specifications. Once this process has been satisfactorily completed, the vehicle(s) shall be considered acceptable.

ACCESSIBILITY REQUIREMENTS:

When submitting a Proposal for an accessible vehicle for the disabled, the vendor shall provide a list of the vehicle related equipment illustrating the component cost and related installation charges. The purpose of this list is to reflect an accurate cost for those vehicle related items, which are required to make the vehicle accessible to the disabled.

OPTIONAL ITEMS

Must be installed by vendor or factory before delivery

The following options shall receive separate pricing as part of the Proposal submission:

CNG CONVERSION BI-FUEL:

OEM engine shall be converted to operate on CNG and Gasoline. System shall be CARB and EPA certified, OBDII compliant, and fully integrated into the OEM powertrain control system. No additional module will be accepted. System shall be capable of switching between CNG and Gasoline. The Gasoline fuel tank will be installed as per OEM specifications. The system must comply with the following:

- a. Closed-loop fuel control
- b. Sequential fuel injection (SFI)
- c. Optimized ignition timing
- d. Must maintain original fault codes (DTCs)
- e. Diagnostics accessed through DLC using original scan tool or any generic OBD-II scanner
- f. CNG system shall be covered by 3 year/50,000 mile warranty and cannot void the OEM powertrain warranty.
- g. Must provide a detailed floor plan of the placement of the CNG tanks.
- h. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture.
- i. The Minimum CNG **Type IV** tank with a capacity of 15 Gasoline Gallon Equivalent. (gge)

POWER RAMP AND DOOR:

Operated from switch mounted on right-side “B” pillar. All other specifications listed in this document for Wheelchair Ramp and Doors shall apply to this optional electrically operated ramp and right-side sliding door.

FOLD-AWAY CENTER SEAT:

Fold-away center seat, which folds up behind the driver.

- This seat shall be forward facing, standard heavy-duty vinyl (if available), of durable type and material that can be cleaned easily, fully padded for occupant comfort and retention.
- This seat shall comply with FMVSS burn resistance requirements, and seat color shall match the vehicle color and be aesthetically pleasing.
- Seat will comply with FMVSS seat anchorage requirements.

BACK-UP MONITOR SYSTEM:

ASA Voyager AOM562A or approved equal with a 5.6" color LCD screen mounted on rear view mirror OEM Bracket. With a rear mounted outside backup camera and a second inside front mounted camera to view passengers.

TWO-WAY RADIO SYSTEM: UHF:

ICOM F221 UHF two-way Radio System with a PCTELMUF4505 UHF antenna and coax or approved equal.

- Antenna shall be mounted on Roof.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for the agency issuing this purchase.

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TWO-WAY RADIO SYSTEM: VHF

ICOM F121 VHF two-way Radio System with a PCTEL MHB5800 VHF antenna and coax or approved equal.

- Antenna shall be mounted on Roof.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for the agency issuing this purchase.

TWO-WAY RADIO SYSTEM: 800 MHz

Kenwood TK-980 800 MHz two-way Radio System with a PCTEL MUF8003 antenna and coax or approved equal.

- Antenna shall be mounted on Roof.

- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for agency issuing this purchase.

INTEGRATED CHILD SEAT:

Integrated Child Restraint Seat must be a **Freedman Seating ICS-10 or equivalent.**

- Must have an integrated 4-point safety harness. for children 22-78 Lbs with under seat retractor seat belts for adults.

SECTION "P"
ADA SIDE RAMP ACCESSIBLE MINIVAN
RESPONSE SHEET

BASE
VEHICLE

COST PER
UNIT

Minivan ADA Vehicle

\$_____/ea.

Specify Overall Vehicle Length (outside of front bumper to outside of Rear bumper):_____

OPTIONAL ITEMS

COST

CNG CONVERSION BI-FUEL:

Option Price: \$_____/ea.

POWER RAMP AND DOOR:

Option Price: \$_____/ea.

FOLD-AWAY CENTER SEAT:

Option Price: \$_____/ea.

BACK-UP MONITOR SYSTEM:

Option Price: \$_____/ea.

TWO-WAY RADIO SYSTEM: UHF:

Option Price: \$_____/ea.

TWO-WAY RADIO SYSTEM:

Option Price: \$_____/ea.

TWO-WAY RADIO SYSTEM:

Option Price: \$_____/ea.

INTEGRATED CHILD SEAT:

Option Price: \$_____/ea.

A list of optional equipment and/or accessories shall be provided. The list must contain:

- Item
- Description and functionality detail
- Cost of item installed in final delivery of vehicle
- Any changes to listed specifications as outlined to accommodate options

RFP EXCEPTIONS:

Supplier must list any exceptions here to be used as a part of the Proposal evaluation and analysis. Please list the roman numerical on the standard specs or the number for the options when listing any Proposal exceptions.

SECTION “Q”
SPECIFICATIONS FOR
LOW FLOOR, PURPOSE BUILT, (NON CONVERSION OR
MODIFIED) 17’ PARATRANSIT MOBILITY VEHICLE
WITH A INTERGRATED ADA SIDE RAMP

The following specifications shall apply to the purchase of a **Purpose-Built Non Conversion** ramp accessible passenger mobility vehicle by transit providers receiving State of Oklahoma and/or Federal Transit Administration (FTA) funds.

All ramp-accessible **Purpose-Built Non Conversion** passenger mobility vehicle purchased under this Proposal must comply with FTA Buy America Guidelines. Any vehicles that are proposed or delivered that do not comply with the Buy America Guidelines will not be accepted unless a waiver from (FTA) was issued.

The ramp-accessible mobility vehicle must comply with all applicable Federal Motor Vehicle Safety Standards (FMVSS) for this type of vehicle. In addition, the vehicle must comply with Title 49 Code of Federal Regulations, part 38, subpart B, dated September 6, 1991, entitled “Americans with Disabilities Act (ADA) Accessibility Specifications for Buses, Vans and Systems”. Written certification that the vehicles to be supplied through this proposal will be in compliance with FMVSS must accompany this Proposal as well as the Special Provisions supplied by ODOT.

Vehicles shall be of the latest model year in standard production and of which parts and warranty service is available at one or more points in Oklahoma or border cities.

The Supplier agrees, if their proposal is awarded, the Supplier guarantees that the design, materials and workmanship throughout the vehicle will conform to the highest standards of the vehicle proposed according to the standard factory warranty.

To take advantage of administrative and cost savings and to ensure that all federal requirements are met, this procurement is assignable to other agencies, organizations and tribal Governments funded by the Federal Transit Administration.

NOTE:

Any Brand names and specifications mentioned within this document are for reference only. Proposals will only be considered when brochures/specifications are included for each Vehicle.

Unless otherwise specified, all items listed below as OEM parts or equipment means that those items were made by the vehicle Manufacturer.

ACCESSORIES:

All safety items and air pollution controls required by statute or regulation in effect at the time the vehicle is produced, dual sunshades, horn, prismatic type day/night mirror, power point, parking brake with warning light, factory standard electronic AM/FM/CD stereo with clock, factory tinted glass in all windows, jack and tire tool, full size spare tire, and all other accessories or optional items which may be shown in the proposal shall be installed in each vehicle. In addition three sets of keys shall be provided with the vehicle.

AIR BAGS:

Driver side shall be equipped with Generation II air bags.

AIR CONDITIONER:

The air conditioning system shall be factory installed and shall be designed to adequately cool the interior of the vehicle with a full load of passengers.

- The system shall consist of one evaporator installed in the front area with integral dash outlets and with rear outlets designed to direct the air throughout the vehicle.
- Evaporator shall be equipped with multi-speed fan. On/Off switches and fan controls shall be within easy reach of the driver.
- Air conditioning efficiency is of paramount concern to the purchaser.
- The Vehicle's electrical system shall be designed so that an ample electrical supply will be provided to maintain optimum air conditioning performance without battery discharge.
- All lines and hoses shall be sufficiently fastened, protected, and insulated to ensure against wear from friction and the elements.
- The lines must be mechanically attached, with OEM clamps, to the vehicle structure at no greater than 18 inch intervals and must be routed so as not to be exposed to wheel spray and not pass within 2 inches of any part of the exhaust system.

ALTERNATOR:

12 Volt, 155 Amps. (Minimum) or OEM Maximum.

BACK-UP WARNING DEVICE:

The vehicle shall be equipped with an audible warning device that is activated when the vehicle transmission is engaged in reverse and continues as the vehicle is being backed.

- This should be located behind the rear axle of the vehicle and all wires should be enclosed and secured.

BATTERY:

A Heavy duty, minimum 750 CCA, 12 Volt, maintenance free or OEM maximum.

- The location and installation of the battery shall ensure easy access for replacement and maintenance.

BRAKES:

4 wheel anti-lock brake system (ABS) with disc brakes.

- The vehicle must have been tested to comply with FMVSS 105. You cannot shift the automatic transmission out of Park unless brake pedal is depressed.
- Brake warning light and ABS malfunction warning light shall be supplied.

BUMPERS:

Front and rear. Bumper height shall provide proper ground clearance.

CRUISE CONTROL:

Must be Standard OEM factory equipment.

DRIVER/FRONT PASSENGER DOOR:

Standard OEM factory equipment.

PASSENGER DOORS:

The vehicle shall be equipped with manually operated single, left and right-side mounted (behind left and right-side front passenger doors) doors.

(Sliding Doors Not Allowed)

- Doors must maintain seal to prevent the entrance of air, water and other elements.

- Doors must have a minimum opening of 36" and a minimum door clearance height of 56".
- The Ramp door shall be equipped with an interlock system
- The door must be capable of being opened from the inside of the vehicle.
- Passenger doors must be aligned correctly and able to open and close smoothly.

DOORS AND WINDOWS:

Shall have Power Windows and Power Door Locks:

- Fit and finish standards must include that the doors and interior panels shall be painted or otherwise finished with a non-glare finish in order matching the other interior panels.

EMERGENCY EQUIPMENT:

All miscellaneous equipment must be secured to the vehicle and easily accessible.

1. First aid kit: (24M – National Standard School Bus Metal)
 - Must be Certified Safety Mfg. Model S203-045 or equivalent.
2. Fire extinguisher – Multi-purpose Stored Pressure Dry Chemical Extinguisher.
 - Must be a **5 lb. type 3A:40B: C Pro Line, Kiddie Model # FXBND9 or equivalent.**
 - Must have a gauge to indicate state of charge and mounted to vehicle using a bracket and having a heavy duty vinyl cover.
3. Triangle warning devices (3), with storage container.
 - must meet FMVSSP # 125
4. Bloodborne Pathogens infection control kit.
 - Must be Certified Safety Mfg. Model #FK200-931, **or equivalent.**
5. Seat belt cutter

ENGINE:

Minimum 4.6L liter V8 gasoline engine with electronic fuel injection and shall include: oil filter, air cleaner and heavy duty radiator capable of

providing sufficient cooling capacity for the operation of all air conditioning equipment.

- Engines that are E-85 flexible fuel capable are preferred if available at no additional cost.
- Engine cooling system shall be protected with permanent type antifreeze to minus 20 degrees Fahrenheit.
- The Coolant used shall meet or exceed the engine manufacture's specification.
- A permanent label listing protection level shall be supplied and riveted or screwed to the close proximity to the radiator.
- Engine warning system with light indicated oil pressure below 6 psi and with a light to indicate water temperature above 210 degrees Fahrenheit.
- Engine shall meet the latest applicable emission control standards.

LIGHTING:

Must meet all ADA requirements as stated in the Federal Register, Part IV, Department of Transportation, 49 CFR Parts 27, 37 and 38, Transportation for Individuals with Disabilities; Final Rule, published Friday, September 6, 1991.

- Ramp area lighting shall illuminate automatically when door is opened.
- Adequate interior lighting shall be installed throughout which provides a minimum of two foot-candles at a seated level.
- Interior lighting fixtures shall be reasonably flush with the interior walls and ceiling to prevent a hazard to passengers.
- All lighting must be LED.

FRAME:

- Must have a fully boxed frame and tubed supportive cross members to provide additional frame stiffness and durability.
- Frame must be coated with a rust inhibitor to increase longevity of vehicle.

BODY ASSEMBLY:

Body assembly shall be the following.

- Body shall be a Body on Frame Structure (Unibody Construction Not Allowed)
- Body shall be made of Galvanized Steel.

SUB FLOOR:

The interior floor shall be made of metal and provide a smooth surface for flooring attachment and to minimize interior noise.

- The proper insulation should be used to prevent the exhaust from making the floor so hot that it would be uncomfortable for the passengers.

FLOOR COVERING MATERIAL:

Shall be at minimum 3/16" thick continuous piece of fire retardant, nonskid transit-type flooring.

- The floor covering shall be butt jointed and cemented to the floor with a waterproof adhesive in order to prevent bubbles and blisters which could create a safety hazard.
- Mobility air restraint tracks and seat locks shall be beveled, with no sharp edges and will protrude no more than 1/4" above floor surface.

REAR AXLE:

Minimum 3000 lbs. capacity or OEM maximum.

Shall be rear wheel drive with a 3.45 axle ratio.

Shall have an air self-leveling suspension system

FRONT AXLE:

Minimum 3000 lbs. capacity or OEM maximum.

FUEL TANK:

Largest available, but no less than 24 U.S. gallons.

- Tank, fuel lines, and hardware must meet all current FMVSS, including FMVSS 301, as well as all current CARB and EPA requirements.
- Fuel Tank shall include an easy access fuel pump cover in Body.
- Tank shall be calibrated with the OEM dash fuel gauge.

GUAGES:

Fuel, water-temperature, oil pressure, Voltmeter, speedometer, odometer and Tachometer.

HORN:

Dual, electric

HEATER:

Heavy-duty heater is required.

- Shall be factory installed hot water type, of sufficient capacity to warm cabin area and clear windows of snow, ice and fog.
- The water lines for the heater coil may be housed within the conduit used for the air conditioning refrigerant lines.
- All lines and hoses shall be sufficiently fastened, protected, and insulated to ensure against wear from friction and the elements.
- The lines must be mechanically attached, with OEM clamps, to the vehicle structure at no greater than 18 inch intervals and must be routed so as not to be exposed to wheel spray and not pass within 2 inches of any part of the exhaust system.

INTERIOR INSULATION:

All side walls and areas around the windows shall be insulated and finished with matching trim and color.

- Entire ceiling shall be insulated.
- Insulation shall consist of a polystyrene composite and shall be nontoxic.
- A polyurethane foam or honeycomb resin is also acceptable.

INTERIOR HEIGHT (at center):

Minimum 57 ½"

INTERIOR LENGTH:

Overall interior floor length

- Shall be a minimum of 81.5 ".

INTERIOR TRIM:

- Material and treatments shall be flame retardant to meet FMVSS 571.302 and be surface treated for efficient cleaning.
- Panel fastening devices shall have smooth finishes without any unprotected sharp edges.

LAMPS:

Automatic daytime running lamps, if available.

EXTERIOR MIRRORS:

Left and Right folding power adjustable

- Manual Folding

INTERIOR MIRROR:

10" automatic day/night rear view mirror.

FLOOR MATS:

Must have Driver floor mat.

KEYS:

Must have 3 sets of keys

OVERALL HEIGHT:

Measured from front to highest point of vehicle.

- Minimum 66", Maximum 83".

OVERALL LENGTH:

Minimum of 195", Maximum 210"

OVERALL WIDTH-EXTERIOR:

Maximum 80".

GROUND CLEARANCE:

Minimum 6"

OVERALL WIDTH-INTERIOR:

Minimum 64.5".

RADIATOR:

Heavy-duty, with factory installed coolant recovery system.

- Vehicle's cooling system must be winterized with ethylene glycol for temperature to 20 degrees F below zero.

REAR WINDOW:

Defogger/defroster with wiper/washer

ROOF GUTTERS:

Gutters shall be contoured into the roof design of vehicle.

DRIVER'S SEAT:

Shall have a 6 way adjustable commercial driver seat.

FRONT PASSENGER SEAT AREA:

The front passenger area must be dedicated for a wheel chair and meet all applicable ADA requirements.

REAR (3rd ROW) SEAT:

Standard three (3) passenger capacity, all passenger seats shall be made of durable type materials that can be cleaned easily, fully padded for occupant comfort and retention.

- All materials used in seats (including driver seat) shall comply with FMVSS burn resistance requirements.
- All seat colors shall match the vehicle color and be aesthetically pleasing.
- All seats will comply with FMVSS seat anchorage requirements.
- The floor plan must comply with the current American with Disabilities Act standards such as axle width, knee room, etc.

SEAT BELTS:

Passenger restraints (seat belts) shall be furnished for all passenger seating positions and for the driver.

- Restraints shall consist of lap belts and/or shoulder seat belts.
- Belts shall comply with FMVSS belt requirements and be of sufficient length for adults, and include two (2) Seat Belt Extensions.
- There needs to be a commercial quality seat belt knife fastened to vehicle in driver's reach.

STEERING:

Power assisted, with Tilt column

SUSPENSION:

The vehicle shall have front and rear independent suspension system adequate to support the rated weight capacity of the individual axle.

- Front Short Long Arm (SLA) suspension that provides a tight turning radius and a rack and pinion steering gear.
- Rear suspension with steel leaf springs and air shocks to deliver a comfortable ride for all passengers.

TRANSMISSION:

4 speed minimum automatic including overdrive.

- Transmission shall be capable of transmitting the torque and horsepower listed on the engine and have a transmission oil cooler.

UNDERCOATING:

All exposed floor seams shall be sealed **with an industrial grade butyl sealant or equivalent** that conforms to ASTM C920.

- The entire body and frame shall be tumbled rotated through a tank in which a high voltage electrical charge bonds a rust inhibitor necessary for rust and corrosion protection. And then baked in an oven to cure.

VEHICLE COLORS:

Body: Vendor to supply list of colors and prices available.

Interior/Seats:

- Gray Leatherette Seating Fabric

WARNING LIGHT:

A warning light shall be in the driver's area, for the rear door, indicating "door ajar".

WARRANTY:

Warranty must be as follows

- A Bumper-to-Bumper Warranty 3 years or 36,000 miles
- Vehicle shall have a 5 Year or 75,000 mile manufacture power train warranty.
- 5 year or 100,000 mile Rust Through Warranty
- Emissions warranty as mandated by Federal and State
- Wheel Chair Ramp 5 years or 75,000 miles
- These warranties shall begin on the date that vehicle delivery is accepted by the agency issuing the purchase order.

WHEEL BASE:

Minimum of 122 inches.

WHEELS AND TIRES:

Tire size must be compatible with each vehicle and must meet 6,600 lb. GVWR minimum.

- Tires shall be steel-belted radial all season type tires.
- Wheels shall be made of steel
- Shall have full Wheel covers
- Shall have an tire sealant and inflator kit included
- Spare wheel and tire shall be of the same size as all the other wheels and shipped loose with vehicle

WHEELCHAIR ACCESSIBILITY SYMBOL:

The international wheelchair accessibility symbol depicted on sign D9-6 in the "Manual of Uniform Traffic Control Devices" published by the federal

Highway Administration shall be affixed to the outside of each vehicle on all four sides.

- No vendor/dealer advertisements shall be on the symbols.
- Symbols shall be between 3” and 4” in overall height.

WHEELCHAIR POSITIONS:

2 Wheelchair positions shall be provided as standard equipment: a center behind driver placement (straight in from the ramp entrance), and a right front passenger placement.

- Multiple tie-down locations shall be provided to properly secure two wheelchairs as approved by the procuring agency.
- The right front passenger placement should be located as far forward as possible.
- This multiple tie-down configuration allows for up to two (2) wheelchair passengers or three (3) ambulatory passengers. Wheelchair positions must be forward facing.

WHEELCHAIR RAMP:

Vehicle will be equipped with a manually deployed integrated ramp that stores under the floor.

- The ramp shall have a minimum usable width of 30” and slope meeting the requirements of ADA, 49 CFR.
- The ramp surface shall be continuous, with the surface being either expanded or solid metal. If solid metal, it shall be covered with (Armstrong Crosswalk, or equivalent) slip-retardant flooring.
- The surfaces of the boarding edge of the ramp and door threshold shall have a bright yellow finish running the full surface, in order to contrast with the finish on the rest of the ramp.
- Vinyl tape is not acceptable.
- Ramp shall have a rated capacity of 1200 lbs. with a safety factor of at least three (3) based on the ultimate strength of the material.
- Each side of the ramp shall have protective barriers at least two (2) inches high to prevent mobility aids from rolling off of the ramp edge and must have yellow tape on them.
- Ramp must meet all ADA requirements as set out in the Federal Register, Part IV Department of Transportation, 49 CFR Parts 27, 37 and 38, Transportation for Individuals with Disabilities; Final Rule, published Friday, September 6, 1991.

WHEELCHAIR SECUREMENTS SYSTEM:

The securement system shall be, **Q'Straint QRT MAX Automatic Retractor System Q-8309-L with L-Track anchorage system and J-Hooks, or equivalent.**

- They must be fully assembled and ready to use.
- Shall include securement pouches store wheelchair securement tie-downs.
- Shall include four (4) Q5-7580 Webbing Loops for Securing Scooters. Belt system shall be of sufficient length to accommodate a motorized wheelchair.
- A minimum of two tracks, (pads), each of sufficient length for proper attachment and positioning of the belts, shall be placed parallel to each other and perpendicular to the direction in which the wheelchair faces.
- The anchors must be bolted to structural steel.
- The tracks shall be securely mounted to the vehicle, flush from the floor and ramps, to insure that the track will not pull away from the van floor or shift position under anticipated loads.
- Any tracks overlapping the access path must be recessed into the floor to prevent passengers from tripping.
- All attachment hardware and anchorages shall meet or exceed the 30 mph/20 Impact Test criteria per SAE J2249, 36 CFR Part 1192 and CFR Part 38, and all applicable Federal Motor Vehicle Safety Standards, as amended.

WHEELCHAIR OCCUPANT RESTRAINT:

The wheelchair occupant restraint system shall be **Q'Straint Q8-6325** or equivalent.

- Shall have a standard manual lap/shoulder belt combo or equivalent to.
- That meets SAE J2249 and ADA requirements.
- The L tracks must be bolted to structural steel.

Price proposed should be for 2 sets of wheelchair restraints (which would cover both wheelchair placements).

VENDOR WILL SUPPLY WRITTEN OR VIDEO INSTRUCTIONS ON THE USE OF THE RESTRAINT SYSTEM.

WINDOWS:

Factory tinted safety glass all around, (1) window on each side capable of being opened.

- Shall be at least 30% smoked glass windows throughout passenger area that is be factory installed.
- After market add on films is not acceptable.

NOTE:

All windows and emergency exits shall meet the performance and operational requirements as outlined in the Federal Motor Vehicle Safety Standards and Procedures.

WINDSHIELD:

Tinted safety glass.

WINDSHIELD WASHER:

Windshield washer must be protected with winter-strength solution.

WIPERS:

Must have an intermittent wiper system.

WIRING:

Schematic of wiring shall be included with the vehicle at the time of delivery.

- Each vehicle shall have a 12-volt electrical charging system as supplied from the OEM.
- All electrical wiring shall be automotive stranded copper, of sufficient gauge to handle the load, color-coded to match the OEM.
- All harnesses will be secured to the frame/body at a maximum of two feet intervals with insulated clamps.
- All exposed terminals and wiring shall be protected from the elements using sealed terminals or heat shrink where necessary. Exposed wires will be wrapped or loomed in corrosion/moisture-resistant material.
- Must be continuous wiring with OEM type pin connectors at harness connections, **butt connectors are not allowed.**

MISCELLANEOUS TECHNICAL SPECIFICATIONS:

1. There shall be no sharp corners on the unit. All corners shall be slightly rounded and filed smooth.

2. All weld joints shall have been cleaned, primed, be free of slag intrusions, undercut, roll, blow holes, craters and porosity.

- Welds shall be properly fused, of ample penetration and smoothly finished on exposed surfaces.
- Sheet metal fit-up must be properly executed and concealed by a finish-coat of paint.
- Finish and all glass must be free of any defects due to welding, welding slag, heat, warp age, or assembly damage.

3. All materials installed shall be new and free of rust.

4. No wires shall be visible on the exterior or interior of the unit.

I. DELIVERY:

Vehicle must be delivered at a maximum of 120 calendar days from the date a Purchase order is issued. Pre-delivery servicing and adjustments: prior to acceptance by the purchaser, the vendor shall service and adjust each vehicle for operation. This process shall include but not be limited to the following:

1. The vehicle must have a full tank of fuel when delivered.
2. Each bus shall be designed to facilitate the disassembly, reassembly, servicing or maintenance thereof by use of tools and items that are normal and available as commercial standard items. The body and structure shall be designed for ease of maintenance and repair.
3. All parts added, as part of the modification process shall be new.
4. Headlights properly aligned
5. Engine Tuned
6. All accessories properly adjusted
7. Electrical, braking and suspension systems inspected
8. Both batteries Charged
9. Front-end alignment must be done after body is put on chassis. Chamber, caster and toe must be adjusted to the center of OEM specs. Ford chassis buses must have adjustable caster, camber bushings installed. Standard OEM bushings will not be accepted. Each bus must come with documentation stating before and after actual alignment readings of bus.
10. All wheels balanced, including spare
11. All lubricants checked, and greased if needed
12. Cooling system serviced with permanent type anti-freeze and summer coolant for minus 20 degrees F (-28.888C).
13. Warranty papers and owner's guide

14. Exterior and interior cleaned and washed.
 15. Odometer cannot exceed 3,000 miles at the time of delivery of completed buses to the purchasing agency. There will be a charge of one dollar (\$1.00) per mile for each vehicle with an odometer reading in excess of 3,000 miles payable to the purchasing agency at the time of delivery.
 16. Under no circumstances are tow vehicles to be attached to any buses.
 17. Each vehicle must be delivered to the agency submitting the P.O.
- Copies of the all Certificate of Origins and signed invoices must be sent to the organization named on the purchase order before delivery is made and must be delivered with the vehicle: receipt of these after delivery **is not acceptable**.

ALTOONA TESTING:

Proposal must include a copy of Altoona Test Report for this vehicle if applicable.

VEHICLE TESTING:

Certification shall be provided that in accordance with 49 CFR part 665, Bus Testing, the vehicle either does not need to be tested (with justification specified for exemption) or has been tested at the bus testing facility and a test report is included.

INFORMATION TO BE FURNISHED WITH EACH VEHICLE

MANUALS:

Must include OEM Repair service manuals and wiring diagram manual for the chassis. And as built wiring diagram and parts manual for body and for all auxiliary equipment.

1. Maintenance and inspection schedule incorporating the required maintenance and inspection of the basic vehicle and its sub-systems.
2. Operator's manual for vehicle and all add-on equipment.
3. Warranty papers for chassis, body, and additional equipment.

PRE-AWARD AUDIT:

A Pre-Award Audit shall be conducted to determine if the proposal meets specifications. The Supplier shall submit documents, which include certification of the manufacturer's compliance with the Federal Transit Administration (FTA) Pre-Award Buy America Audit Requirements. The document submitted shall include the following information for each major component used on vehicle:

1. Name and address of each supplier.
 2. Cost of each major component and subcomponent. In order to protect proprietary information, the document may reflect the percentage of total cost each item represents instead of the actual cost.
 3. Country of origin of each major component and subcomponent.
 4. Name and address of company where final assembly occurs.
 5. Cost of final assembly
 6. Signature of authorized representative of vehicle manufacturer.
- Once the preceding steps have been completed, the contract shall be awarded.

POST- DELIVERY AUDIT:

A Post Delivery Audit of the vehicle(s) shall be conducted at the purchaser's facility, to determine that the completed vehicle(s) meets specifications. Once this process has been satisfactorily completed, the vehicle(s) shall be considered acceptable.

ACCESSIBILITY REQUIREMENTS:

When submitting a Proposal for an accessible vehicle for the disabled, the vendor shall provide a list of the vehicle related equipment illustrating the component cost and related installation charges. The purpose of this list is to reflect an accurate cost for those vehicle related items, which are required to make the vehicle accessible to the disabled.

OPTIONAL ITEMS

Must be installed by vendor or factory before delivery

CNG:

Unique CNG fuel system option designed and factory-installed, not an aftermarket conversion.

- Estimated 290-mile CNG range (which includes a 40-mile low-level indicator).
- Three Type-3 CNG tanks integrated seamlessly into the vehicle design and factory-installed.
- 21.1 Gasoline Gallon Equivalent (GGE).

System shall be CARB and EPA certified, OBDII compliant, and fully integrated into the OEM powertrain control system. No additional control module will be accepted.

1. Closed-loop fuel control
2. Sequential fuel injection (SFI)
3. Optimized ignition timing
4. Must maintain original fault codes (DTCs)
5. Diagnostics accessed through DLC using original scan tool or any generic OBD-II scanner
6. CNG system shall be covered by 3 year/50,000 mile warranty and cannot void the OEM powertrain warranty.
7. The Minimum CNG Type III tank with a capacity of 21 Gasoline Gallon Equivalent. (gge)
8. System must be installed by a Qualified Vehicle Modifier (QVM), and installation must meet or exceed OEM requirements. This system shall also be installed by the system manufacture

POWER RAMP:

- Telescoping Power Ramp (meets ADA/CSA guidelines).
- Anti-Slip Ramp Surface.
- Two deployment settings: 4.4:1 Short Deploy Slope & 6.0:1 Long Deploy Slope.
- Ramp Lighting.

TWO-WAY RADIO SYSTEM: UHF:

ICOM F221 UHF two-way Radio System with a PCTELMUF4505 UHF antenna and coax or approved equal.

- Antenna shall be mounted on Roof.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for the agency issuing this purchase.

TWO-WAY RADIO SYSTEM:

ICOM F121 VHF two-way Radio System with a PCTEL MHB5800 VHF antenna and coax or approved equal.

Antenna shall be mounted on Roof.

- Radio must be mounted in an easy accessible location for the driver.

- Radio must be programmed with the correct Frequencies and the antenna tuned for the agency issuing this purchase.

TWO-WAY RADIO SYSTEM:

Kenwood TK-980 800 MHz two-way Radio System with a PCTEL MUF8003 antenna and coax or approved equal.

- Antenna shall be mounted on Roof.
- Radio must be mounted in an easy accessible location for the driver.
- Radio must be programmed with the correct Frequencies and the antenna tuned for agency issuing this purchase.

FOLDING JUMP SEAT:

A rear facing folding jump seat behind driver's seat for additional passenger.

AUXILLARY A/C UNIT:

An additional A/C unit to help with the cooling of the interior of the vehicle.

SECTION “Q”
ADA PURPOSE BUILT LOW FLOOR VEHICLE
RESPONSE SHEET

BASE PRICE \$_____ **ea.**

The following options shall receive separate pricing as part of the Proposal submission:

OPTION PRICING

CNG: **Option Price:** _____

POWER RAMP: **Option Price:** _____

TWO-WAY RADIO SYSTEM: UHF: **Option Price:** _____

TWO-WAY RADIO SYSTEM: **Option Price:** _____

TWO-WAY RADIO SYSTEM: **Option Price:** _____

FOLDING JUMP SEAT: **Option Price:** _____

AUXILLARY A/C UNIT: **Option Price:** _____

A list of optional equipment and/or accessories shall be provided. The list must contain:

- Item
- Description and functionality detail
- Cost of item installed in final delivery of vehicle
- Any changes to listed specifications as outlined above to accommodate options

RFP EXCEPTIONS:

Supplier must list any exceptions here to be used as a part of the Proposal evaluation and analysis. Please list the roman numerical on the standard specs or the number for the options when listing any Proposal exceptions.

SECTION “R” SPECIFICATIONS FOR LOW FLOOR PARATRANSIT CUTAWAY WITH WHEEL CHAIR RAMP

1. GENERAL DESCRIPTION:

The purpose of these specifications is to describe the conversion of a steel cage, low floor, commercial bus designed for use in Shuttle and Transit applications that meets all the requirements of ADA and the FMVSS Safety Standards in effect at the time of manufacture. Due to the lower passenger position on the low floor configuration, the bus shall have successfully completed FMVSS214 Side Impact Protection testing. Buses that do not comply with FMVSS214 will not be accepted. The bus shall be a body-on-chassis design utilizing a Chevrolet G4500 cutaway chassis with 6.0L gas engine. Proposals offering a Ford E450 chassis will not be considered. The proposed bus must have been tested at the Federal Bus Testing Center at Altoona, PA in the 7-year/ 200,000 mile category. The bus must meet all the chassis specifications listed in the chassis section. The maximum overall width of the bus body shall be 96”. A bus body wider than 96” will not be accepted.

The bus will be of a “Steel Cage” type construction with FRP Composite Skin laminated to a moisture resistant (less than 1%) substrate (not Luan) attached to the steel cage with urethane adhesive. The roof will consist of a single piece FRP skin laminated to the substrate and roof steel with urethane adhesive. The bus body is constructed of welded walls, sub floor, roof framing, and rear steel structure which are bonded and bolted together, forming an integrated steel cage around the passenger area. The steel structure of the walls must extend below the floor level and continue to the lowest part of the bus. Separate skirting that only serves a decorative purpose is not allowed; every part of the sidewall must have the steel cage structure behind the exterior skin. Construction methods utilizing a matrix of honeycomb composite will not be acceptable.

Unless otherwise specified, all units shall be furnished complete with standard equipment and factory-installed accessories as listed in the manufacturer's literature for the models specified herein. The following items are minimum requirements and shall be provided whether shown as optional or standard equipment by the manufacturer.

1.1 All Standard and Common Features Shall be Furnished:

Standard and common features, some related to safety and others to driver and passenger convenience, which are generally provided in a para-transit vehicle without customer stipulation. Those features include but are not limited to: adjustable instrument lights, interior sun visors, exterior backup lamps, two-speed windshield wipers, windshield washers, windshield defroster, coolant recovery system, etc. Standard and other common features if not specifically stated shall not be interpreted as items that can be omitted to reduce price or to provide any other advantage

.1.2 Certification of ISO 9001:2000 Compliance:

The manufacturer of the vehicles shall have a proven, third-party certified quality control system in place and shall be ISO 9001:2000 certified at the facility that will produce the vehicles as proposed. Written certification of ISO 9001:2000 compliance shall be included with the Proposal submission documents. A copy of the vehicle manufacturer's ISO-approved Quality Assurance Manual shall also be submitted with the Supplier's Proposal package.

2. GENERAL DIMENSIONS:

Wheelbase.....	165" min.
Interior height from floor to ceiling front.....	86" min.
Interior height from floor to ceiling at rear.....	76" min.
Height at first step.at ride height.....	14.5" max.
Height at first step.at ride height- bus knelt...	10.5" max.
Height at passenger door entrance.....	75" min.
Aisle width.....	14" min.
Interior width at floor level.....	91" min.
Exterior width	96" max
Gross Vehicle Weight Rating.....	14,200 lbs. min.

3. BUMPERS:

Chassis manufacturer's standard front chrome bumper and vehicle manufactured standard rear bumper. Rear bumper must be of sufficient strength to allow the vehicle to be pushed without damage.

4. ELECTRICAL:

4.1 Electrical box for the bus body shall be located inside above the driver in a compartment with a door. Fuse, relay and component location will be labeled on the inside of this door.

4.2 Automotive type fuses are required.

4.3 Wiring needs to be color coded, and labeled for function every 12" and meet all the requirements of the Society of Automotive Engineers (SAE Standards).

4.4 All body component circuits shall be protected in convoluted split loom tubing for protection and tied/anchored a minimum every 16".

4.5 The bus will be equipped and labeled with extra fuse protected circuits for the use of the customer.(minimum of 4 extra circuits). Fuses to be located in electrical box described in section 15.1 All exterior loomed wire harnesses shall have waterproof connectors and sprayed with corrosion resistance spray.

4.6 Rotary battery disconnect switch located near the driver.

4.7 Wired for 2 way radio with a minimum 6"X6" metal ground plane for the antenna. Motorola radio CDM1250, or approved equal, with low profile wing type antenna and ground plane shall be installed and preprogrammed with customer supplied frequencies.

4.8 A wiring diagram, "As Built" is required. The wiring diagram should indicate schematics and wire color, gauge, and location. There should be separate diagrams for each system ie. Doors, heaters, lights etc. A master wiring diagram will also be included of the complete wiring system added to the chassis. An example of the wiring diagrams will need to be included with the Proposal.

4.9 A minimum of 200 ampere alternators shall be provided. KEI or approved equal.

4.10 Chassis manufacturer supplied batteries shall be mounted on a stainless steel roller mounted pull out tray with battery hold down secured with bolts. Inside of compartment should be covered with a durable insulating material to prevent shorts. Battery compartment should be vented and the battery shall be easily serviceable without removal from battery tray.

4.11 All wiring other than that provided with the OEM chassis shall be number and function coded every 6 inches and shall be color coded. The body manufacturer shall furnish a complete wiring diagram with integrated body and chassis marked to show the codes used.

4.12 Intermotive Gateway or approved equal idle with manual switch, volt sensor and light shall be installed. Solenoid is to automatically shut off when transmission is in gear or brake is applied.

5. LIGHTING:

5.1 Overhead entrance and step well lights shall be Light Emitting Diode (LED) and provide no less than five foot-candles of illumination on the entrance step area with the door open. This system shall be illuminated automatically when the door is open. Overhead and step well lights shall be wired to and activated automatically by door control and by a separate dash mounted switch.

5.2 All exterior lights, with the exception of headlights, passenger entry door, lift door, curb light, and rear back-up lights shall be Light Emitting Diode (LED) lights. Lighting shall be in accordance with Federal Motor Carrier Safety Regulations 393.12. All lights shall have wire long enough to move the light at least six inches (6") from vehicle for service. Lights shall be grounded to body framing structure. All lights shall be sealed from moisture. Marker lights shall be armored, surface mounted. Center brake light shall be furnished.

6. AIR CONDITIONING:

6.1 In addition to the OEM chassis A/C system, the installed auxiliary air conditioning system shall be a minimum 75,000 BTU rated. Unit shall be a model TC70 by American Climate Controls or approved equal.

6.2 Compressors:

A chassis OEM supplied compressor and an engine mounted TM-21 or larger compressor shall be provided. Each unit shall have a nominal ten (10) cubic-inch

displacement, and is to be belt driven off of the vehicle's engine. The compressors are to be equipped with an electro-magnetic clutch controlling each of the system's (2) thermostats.

7. HEATING AND DEFROSTING:

A rear hot water heater with blower fan shall have a minimum BTU rating of sixty five thousand (65,000) and shall be installed under a seat near the rear of the vehicle. The controls shall be readily accessible to the driver. Heater hose connections shall be installed above the floor of the vehicle body and through: the fire wall to the engine compartment. **Easily accessible** all brass gate valve(s) shall be furnished to cut off the flow of coolant water to the rear heater.

8. SAFETY EQUIPMENT:

- 8.1** First Aid Kit; 64 unit
- 8.2** Fire Extinguisher; One 5-pound dry type (BC rated), securely mounted near the driver's seat.
- 8.3** Reflectors; Three folding triangle reflectors with storage container(s).
- 8.4** Back up Alarm; Meeting the requirements of SAE J994B or the latest revision thereto.
- 8.5** Fresnel Lens; provided on the rear window of the vehicle.
- 8.6** Seat belt cutter

9. MIRRORS:

- 9.1.** Exterior; Rearview mirror, manufacturer's exterior low mount type with extension arms (below eye level) wide view type mirror. Mirror shall be a minimum of 6 inches by 9 inches. Additionally minimum 5-inch convex mirrors to be mounted with brackets on top of the main mirrors on the left and right sides. Mirrors are to be Velvac model 2020 XG or approved equal
- 9.2.** Interior; Day/night type, conforming to FMVSS No. 111 and affording a good view of the road to the rear as well as the passenger area. The mirror(s) shall be made of safety glass, having rounded corners and protective edges. If more than one interior mirror is installed, at least one of the mirrors shall have a minimum of 90 square inch of clear vision, reflective surface area.
- 9.3.** Passenger Mirror; an additional minimum 6-inch by 10-inch interior mirror shall be furnished for the driver to view the passengers.
- 9.4.** OE Compliant mirror (tested for vibrations, door slams, UV testing, Salt spray testing, Thermal testing (temperatures of -40F to 212F) and shell load test (holds 225 lbs. max. load).
- 9.5.** Die Cast Aluminum construction (durability).
- 9.6.** Powder Coating (No rust/corrosion with this type of coating).
- 9.7.** No exposed fasteners weld spots or wires (weld spots and fasteners can create corrosion areas over time due to inclement weather and the wires run internal through arm for heated/remote upgrade option to mirror).
- 9.8.** Replaceable parts which include flat glass and convex glass mirrors that is cost effective rather than replacing complete head mount.
- 9.9.** Spring detent with adjustable home position arm (arm folds either forward or

backwards to allow buses to go through bus washes and park close together in bus yards). This arm would also move if hit from either direction and fold rather than cause damage to mount or body of bus.

10. WINDOWS:

- 10.1** One Double T – Slider window on each side of the bus will be standard. Option of all T slider windows is available.
- 10.2** Passenger windows shall be a minimum 18 ½”, 36” or 45” wide and 36” high (body length will dictate sizes).
- 10.3** Egress windows shall be provided in sufficient numbers and labeled to meet FMVSS and state requirements (23 ½” x 60”) minimum. A minimum of one on each side and the rear is required.
- 10.4** Side windows to be provided the full length of the vehicle. If the windows are transit type T-slider windows they shall be equipped with emergency release latches to provide emergency exits. Release instructions shall be provided at or near the release handles and an audible alarm shall be activated when any handle is released. Side windows, rear window(s) and glass in passenger entrance door shall be of uniform dark tint sufficient to permit no more than 31% light transmission. Tinted film is not acceptable.

11. PASSENGER SEATS AND DRIVER’S SEAT:

All seating installed in this vehicle shall be in compliance with FMVSS 207 (Seating System) and any associated seat belt assemblies shall be in compliance with FMVSS 209, 210 (Seat Belt Assembly, Seat Belt Assembly Anchorage’s). Testing of the seats must have been performed in the bus. A level 5 fabric must be used.

- 11.7** Freedman featherweight or approved equal mid high seats shall be provided with top mounted grab rails and flip up arm rests on all aisle seats. Seats shall be covered with a durable level 5 cloth with antimicrobial properties and that is impervious to liquids.
- 11.8** All passenger seats shall be equipped with Under Seat Retractable seat belts manufactured by Freedman Seating or approved equal.
- 11.9** Minimum Aisle: 18” Standard; (Optional wider seats will decrease aisle width).
- 11.10** Seating quantity shall be determined by the floor plan selected.
- 11.11** Driver’s seat shall be a USSC G2E mounted to a 6-way power seat base.

12. BODY CONSTRUCTION SIDE WALL AND REAR WALL CONSTRUCTION:

Bus shall have successfully completed FMVSS214 Side Impact Protection testing. Sides and roof shall be constructed of fiberglass panels. Roof shall be of sufficient height to provide at least 76 inches headroom at the center aisle. Headroom may be reduced slightly in some areas of the vehicle to accommodate other specified equipment such as air conditioner components and the normal contour of the roof. The structure shall be watertight and shall meet the requirements of Federal Safety Standards as to school bus rollover protection, No. 220, as well as FMVSS 214 Side Impact Protection

- 12.7** There is one 1 ½" X 1 ½" horizontal 16 gauge steel tube below the window line and one 1 ½" X 2 ½" 14 gauge tube at the floor level, or approved equal. There is one 1 ½" X 1 ½" horizontal 16 gauge steel tube at the top sidewall forming the top edge of the wall, or approved equal. Steel structure must extend to or below the floor level to the lowest point in the sidewall, or approved equal.
- 12.8** Vertical steel 16 gauge square tubing nominal dimensions 1 ½" X 1 ½". Vertical steel ribs consist of one (1) 1 ½" X 2" 16 gauge steel spaced at the sides of each window opening, or approved equal.
- 12.9** Two (2) 1½" X 1½" 16 gauge steel tubes are required at the front of the sidewall to form the front & rear of the door opening. One (1) 1 ½" X 1 ½" 16 gauge steel tube is welded vertically at the midpoint of each window with a width greater than 24 inches connecting the horizontal tube welded below the window line and the horizontal tube that is welded at the floor line, or approved equal.
- 12.10** Horizontal steel tubes are welded to the vertical steel tubes. The entire steel structure must be bonded and bolted together with Sikaflex 252 or Locktite H8600 adhesive and have a full E-Coat corrosion protection to prevent rust/corrosion.
- 12.11** Exterior skin is FRP composite skin laminated to a moisture resistant (less than 1% absorption) substrate (not Luan) attached to the steel cage with urethane adhesive.
- 12.12** No wood or Luan is permitted in the sidewalls or rear end wall of the bus. Laminated constructions with Luan or other wood materials are not allowed as they can lead to corrosion of the skin due to the wicking of moisture into the wood material.
- 12.13** Rear of the bus shall have vacuum formed caps bonded to a FRP Composite Skin laminated to a moisture resistant (less than 1% absorption) substrate (not Luan) attached to the steel cage with urethane adhesive or a full Fiberglass panel. The LED lights shall be mounted to the vacuum formed or Fiberglass caps.

13. ROOF LINER:

The roof liner shall be of molded fiberglass installed the full length so as to cover all protrusions.

15. STANCHIONS, GRAB RAILS, AND MODESTY PANELS:

Vertical stanchions shall be provided at the aisle immediately behind the driver's seat and the step well; a horizontal grab rail shall extend from the wall to each stanchion. A modesty panel shall be attached to the stanchion behind the step well.

- 15.1** A smoked three eighths inch (3/8") thick panel Plexiglas panel shall be provided behind the driver's seat. Panels shall extend from the top of the horizontal grab rail to the ceiling and shall extend from the wall to the vertical stanchion. Stanchion and panel shall not impair driver's seat adjustment

- 15.2** An overhead handrail shall be installed in the roof of the vehicle on the driver and curb side and shall run the length of the seating area.

16. PASSENGER AND WHEELCHAIR RAMP DOOR:

Passenger entrance door shall be a transit type, and shall have a minimum horizontal

opening of approximately 35 inches and a minimum vertical opening of approximately 75 inches. The door shall be operated from controls at or near the vehicle driver's seated position. The door shall be automatically operated by pressing a switch on the driver's console, and shall be designed to allow manual opening in case of an emergency. The entry ramp shall be designed so that the top of the first step is no more than 10.5 inches above the ground with the vehicle unloaded and bus fully kneeled. The entry ramp shall have a non-skid material applied.

The passenger entry door shall be angled at 12.5° so that wheel chairs need only to be turned 77.5° to proceed down the aisle. The forward most door jamb (right side when entering bus) shall be in line with the driver to minimize driver head turn to view entry way. Doorways positioned behind the driver are not acceptable.

16.5 AIR SUSPENSION WITH KNEELING:

The bus shall be of the Low Floor type with air suspension both front and rear, and shall have a kneeling feature to lower the bus to meet 1:6 angle when ramp is deployed.

16.5.1 All chassis shall be equipped with Air Suspension System supplied with two electric compressors.

16.5.2 The pump pressurizes air and stores it in a tank for use in the air springs while the vehicle is operational. If the vehicle is not operated for an extended period of time, the springs will gradually decrease pressure as the compressed air escapes to the atmosphere. Once the vehicle is powered up the suspension controller will level the vehicle automatically.

16.5.3 System is equipped with a suspension status LED and buzzer which will flash at 1Hz to indicate an error in the system.

16.5.4 When stopping for non-wheelchair passengers, operators may choose to maintain the vehicle at its normal ride height condition by keeping the kneel switch in the off position.

16.5.5 When Kneel switch is on, the kneel sequence shall be follows:

- Driver pulls into position, places the vehicle transmission shifter in the park position, and engages the emergency brake.
- Driver opens door by pressing and holding open door switch until door is fully opened.
- Door open limit switch sends signal to the suspension controller to kneel the front.
- The front of the vehicle kneels.
- Driver then deploys the ramp by pressing/holding ramp deploy switch until ramp is fully deployed.
- Ramp deploy switch sends a signal to the suspension controller to fully kneel the vehicle.
- Full kneel drops the vehicle to meet 1:6 angle.
- Once the ramp is stowed and the door is closed the suspension controller will raise the vehicle to the normal ride height.

17. WHEELCHAIR RAMP:

- 17.1 The wheelchair ramp shall comply with all Federal ADA requirements.
- 17.2 The ramp shall be a power ramp that is designed to let wheelchair passengers enter the bus unassisted once the ramp is deployed. Ramps shall be rated at 800# minimum and have 34 inches clear width. Ramp length shall be 62 inches minimum. The use of exposed chains is not allowed.

18. WHEELCHAIR SECUREMENT AND SEATBELTS:

- 18.1 The vehicle shall have forward facing wheelchair positions per the attached floor plan. Each wheelchair position shall be provided with restraint devices that will secure the wheelchair and its passenger while in the wheelchair. These devices shall be adjustable to accommodate varying track widths of wheelchairs. Each wheelchair shall have a four (4) point securement (2 front, 2 back) in the vehicle with recessed anchor points of sufficient strength to secure a wheelchair and/or three wheel scooter. The entire securement system shall comply with all applicable regulations including ADA.
- 18.2 Floor mounted pucks shall be used to secure the restraint devices. The pucks shall be recessed mounted in the floor with three-eighths inch (3/8") diameter, SAE Grade 5 bolts, washers and self-locking nuts with National Fine Threads.
- 18.3 There shall be four (4) retractors assemblies for each wheelchair position in the vehicle to secure the wheelchair to the tracks. Example: Q' Strain QRT Deluxe (Q-8100-A1) System, or approved equal. Each retractor assembly shall consist of a heavy duty series "L" track fitting, the front left and right retractor shall be equipped with manual tension knobs for manual tightening and/or release. Each retractor assembly shall be equipped with a quick release, push-button buckle and buckle connector.
- 18.4 Two (2) seat belts shall be provided for each wheelchair passenger. The torso belts shall be two inches (2") wide, seventy-two inches (72") long, adjustable, with a strength rating of not less than three thousand pounds (3,000 lbs.). One end of the belt shall be secured to a female seat belt fitting and the other end shall have a male seat belt fitting. The seat belt assembly shall provide for a quick-release and also provide for a snap locking to connect both ends together.
- 18.5 A wall mounted height adjustable of approximately twelve inches (12") shoulder harness system shall be provided at each wheelchair securement location that is compatible with the specified restraints. The harness system shall be installed in accordance with all structural requirements established by the restraint supplier and all applicable regulations, including 49 CFR part 571.
- 18.6 All belts, straps, and harness assemblies in bundled sets and shall include a container in which to store them. Storage compartments shall be provided over the windshield and over the driver's door.

19. EMERGENCY EXITS:

Emergency egress points shall be provided on both sides and the rear of the vehicle as required by applicable Federal Motor Vehicle Safety Standards.

20. ROOF, FLOOR AND FLOOR COVERING:

Floor:

- 20.1** Steel sub floor cross members shall be 2" X 2", 14 Gauge steel tubing and coated to prevent rust and corrosion.
- 20.2** Body is mounted directly over the chassis frame to provide an integrated body chassis mounting, or approved equal.
- 20.3** Flooring shall be 5/8" thick single piece, engineered wood with moisture barrier laminated to upper surface, with moisture sealed edges. The underside of the flooring shall be sprayed with a Poly-Urea coating (material thickness of 40 mils), or approved equal.
- 20.4** A sealant shall be installed in body to floor corners to provide a water tight seal as an aid in floor cleaning. Interior floor/lower side wall covering shall be seamless sprayed-in Poly-Urea coating (material thickness of 50 mils), for durability and which will allow the floor to be cleaned with a hose if desired, or approved equal.
- 20.6** The floor will also cover the area around the ramp (but not the ramp platform itself). The cab floor shall be the General Motors OEM or approved equal insulated floor covering. Floor will have a removable fuel tank access panel for easy access to fuel pump and fuel gauge sending unit.
- 20.7** Steel 1 1/2" x 1 1/2", 18 gauge, (minimum) square tubing bent to the radius of the roof is required, or approved equal. Roof bows must be bent square steel tubing. All roof cross members shall be a minimum 18 gauge steel, (minimum) spaced no more than 24" apart or two (2) 1 1/2" X 1 1/2" tubing welded together. One (1) 1 1/2" X 1 1/2" tube installed to form the center longitudinal members front to rear of roof structure.
- 20.8** The outer edge of the roof structure shall consist of one (1) 1 1/2" X 1 1/2", 18 gauge (minimum) steel tube running the length of the roof welded to the roof bow steel tubes and bonded with Sikaflex 252, Loctite H8600 or equivalent and four (4) weld studs to the 1 1/2" X 1 1/2" steel tube that forms the top of the sidewall structure.
- 20.9** Exterior roof surface shall be Fiberglas, in a single piece that extends across the roof from rain gutter to rain gutter. The roof surface base material will be attached to the roof bows using urethane adhesive.
- 20.10** Seams are allowed only at the junction of the front cap and the junction of the rear cap. Any other seams on the exterior of the roof are not permitted.

21. PAINTING:

Exterior surfaces normally painted shall be thoroughly degreased, primed, and painted solid white. The base vehicle shall be Bright White in color. The area around the passenger windows shall be black.

21.1 All sections of the steel body cage are to be Electro-coated (Cathodic E-coating to 1500 hour salt spray test) after fabrication, prior to final assembly. Galvanized steel with “Gatorshield” is acceptable.

22. ADDITIONAL EQUIPMENT REQUIRED:

22.1 Stainless Steel wheel inserts for front and rear.

22.2 Valve stem extensions for rear dual wheels with a tire equalization system installed.

22.3 All stainless steel grab rails and stanchion poles shall be powder coated yellow.

22.4 Energy absorbing rear bumper – Romeo Rim or approved equal.

22.5 AM/FM/CD radio – chassis OEM

23. DELIVERY:

Each vehicle shall be delivered to the ordering agency’s location with a full tank of fuel.

24. MANUALS:

A line setting sheet and manual(s) containing operating and servicing instructions for the vehicle shall be provided with each unit. The manual(s) shall be as detailed as possible outlining all necessary operating and servicing instructions for each vehicle including the vehicle's driveline components. Necessary warnings and safety precautions shall be included. In addition, manual(s) containing illustrated parts lists, operating and servicing instructions for related and special equipment supplied with the vehicle shall be provided with the unit.

25. WARRANTY:

The manufacturer of this vehicle will provide a warranty of 3 years or 36,000 miles parts and labor. The body structure shall be warranted for a period of five (5) years and 100,000 miles.

The major subcomponents, including but not limited to, the Wheelchair Ramp, the Wheelchair Tie Downs, and the optional rear Air Conditioning Systems are warranted by the manufacturer of that component. Detailed warranty coverage shall be provided with each bus. The Electric Air Ride Systems are warranted for 3 years and 100,000 miles, minimum.

The Electrical System will be warranted for a minimum of 3 Years or 36,000 miles parts and labor.

LED Lights, Exterior/Interior, will be warranted for 7 years parts and labor (warranted by the manufacturer of those components)

Chassis warranty is provided for 3 years or 36,000 miles. Details of the Warranty shall be provided with every bus delivered. Drive train warranty shall be 5 yr. or 100,000 miles.

EXCLUSIONS: The using agency will assume the expense for replacement filters, fuel,

cleaning, painting and other minor items normally consumed in day to day operations. The using agency will assume responsibility for cost of repairs resulting from collision, theft, vandalism, operator negligence and/or acts of God.

26. PARTS AND SERVICE:

The successful Supplier shall have factory-trained personnel available for warranty repairs and the performance of service. The dealer shall also maintain an inventory of high-usage parts and a quick source for low-usage parts.

27. SAFETY DECAL(S):

Safety decal(s) shall be furnished and shall be affixed at any applicable area (emergency exit, steps, etc.). The decals shall include necessary warnings and precautions. Permanent decals (plaques) are preferred.

28. INSTRUCTION ON SAFETY, OPERATION AND PREVENTIVE MAINTENANCE:

The successful Supplier shall provide the agency sufficient instruction on safety, operation and preventive maintenance of the vehicle after the unit has been delivered and is ready for operation but prior to payment.

OPTIONAL EQUIPMENT:

1. Dedicated CNG conversion:

The chassis shall be modified to operate on dedicated Compressed Natural Gas (CNG) and have a minimum fuel capacity of 58GGE. Fuel tanks shall be mounted horizontally in a rear compartment accessible from the outside only via a hinged door on each side and the rear. The gasoline engine shall be converted to operate strictly on CNG. As part of this conversion, the original intake and exhaust valve seats and the exhaust valves of the L96 engine shall be removed and replaced with case hardened intake and exhaust valve seats and exhaust valves with LC8 heads. The CNG system must be OBD2 compliant operating parameters must be obtained by re-flashing the OEM ECM. Conversions utilizing a separate control module will not be considered. Fuel port shall be conveniently located inside the curb side rear door with pressure gauge and de-fueling port. A vehicle interlock shall be provided that will prevent the vehicle from running while a fuel nozzle is attached to the filler port. This option shall also include a roof escape hatch, as the rear storage compartment prevents egress out the back of the bus.

2. Stop Request System:

Stop request system will have a pull cord type activation and a large "Stop Request" display with an adjustable audible Chime. The display will need to be easily seen by the passengers and driver or have a second dash light in the driver's area. Display will be reset to off with the opening of the passenger doors. The system will need a switch to reset false trip of pull cord other than the opening and closing of the doors. Activation

strips or pull cords will need to be at an appropriate level for activation by riders in wheelchairs in the par transit locations.

3. Traffic Control Light Bar:

Traffic controlling light bar mounted on rear wall of bus above rear door. "Arrow Stik" or equal. Controls to activate flashing arrow shall be mounted in convenient location within driver's reach.

4. LED Front and Side Destination Signs:

Front and side LED full color destination signs shall be provided. Front sign shall be mounted in front bulkhead. Side sign shall be mounted in foremost curb side window. Signs shall be manufactured by Hanover Displays or approved equal.

5. Aluminum Wheels:

Aluminum wheels shall be provided in lieu of the standard steel wheels from the OEM chassis manufacturer. There will be no stainless steel wheel inserts with this option.

6. Camera System – 4 Cameras:

CWI Digital or approved equal

7. Camera System – 8 Cameras:

CWI Digital or approved equal

8. Bicycle Rack:

Shall be a Sportworks Veloporter 2 bicycle rack or approved equal mounted to the front bumper

9. Rear View camera system:

10. 2-way radio system:

11. Door activated 4 way flashers:

Hazard flashers shall be activated when passenger door is opened. This includes 2 additional amber LED flashing lights mounted high on each side of the rear wall.

SECTION "R"
LOW FLOOR ADA BUS
RESPONSE SHEET

BASE
VEHICLE

COST PER
UNIT

Transit Bus

\$_____ / ea.

Specify Overall Vehicle Length (outside of front bumper to outside of Rear bumper):_____

OPTIONAL ITEMS

COST

1. **Dedicated CNG conversion:** \$_____ /ea.
2. **Stop Request System:** \$_____ /ea.
3. **Traffic Control Light Bar:** \$_____ /ea.
4. **LED Front and Side Destination Signs:** \$_____ /ea.
5. **Aluminum Wheels:** \$_____ /ea.
6. **Camera System – 4 Cameras:** \$_____ /ea.
7. **Camera System – 8 Cameras:** \$_____ /ea.
8. **Bicycle Rack:** \$_____ /ea.

9. Rear View camera system: \$ _____/ea.

10. 2-way radio system: \$ _____/ea.

11. Door activated 4 way flashers: \$ _____/ea.

RFP EXCEPTIONS:

Proposal must list any exceptions here to be used as a part of the Proposal evaluation and analysis. Please list the roman numerical on the standard specs or the number for the options when listing any bid exceptions.

OKLAHOMA DEPARTMENT OF TRANSPORTATION



TRANSIT PROGRAMS DIVISION

FTA'S
SPECIAL PROVISIONS
FOR THE PROCUREMENT OF CAPITAL EQUIPMENT
WITH AN ESTIMATED CUMULATIVE COST
IN EXCESS OF \$100,000

STATEMENT OF FEDERAL PARTICIPATION

THIS PROCUREMENT IS DEPENDENT UPON THE AVAILABILITY OF FEDERAL FUNDS THROUGH THE FEDERAL TRANSIT ADMINISTRATION (FTA)

PAGES 2 THRU 15 OF THIS DOCUMENT ARE TO BE COMPLETED BY BIDDER/VENDOR

PAGES 18 THRU 24 OF THIS DOCUMENT ARE TO BE COMPLETED BY PRE AWARD REVIEWER AT TIME OF THE BID AWARD

PAGES 26 THRU 32 ARE TO BE COMPLETED BY THE PURCHASER AT THE TIME OF VEHICLE DELIVERY

**SPECIAL PROVISIONS FOR THE PROCUREMENT OF CAPITAL EQUIPMENT
USING FEDERAL FUNDS**

**THE FOLLOWING REQUIREMENTS AND CONDITIONS ARE INCLUDED AS AN
ESSENTIAL PART OF THE SPECIFICATIONS ATTACHED HERETO.**

SECTION I. FOR ALL BIDS:

**FMVSS CERTIFICATION - 49 CFR 571 Part D
(Circle all applicable standard #s)**

#	Title	#	Title
101	##Controls and Displays	102	##Transmission shift lever sequence, starter, interlock, transmission braking effect
103	##Windshield defrost and defogging system	104	##Windshield wiping and washing system.
105	##Hydraulic brake system.	106	##Brake hoses
107	##Reflecting surfaces	108	##Lamps, reflective devices, and assoc. equip.
109	#New pneumatic tires	110	#Tire selection and rims.
111	##Rearview mirrors	112	##Headlamps concealment devices.
113	##Hood latch system	114	#Theft Protection (not for walk-in vans)
115	##VIN -basic requirements.	116	##Motor vehicle brake fluids.
117	#Re-treaded pneumatic tires (to be used on rear wheels only)	118	#Power-operated window, partition, roof panel system (GVWR < 10K)
119	*New pneumatic tires for vehicles other than passenger cars	120	*Tire selection & rims for vehicles other than passenger cars
121	*Air brake system	124	##Accelerator control system.
129	#New non-pneumatic tires for passenger cars.	201	##Occupant protection in interior impact
202	##Head restraints	203	##Impact protect, driver steering control system
204	##Steering control rearward displace (not walk-in vans)	205	##Glazing materials
206	#Doors, locks, and door retention components.	207	##Seating system
208	##Occupant crash protection	209	##Seat belt assemblies.
210	##Seat belt assembly anchorages.	211	#Wheels, nuts, wheel discs, and hub caps
212	##Windshield mounting	213	##Child restraint system.
214	##Side impact protection (not walk-in vans)	217	*Bus emergency. exits / window retention & release
219	##Windshield zone intrusion	220	*School Bus rollover protection
301	##Fuel system integrity (+School Bus >10K GVWR)	302	##Flammability of interior materials.

The undersigned **BIDDER/VENDOR** hereby certifies that all vehicles furnished meet the **FMVSS IAW 49 CFR 571.**

Name of Company	Date
Printed Name of Person Signing Form	Signature

*Bus

@Bus with GVWR below 10,000 lbs.

#Passenger Car

In submitting this bid, the undersigned **BIDDER/VENDOR** as noted in Section III - Certification to Purchaser, certifies and agrees to the following clauses, assurances and certifications.

The **BIDDER/VENDOR** agrees to include these requirements in subcontracts financed in whole or in part by Federal Transit Administration funding. The bidder/vendor must execute all certifications below.

A. INCORPORATION of FEDERAL TRANSIT ADMINISTRATION (FTA) TERMS: The following provisions include, in part, certain Standard Terms and Conditions required by DOT, whether or not expressly set forth in the preceding contract provisions. All contractual provisions required by DOT, as set forth in [FTA Circular 4220.1E](#) 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 Agreement. The **BIDDER/VENDOR** shall not perform any act, fail to perform any act, or refuse to comply with any **PURCHASER'S** requests which would cause the **PURCHASER** to be in violation of the FTA terms and conditions

B. FEDERAL CHANGES: **BIDDER/VENDOR** 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 Master Agreement between the **PURCHASER** and FTA, as they may be amended or promulgated from time to time during the term of this contract **BIDDER/VENDOR's** failure to so comply shall constitute a material breach in this contract.

C. DBE CERTIFICATION: The **BIDDER/VENDOR** complies with 49 CFR 26.49 regarding the transit vehicle manufacturer=s overall DBE goal.

D. AIR CONDITIONING PERFORMANCE: The **BIDDER/VENDOR** will provide vehicles that meet or exceed the performance requirements of the air conditioning system(s) as detailed in the specification.

E. INTEREST of MEMBERS of or DELEGATES to CONGRESS: The **BIDDER/VENDOR** certifies that no member of or delegate to the Congress of the United States shall be admitted to any share or part of this contract or to any benefit arising there from.

F. PROHIBITED INTEREST: The **BIDDER/VENDOR** certifies that no member, officer, or employee of the Public Body or of a local public body during his or her tenure or one year thereafter shall have any interest, direct or indirect, in this contract or the proceeds thereof.

G. CARGO PREFERENCE - USE of UNITED STATES-FLAG VESSELS: The **BIDDER/VENDOR** agrees: a. to use privately owned United States-Flag commercial vessels to ship at least 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 United States-Flag commercial vessels; b. to furnish within 20 working days following the date of loading for shipments originating within the United States or within 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 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.)

H. ENERGY CONSERVATION: The **BIDDER/VENDOR** 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 Energy Policy and Conservation Act.

I. CLEAN WATER & AIR: The **BIDDER/VENDOR** 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. The **BIDDER/VENDOR** agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. 1701 et seq. The **BIDDER/VENDOR** agrees to report each violation to the **PURCHASER** and understands and agrees that the **PURCHASER** will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

J. NO OBLIGATION by the FEDERAL GOVERNMENT: The **PURCHASER** and **BIDDER/VENDOR** 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 the **PURCHASER, BIDDER/VENDOR**, or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying contract.

K. PROGRAM FRAUD and FALSE or FRAUDULENT STATEMENTS or REALTED ACTS: The **BIDDER/VENDOR** 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. The **BIDDER/VENDOR** 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 resultant contract or the FTA assisted project for which this work is being performed. The **BIDDER/VENDOR** 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 **BIDDER/VENDOR** to the extent the Federal Government deems appropriate. The **BIDDER/VENDOR** 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 the authority 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 **BIDDER/VENDOR**, to the extent the Federal Government deems appropriate.

L. CONTRACT WORK HOURS:

1. Overtime requirements: No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty 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.

2. Violation; liability for unpaid wages; liquidated damages: In the event of any violation of the clause set forth in paragraph (1) of this section the contractor and any subcontractor responsible therefore shall be liable for unpaid wages. Such 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 (1) of this section, in the sum of \$ 10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this section.

3. Withholding for unpaid wages and liquidated damages: The **PURCHASER** 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 the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this section.

4. Subcontracts: The contractor or subcontractor shall include the clauses set forth in this section and require the same from subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these clauses.

5. Payrolls and basic records: (i) 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 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 which 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 records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs 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.

M. CIVIL RIGHTS:

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 **BIDDER/VENDOR** 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 **BIDDER/VENDOR** 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:

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 **BIDDER/VENDOR** 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 **BIDDER/VENDOR** 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 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 **BIDDER/VENDOR** 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 **BIDDER/VENDOR** agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the **BIDDER/VENDOR** 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 **BIDDER/VENDOR** 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 **BIDDER/VENDOR** agrees to comply with any implementing requirements FTA may issue.

N. ALTOONA TEST CERTIFICATION: (Check one of the following):

- ☐ The vehicle has been Altoona tested, report number: _____
- ☐ The vehicle is exempt from testing in accordance with 49 CFR 665
- ☐ The vehicle is currently being tested at Altoona

O. DEBAREMENT AND SUSPENSIONS: This contract is a covered transaction for purposes of 2 CFR Part 1200, which adopts and supplements the provisions of U.S. Office of Management and Budget (U.S. OMB) "Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," 2 CFR Part 180. As such, the contractor is required to verify that none of the contractor, its principals, as defined at 2 CFR 180.995, or affiliates, as defined at 2 CFR 180.905, are excluded or disqualified as defined at 2 CFR 180.940, 180.935 and 180.945.

The **BIDDER/VENDOR** is required to comply with 2 CFR 180, Subpart C and must include the requirement to comply with 2 CFR 180, Subpart C in any lower tier covered transaction it enters into.

By signing and submitting its bid or proposal, the **BIDDER/VENDOR** or proposer certifies as follows:

The certification in this clause is a material representation of fact relied upon by the **Procuring Agency**. If it is later determined that the **BIDDER/VENDOR** or proposer knowingly rendered an erroneous certification, in addition to remedies available to **Procuring Agency**, the Federal Government may pursue available remedies, including but not limited to suspension and/or

debarment. The bidder or proposer agrees to comply with the requirements of 2 CFR 180, Subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The **BIDDER/VENDOR** or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

The Procuring Agency agrees and assures that its third party contractors and lessees will review the “Excluded Parties Listing System” at <http://epls.gov/> before entering into any subagreement, lease or third party contract.

The Procuring Agency will be reviewing all third party contractors under the Excluded Parties Listing System at <http://epls.gov/> before entering into any contracts.

FEDERAL FUNDS WILL NOT BE RELEASED UNTIL THE PURCHASING AGENCY RECEIVES A COPY OF THE ALTOONA TEST REPORT IF REQUIRED IN ACCORDANCE WITH 49 CFR 665



SECTION II

A. BUY AMERICA CERTIFICATION:

BIDDER/VENDOR to complete the Buy America Certification listed below. **BIDDER/VENDOR** shall certify **EITHER COMPLIANCE OR NON-COMPLIANCE** (not both).

Certification requirement for procurement of buses, other rolling stock, and associated equipment.

Certificate of Compliance with 49 U.S.C. 5323(j)(2)(C)

The **bidder/vendor** or offer or hereby certifies that it **will meet** the requirements of 49 U.S.C. 5323(j)(2)(C) and the regulations at 49 C.F.R. Part 661.11.

Signature_____

Company Name_____

Title _____

Date _____

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(2)(C)

The **bidder/vendor** or offer or hereby certifies that it **cannot comply** with the requirements of 49 U.S.C. 5323(j)(2)(C) and 49C.F.R. 661.11, but it may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Signature _____

Company Name _____

Title _____

Date _____

Instructions:

Special Note: Make sure you have signed only one of the above statements -- either Compliance OR Non-Compliance (not both).

Subscribed and sworn to before me this ____ day of _____ 20__.

Notary Public

Commission Expiration Date

My Commission Number

Seal:

This form **MUST** be prepared and signed by the offeror/vendor and submitted with all bids or offers on FTA-funded contracts. Bids or offers not accompanied by this form will be **REJECTED**

B. DOMESTIC CONTENT WORKSHEET:

(Typical Components of Buses from Appendix B to 49 CFR Sec. 661.11, an itemized component listing from the **manufacturer** that verifies compliance with the Buy America Provisions may be submitted in lieu of this form)

If you plan on using another components listing, you must include it with your bid and place an X in the following box. ☐

I. Components	% Domestic	X % Value	Dom. Value
engines			
transmissions			
front axle assemblies			
rear axle assemblies			
drive shaft assemblies			
front suspension assemblies			
rear suspension assemblies			
air compressor and pneumatic systems			
generator, alternator & electrical systems			
steering system assemblies			
front and rear air brake assemblies			
air conditioning compressor assemblies			
air conditioning evaporator/condenser assemblies			
heating systems.			
passenger seats			
driver's seat assemblies			
window assemblies			
entrance and exit door assemblies			
door control systems			
destination sign assemblies			
interior lighting assemblies			
front and rear end cap assemblies			
front and rear bumper assemblies			
specialty steel (structural steel tubing etc.) and aluminum extrusions			
aluminum, steel or fiberglass exterior panels and interior trim			
flooring and floor coverings			
TOTAL DOMESTIC CONTENT OF COMPONENTS (%)			

B. CONTINUED DOMESTIC CONTENT WORKSHEET:

II. Construction Activities (Describe Activities)	
Location of Construction Activities:	% OF DOMESTIC CONSTRUCTION ACTIVITIES:

Vehicle Manufacturer	Model	Model Year
Vendor Name	Signature	Date



C. LOBBYING:

The **BIDDER/VENDOR** certifies compliance with the Anti-Lobbying amendment, 31 U.S.C. ' 1352, as amended by the Lobbying Disclosure Act of 1995, Public Law 104-65 [to be codified at 2 U.S.C. ' 1601, et seq.]. The **BIDDER/VENDOR** also certifies that it will execute the following, "Certification Regarding Lobbying", as required by 49 CFR Part 20, AA New Restriction on Lobbying.@

EXECUTE THE FOLLOWING

CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements
(To be submitted with each bid or offer exceeding \$100,000)

The undersigned,

(Bidder/Vendor)

certifies, to the best of his or her knowledge and belief, that:

A. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal Contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal Contract, grant, loan, or cooperative agreement.

B. If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to 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 this Federal Contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/96). Note: Language in paragraph "B" herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (Public Law 104-65, to be codified at 2 U.S.C. ' 1601, et seq .)]

C. The undersigned shall require that the language of this certification be included in the award documents for all sub awards at all tiers (including subcontracts, sub grants, and contracts under grants, loans, and cooperative agreements) and that all Subrecipient's shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. ' 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

C. CONTINUED LOBBYING:

[Note: Pursuant to 31 U.S.C. ' 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such expenditure or failure.

(Bidder/Vendor)

certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the **BIDDER/VENDOR** understands and agrees that the provisions of 31 U.S.C. ' 3801, et seq., apply to this certification and disclosure, if any.

Signature of BIDDER/VENDOR's Authorized Official

Name and Title of BIDDER's Authorized Official

Date



SECTION III

CERTIFICATION TO PURCHASER:

The undersigned **BIDDER/VENDOR** certifies that the vehicle(s) furnished will meet or exceed the specifications.

The **BIDDER/VENDOR** hereby certifies that it has attached all applicable documentation including:

1. Federal Motor Vehicle Safety Standards (**FMVSS**)
2. Altoona Test Certification
3. Buy America Certification Form
4. Domestic Content Worksheet
5. Lobbying Certification Form
6. Government wide Debarment & Suspension Certification Form
7. Certification to Purchaser Form
8. Drawing of proposed floor plan.
9. Printed product literature of the vehicle and all ancillary equipment

The undersigned **BIDDER/VENDOR** certifies that it has read all of the bid documents and agrees to abide by the terms, certifications, and conditions thereof.

Name of Company:	Printed Name of Person Completing Form:
Address: (City, State, Zip)	SS# or Tax ID #:
Telephone: (Area Code)	Signature:

Disadvantaged Business Enterprise Information (DBE)	Bidders type of organization (circle)	
Is your firm a DBE?	Sole Proprietorship	General Proprietorship
(yes) (no)	Corporation	Limited Partnership
If yes, what type?	Other? Please List	

BIDDER/VENDOR CHECKLIST

THE FOLLOWING CHECKLIST MUST BE COMPLETED BY THE BIDDER/VENDOR BEFORE THE BID IS SUBMITTED.

This checklist will be used to ensure that all required procurement clauses and certifications listed within these special provisions have been read, initialed, and signed by the Bidder/Vendor along with any necessary signed certifications.

Section I. FOR ALL BIDS:

Bidder's initial all lines below:

FMVSS CERTIFICATION: Circled all applicable Standards & Signed? _____

- A. **Incorporation of Federal Transit Administration Terms:** Read? _____
- B. **Federal Changes:** Read? _____
- C. **DBE Certification:** Read? _____
- D. **Air Conditioning Performance:** Read? _____
- E. **Interest of Members of or Delegates to Congress:** Read? _____
- F. **Prohibited Interest:** Read? _____
- G. **Cargo Preference:** Read? _____
- H. **Energy Conservation:** Read? _____
- I. **Clean Water and Air:** Read? _____
- J. **No Obligation By the Federal Government:** Read? _____
- K. **Program Fraud and False or Fraudulent Statements:** Read? _____
- L. **Contract Work Hours:** Read?
 - 1. Overtime requirements: _____
 - 2. Violation; liability for unpaid wages: _____
 - 3. Withholding for unpaid wages: _____
 - 4. Subcontracts: _____
 - 5. Payrolls and basic records: _____
- M. **Civil Rights:** Read?
 - 1. Nondiscrimination: _____
 - 2. Equal Employment Opportunity: _____
- N. **Altoona Test Certification:** Completed the following?
 - 1. Report Summary enclosed? Attached? _____
 - 2. Report # _____: Completed? _____
- O. **Debarment and Suspensions:** Read & Understood? _____
 - 1. EPLS Report www.epls.gov (Must Not be Debarred) _____

CONTINUED BIDDER/VENDOR CHECKLIST

Section II.

- A. **Buy America Certification:** Completed and signed? _____
- B. **Domestic Content Worksheet:** Calculated, Completed & Signed? _____
- C. **Lobbying Certification signed:** Completed and signed? _____

Section III. CERTIFICATION TO PURCHASER Completed and signed? _____

I hereby attest that each item was reviewed and that my initials above indicate that the item was properly executed on this date.

Bidder/Vendor Company

Date

Bidder/Vendor Representative

Date



Pre-Award Reviewer
Replace This Blank Page
With A Screen Print
Of The
EPLS Report

***NOTE: PAGES 18 THRU 24
ARE TO BE COMPLETED BY THE PRE AWARD
REVIEWER AT TIME OF THE BID AWARD***

SECTION IV PRE AWARD AUDIT:

A. Purchaser's Certification - 49 CFR 663, subpart B:

The **bidder/vendor** has certified that the vehicle to be provided will be the same product as described in the advertised specification. (See attached consolidated certification form signed by the **bidder/vendor**, part III -A). The pre-award reviewer certifies that the **bidder/vendor** is responsible and will provide a vehicle that will meet or exceed the specifications.

EXECUTE THE FOLLOWING

PRE-AWARD PURCHASER'S REQUIREMENTS CERTIFICATION

As required by Title 49 of the CFR, Part 663 – Subpart B,

(Pre Award Reviewer)

certifies that the buses to be purchased,

(Number and Description of Buses)

from

(The Manufacturer/Vendor),

are the same product described in the recipient's solicitation specification and that the proposed **bidder/vendor** is a responsible **bidder/vendor** with the capability to produce a bus that meets the specifications.

Date:

Pre-Award Reviewer Signature:

Title:

B. BUY AMERICA - 49 CFR 663, subpart B:

The total price of this purchase is less than the small purchase threshold of \$100,000 and is not subject to Buy America requirements. **OR**

The vehicles provided by the **bidder/vendor** (# of vehicles, make, and model) cannot comply with the Buy America requirements, but may qualify for an exception (see attached consolidated certification form signed by the **bidder/vendor**, part II-A). **OR**

The **bidder/vendor** has certified that the vehicles (# of vehicles, make, and model) will comply with the Buy America requirements. (See attached consolidated certification form signed by the **bidder/vendor**, part II-A). The **bidder/vendor** has also completed the attached domestic content worksheet. (Or the **bidder/vendor** has provided a certificate from the manufacturer that lists the domestic content of each component, states that the vehicle is composed of at least 60% domestic content, describes construction activities, and gives the location of construction activities.) The agency certifies that the vehicles provided will meet the Buy America requirements.

NOTE: Only one of the following Certifications should be signed, not both.

PRE-AWARD BUY AMERICA COMPLIANCE CERTIFICATION:

As required by Title 49 of the CFR, Part 663 – Subpart B,

(Pre Award Reviewer)

is satisfied that the buses to be purchased,

(Number and Description of Buses)

from

(The Manufacturer/Vendor)

Do in fact meet all of the requirements of Section 165(b) (3) of the Surface Transportation Assistance Act of 1982, as amended. The recipient or its appointed analyst

(The Analyst Not the Manufacturer or Its Agent)

has reviewed documentation provided by the **manufacturer**, which lists (1) the actual component and subcomponent parts of the buses identified by the **manufacturer**, country of origin, and cost; and (2) the actual location of the final assembly point for the buses, including a description of the activities that took place at the final assembly point and the cost of final assembly.

Date:

Pre-Award Reviewer Signature:

Title:

OR

If not applicable, execute the following exemption certification

On next page

B. PRE-AWARD BUY AMERICA EXEMPTION CERTIFICATION

For the Procurement of vehicle(s) that require an FTA waiver:

As required by Title 49 of the CFR, Part 663 – Subpart B,

(Pre Award Reviewer)

certifies that there is a letter from FTA that grants a waiver to the buses to be purchased

(Number and Description of Buses)

from

(The Manufacturer/Vendor)

from the Buy America requirements under Section 165(b)(1), (b)(2), or (b)(4) of the Surface Transportation Assistance Act of 1982, as amended.

Date:

Pre-Award Reviewer Signature:

Title:

C. FEDERAL MOTOR VEHICLE SAFETY STANDARDS (FMVSS) - 49 CFR 663, subpart D:

The **bidder/vendor** has certified that the vehicle complies with relevant **FMVSS** issued by the National Highway Traffic Safety Administration in 49 CFR Part 571 (see attached **FMVSS** certification form signed by **bidder/vendor**). The **PURCHASER** certifies that the vehicles that the vehicles will meet **FMVSS**.

EXECUTE THE FOLLOWING:

EXECUTE THE FOLLOWING (Only one of the following FMVSS Certifications should be signed, not both.

PRE-AWARD FMVSS COMPLIANCE CERTIFICATION:

As required by Title 49 of the CFR, Part 663 – Subpart D,

(Pre Award Reviewer)

certifies that it received, at the post-delivery stage, a copy of

(The Manufacturer/Vendor)

self-certification information stating that the buses,

(Number and Description of Buses)

do comply with the relevant Federal Motor Vehicle Safety Standards issued by the National Highway Traffic Safety Administration in Title 49 Code of Federal Regulations, Part 571.

Date:

Pre-Award Reviewer Signature:

Title:

OR

NEXT PAGE

C. PRE-AWARD FMVSS EXEMPTION CERTIFICATION:

As required by Title 49 of the CFR, Part 663 – Subpart D,

(Pre Award Reviewer)

certifies that it received at the pre-award stage, a statement from

(The Manufacturer/Vendor)

indicated that the buses,

(Number and Description of Buses)

will not be subject to the Federal Motor Vehicle Safety Standards issued by the National Highway Traffic Safety Administration in Title 49 Code of Federal Regulations, Part 571.

Date:

Pre-Award Reviewer Signature:

Title:

PRE- AWARD CHECKLIST:

THE FOLLOWING CHECKLIST IS TO BE COMPLETED BY THE BUYER AND PRE AWARD REVIEWER BEFORE BID IS AWARDED.

This checklist will be used to ensure that all required clauses and certifications are included in the vendor's returned bid packet and that all required certifications have been signed by the vendor.

Section I. FOR ALL BIDS:

Buyer's initial all lines below:

FMVSS CERTIFICATION: Signed by Bidder/Vendor? _____

- A. **Incorporation of Federal Transit Administration Terms:** Initialed by Bidder? _____
- B. **Federal Changes:** Initialed by Bidder? _____
- C. **DBE Certification:** Initialed by Bidder? _____
- D. **Air Conditioning Performance:** Initialed by Bidder? _____
- E. **Interest of Members of or Delegates to Congress:** Initialed by Bidder? _____
- F. **Prohibited Interest:** Initialed by Bidder? _____
- G. **Cargo Preference:** Initialed by Bidder? _____
- H. **Energy Conservation:** Initialed by Bidder? _____
- I. **Clean Water and Air:** Initialed by Bidder? _____
- J. **No Obligation By the Federal Government:** Initialed by Bidder? _____
- K. **Program Fraud and False or Fraudulent Statements:** Initialed by Bidder? _____
- L. **Contract Work Hours:** Initialed by Bidder? _____
 - 1. Overtime requirements: _____
 - 2. Violation; liability for unpaid wages: _____
 - 3. Withholding for unpaid wages: _____
 - 4. Subcontracts: _____
 - 5. Payrolls and basic records: _____
- M. **Civil Rights:** Initialed by Bidder? _____
 - 1. Nondiscrimination: _____
 - 2. Equal Employment Opportunity: _____
- N. **Altoona Test Certification completed:** Initialed by Bidder? _____
 - 1. Report Summary enclosed? Attached to bid? _____
 - 2. Altoona Test Report # listed by Bidder? _____
- O. **Debarment and Suspensions:** Initialed by Bidder? _____
 - 1. **EPLS Report** from www.epls.gov: Attached to bid by Procuring Agency? _____

CONTINUED PRE- AWARD CHECKLIST:

Section II.

- A. Buy America Certification signed:** Signed by Bidder/Vendor? _____
- B. Domestic Content Worksheet signed:** Signed by Bidder/Vendor? _____
- C. Lobbying Certification signed:** Signed by Bidder/Vendor? _____

Section III. CERTIFICATION TO PURCHASER:

- A.** Completed and signed? _____

The previous checklist was to determine if the Bidder/Vendor read and completed all required necessary documentation. The following checklist is to determine if all of the pre-award documents and required Certifications are signed and completed.

Section IV. PRE AWARD AUDIT (signed by Pre-Award Reviewer)

- A. Purchaser's Certification - 49 CFR 663, subpart B:** Executed by Reviewer?
Pre-Award Purchaser's Requirements Certification: _____
- B. Buy America - 49 CFR 663, subpart B:** Executed by Reviewer?
**Pre-Award Buy America Compliance Certification, or
Pre-Award Buy America Exemption Certification:** _____
- C. FMVSS - 49 CFR 663, subpart D:** Executed by Reviewer?
**Pre-Award FMVSS Compliance Certification, or
Pre-Award FMVSS Exemption Certification:** _____

I hereby attest that each item was reviewed and that my initials above indicate that the item was properly executed on this date.

(Pre Award Reviewer)

Date

Additional Oversight

Date

***NOTE: PAGES 26 THRU 32
ARE TO BE COMPLETED BY THE PURCHASER
AT TIME OF VEHICLE DELIVERY***

SECTION V POST DELIVERY AUDIT:

A. Purchaser's Certification - 49 CFR 663, subpart C:

After visually inspecting and road testing the contract buses, the agency certifies that the (# of vehicles, make, and model) meet the contract specifications.

- or, Grantees in areas with populations of 200,000 or less that purchase more than 20 buses.

The agency's resident inspector monitored manufacturing and completed a report providing accurate records of all construction activities. The report addresses how the construction and operation of the vehicles fulfill the contract specifications. After reviewing the report, visually inspecting and road testing the contract buses, the agency certifies that the (# of vehicles, make, and model) meet the contract specifications.

EXECUTE THE FOLLOWING:

NOTE: Only one of the following Certifications should be signed, not both.

POST-DELIVERY PURCHASER'S REQUIREMENTS CERTIFICATION

As required by Title 49 of the CFR, Part 663 – Subpart C, after visually inspecting and road testing the contract buses,

(The Purchaser)

certifies that the buses,

(Number and the Description of Buses)

from

(The Manufacturer/Vendor),

meet the contract specifications.

Date:

Signature:

Title:

OR

NEXT PAGE

A. POST-DELIVERY PURCHASER'S REQUIREMENTS CERTIFICATION:

As required by Title 49 of the CFR, Part 663 – Subpart C,

(The Purchaser)

certifies that a resident inspector,

(Not an Agent or Employee of the Manufacturer),

was at manufacturing site during the period of manufacture of

(Number and Description of Buses)

The inspector monitored manufacturing and completed a report on the manufacture of the buses providing accurate records of all bus construction activities. The report addresses how the construction and operation of the buses fulfill the contract specifications. After reviewing the report, visually inspecting the buses, and road testing the buses, the recipient certifies that the buses meet the contract specifications.

Date:

Signature:

Title:

B. BUY AMERICA - 49 CFR 663, subpart C:

The total price of this purchase is less than the small purchase threshold of \$100,000 and is not subject to Buy America requirements. **OR**

The agency certifies that there is a letter from FTA, which grants a waiver to the vehicles provided by the vendor (# of vehicles, make, and model) from the Buy America requirements, under Section 165 (b)(1), (b)(2), or (b)(4) of the Surface Transportation Assistance Act of 1982, as amended. **OR**

The agency certifies that it is satisfied that the (# of vehicles, make, and model) meet the requirements of Section 165 (b)(3) . The agency has reviewed documentation provided by the **manufacturer** that lists the domestic content of each component, states that the vehicle is composed of at least 60% domestic content, describes construction activities, and gives the location of final construction activities.

NOTE: Only one of the following Certifications should be signed, not both.

POST-DELIVERY BUY AMERICA COMPLIANCE CERTIFICATION:

As required by Title 49 of the CFR, Part 663 – Subpart C,

(The Purchaser)

certifies that the buses received are in fact what they ordered and are satisfied with the,

(Number and Description of Buses)

from

(The Manufacturer/Vendor)

meet the requirements of section 165(b)(3) of the Surface Transportation Assistance Act of 1982, as amended. The recipient or its appointed analyst

(The Analyst Not the Manufacturer or Its Agent)

has reviewed documentation provided by the **manufacturer**, which lists (1) the actual component and subcomponent parts of the buses identified by the **manufacturer**, country of origin, and cost; and (2) the actual location of the final assembly point for the buses, including a description of the activities that took place at the final assembly point and the cost of final assembly.

Date:

Signature:

Title:

OR

**If not applicable, execute the following exemption certification
On next page**

B. POST-DELIVERY BUY AMERICA EXEMPTION CERTIFICATION:

As required by Title 49 of the CFR, Part 663 – Subpart C,

(The Purchaser)

certifies that there is a letter from FTA, which grants a waiver to the buses received,

(Manufacturer, Number and Description of Buses)

from the Buy America requirements under Section 165(b)(1), (b)(2), or (b)(4) of the Surface Transportation Assistance Act of 1982, as amended.

Date:

Signature:

Title:

Vehicle Vin Numbers:

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

C. FEDERAL MOTOR VEHICLE SAFETY STANDARDS (FMVSS) - 49 CFR 663, subpart D:

The vendor has certified that the vehicle complies with relevant FMVSS issued by the National Highway Traffic Safety Administration in 49 CFR Part 571 (see attached FMVSS certification form provided by the **bidder** upon vehicle delivery). The agency certifies that the vehicles provided meet FMVSS.

EXECUTE THE FOLLOWING:

NOTE: Only one of the following Certifications should be signed, not both.

POST-DELIVERY FMVSS COMPLIANCE CERTIFICATION:

As required by Title 49 of the CFR, Part 663 – Subpart D,

(The Purchaser)

certifies that it received, at the post-delivery stage, a copy of

(The Manufacturer/Vendor)

self-certification information stating that the buses,

(Number and Description of Buses)

comply with the relevant Federal Motor Vehicle Safety Standards issued by the National Highway Traffic Safety Administration in Title 49 Code of Federal Regulations, Part 571.

Date:

Signature:

Title:

OR

NEXT PAGE

C. POST-DELIVERY FMVSS EXEMPTION CERTIFICATION:

As required by Title 49 of the CFR, Part 663 – Subpart D,

(The Purchaser)

certifies that it received, at the Post-delivery stage, a statement from

(The Manufacturer/Vendor)

indicating that the buses,

(Number and Description of Buses)

are not subject to the Federal Motor Vehicle Safety Standards issued by the National Highway Traffic Safety Administration in Title 49 Code of Federal Regulations, Part 571.

Date

Signature

Title

POST DELIVERY AUDIT

THE FOLLOWING CHECKLIST IS TO BE COMPLETED BY THE BUYER AND GOVERNMENT REVIEWER BEFORE THE VEHICLE(S) ARE ACCEPTED.

Section V VEHICLE DELIVERY CHECKLIST: (to be signed by buyer upon acceptance of vehicle)

Buyer initials all lines below:

A. Purchaser's Certification - 49 CFR 663, subpart C:

Post-Delivery Purchaser's Requirements Certification or
Post-Delivery Purchaser's Requirements Certification (Inspector): _____

B. Buy America - 49 CFR 663, subpart C:

Post-Delivery Buy America Compliance Certification or
Post-Delivery Buy America Exemption Certification: _____

B. FMVSS - 49 CFR 663, subpart D:

Post-Delivery FMVSS Compliance Certification or
Post-Delivery FMVSS Exemption Certification: _____

Section VI CERTIFICATION OF DELIVERY:

By executing this document,

A. You hereby request that a Lien Entry Form – Motor Vehicle be issued naming the Government Agency utilizing federal funds as Secured Party and that said form(s) will be delivered by the purchaser to a local tag agent for executing and

B. Assure the vehicle be used in accordance with the federal regulations and current provisions, as applicable.

I hereby attest that each item was reviewed and that my initials above indicate that the item was properly executed.

Purchaser

Date

Government Reviewer

Date