



Bid Number 50-00145018

Five (5) Year Contract to Provide and Deliver One (1) to Ten (10) 35' and/or 40' Heavy Duty Transit Buses with an Option to Purchase an Additional Thirty (30) for the Jefferson Parish Department of Transit Administration

BID DUE: JUNE 04, 2024 AT 2:00 PM

ATTENTION VENDORS!!!

Please review all pages and respond accordingly, complying with all provisions in the technical specifications and Jefferson Parish Instructions for Bidders and General Terms and Conditions. All bids must be received on the Purchasing Department's eProcurement site, www.jeffparishbids.net, by the bid due date and time. Late bids will not be accepted.

**Jefferson Parish Purchasing Department
200 Derbigny Street
General Government Building, Suite 4400
Gretna, LA 70053
Buyer Name: DONNA M EVANS
Buyer Email: DMEVANS@jeffparish.net
Buyer Phone: 504-364-2691**

DATE: 5/07/2024
BID NO.: 50-00145018

INVITATION TO BID
THIS IS NOT AN ORDER

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JEFFERSON PARISH

PURCHASING DEPARTMENT
P.O. BOX 9
GRETNA, LA. 70054-0009
504-364-2678

PURCHASING SPECIALIST:
DMEVANS@jeffparish.net

BIDS WILL BE RECEIVED ONLINE VIA WWW.JEFFPARISHBIDS.NET UNTIL 2:00 PM, 6/04/2024 AND PUBLICLY OPENED THEREAFTER IN THE WEST BANK PURCHASING DEPT, SUITE 4400, JEFFERSON PARISH GENERAL GOVERNMENT BUILDING, 200 DERBIGNY STREET, GRETNA, LA 70053. At no charge, bidders are to submit via Jefferson Parish's electronic procurement page by visiting www.jeffparishbids.net to register for this free site. Additional instructions are included in the text box highlighting electronic procurement.

LATE BIDS WILL NOT BE ACCEPTED

NOTE: ONLY BIDS WRITTEN IN INK OR TYPEWRITTEN, AND PROPERLY SIGNED BY A MEMBER OF THE FIRM OR AUTHORIZED REPRESENTATIVE, WILL BE ACCEPTED. PENCIL AND/OR PHOTOSTATIC FIGURES OR SIGNATURES SHALL RESULT IN BID REJECTION. HOWEVER, ELECTRONIC SIGNATURES AS DEFINED IN LSA - R.S. 9:2620(8) ARE ACCEPTABLE. SIGNATURE MUST BE A SECURED DIGITAL SIGNATURE.

**INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS
THE FOLLOWING INSTRUCTIONS APPLY TO ALL BIDS**

All bids submitted are subject to these instructions and general conditions and any special conditions and specifications contained herein, all of which are made part of this bid proposal reference. By submitting a bid, vendor agrees to comply with all provisions of Louisiana Law as well be in compliance with the Jefferson Parish Code of Ordinances, Louisiana Code of Ethics, applicable Jefferson Parish ethical standards and Jefferson Parish Resolution No. 136353 and/or Resolution No. 141125 as amended.

Jefferson Parish adheres to the Louisiana Code of Governmental Ethics, contained in Louisiana Revised Statutes Annotated, R.S. 42:1101, et seq. Vendor/Proposer by this submission, warrants that there are no "conflicts of interest" related to this procurement that would violate applicable Louisiana Law. Violation of the Louisiana Code of Governmental Ethics may result in rescission of contract, permit or licenses, and the imposition of fines and/or penalties, without contractual liability to the public in accordance with applicable law.

All vendors submitting bids should register as a Jefferson Parish vendor if not already yet registered. Registration forms may be downloaded from <http://purchasing.jeffparish.net> and by clicking on Vendor Information. Current W-9 forms with respective Tax Identification numbers and vendor applications may be submitted at any time; however, if your company is not registered and/or a current W-9 form is not on file, vendor registration is mandatory. Vendors may experience a delay in payment if your company is not a registered vendor with Jefferson Parish.

All quotations shall be based on F.O.B. Agency warehouse or job site, anywhere within the Parish as designated by the Purchasing Department. This provision does not apply to public works projects

JEFFERSON PARISH requires all products to be new (current) and all work must be performed according to standard practices for the project. Unless otherwise specified, no aftermarket parts will be accepted. Unless otherwise specified, all workmanship and materials must have at least one (1) year guaranty, in writing, from the date of delivery and/or acceptance of the project. Any deviations or alterations from the specifications must be indicated and/or supporting documentation supplied with bid submission.

Bidders should submit all questions in writing via email to the Purchasing Specialist's email address as indicated above, no later than Five (5) working days prior to the bid opening. Bid numbers should be mentioned in all requests. If submitting online, vendors may send questions via the E-Procurement site no later than Five (5) working days prior to the bid opening.

If this bid requires a pre-bid conference (see Additional Requirements section), bidders are advised that such conference will be held to allow bidders the opportunity to identify any discrepancies in the bid specifications and seek further clarification regarding instructions. The Purchasing Department will issue a written response to bidders' questions in the form of an Addendum. Please note that all official communication will be expressed in the form of an addendum.

Visit our website at [HTTP://PURCHASING.JEFFPARISH.NET](http://PURCHASING.JEFFPARISH.NET)

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All formal Addenda require written acknowledgement on the bid form by the bidder. Failure to acknowledge any Addendum on the bid form shall cause the bid to be rejected. JEFFERSON PARISH reserves the right to award bid to next lowest responsive and responsible bidder in this event.

JEFFERSON PARISH will accept one price for each item unless otherwise indicated. Two or more prices for one item will result in bid rejection. Bidders are required to complete, sign and return the bid form and/or complete and return the associated line item pricing forms as indicated. Vendors must not alter the bid forms. Doing so will cause the bid to be rejected.

A corporate resolution or written evidence of the individual signing the bid having such authority must be submitted with the bid. Failure to comply will cause bid to be rejected. For corporate entities, such written evidence may be a printout of the Louisiana Secretary of State's website listing the signatory as an officer. Such printout shall be included with the bid submission. Bids submitted by Owners or Sole Proprietorships must include certification that he or she owns the entity for which the bid is signed. This documentation must be submitted with the bid. Failure to do so will result in bid rejection.

NOTE: A sample corporate resolution can be downloaded from our website <http://purchasing.jeffparish.net> or you may provide your own document. A sample certification of sole proprietorship can also be downloaded from our website <http://purchasing.jeffparish.net> or you may provide your own document.

INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

A. AWARD OF CONTRACT: JEFFERSON PARISH reserves the right to award contracts or place orders on a lump sum or individual item basis, or such combination, as shall in its judgment be in the best interest of JEFFERSON PARISH. Every contract or order shall be awarded to the LOWEST RESPONSIVE and RESPONSIBLE BIDDER, taking into consideration the CONFORMITY WITH THE SPECIFICATIONS and the DELIVERY AND/OR COMPLETION DATE. SPLIT AWARDS MADE TO SEVERAL VENDORS WILL ONLY BE GRANTED TO THOSE DEEMED RESPONSIVE AND RESPONSIBLE.

All bid prices shall remain valid for 45 days. Jefferson Parish and the lowest responsive and responsible bidder(s) by mutual written consent may mutually agree to extend the deadline for award by one (1) or more extensions of thirty (30) calendar days.

PROTESTS: Only those vendors that submit bids in response to this solicitation may protest any element of the procurement, in writing to the Director of the Purchasing Department. Written protest must be received within 48 hours of the release of the bid tabulation by the Purchasing Department. After consultation, the Parish Attorney's Office will then respond to protests in writing. (For more information, please see Chapter 2, Article VII, Division 2, Sec. 2-914.1 of the Jefferson Parish Code of Ordinances.)

PREFERENCE: Unless federal funding is directly spent by Jefferson Parish for this purchase, preference is hereby given to materials, supplies, and provisions produced, manufactured or grown in Louisiana, quality being equal to articles offered by competitors outside the state. "LSA – R.S. 38:2251-2261"

B. USE OF BRAND NAMES AND STOCK NUMBERS: Where brand names and stock numbers are specified, it is for the purpose of establishing certain minimum standards of quality. Bids may be submitted for products of equal quality, provided brand names and stock numbers are specified. Complete product data may be required prior to award.

C. CANCELLATION OF CONTRACT: JEFFERSON PARISH reserves the right to cancel all or any part if not shipped promptly. No charges will be allowed for parking or cartage unless specified in quotation. The order must not be filled at a higher price than quoted. JEFFERSON PARISH reserves the right to cancel any contract at anytime and for any reason by issuing a THIRTY (30) day written notice to the contractor.

For good cause and as consideration for executing a contract with Jefferson Parish, vendor conveys, sells, assigns and transfers to Jefferson Parish or its assigns all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of Louisiana, relating to the particular good or services purchased or acquired by Jefferson Parish.

D. PRICES: Jefferson Parish is exempt from paying sales tax under LSA-R.S. 47:301 (8)(c). All prices for purchases by Jefferson Parish of supplies and materials shall be quoted in the unit of measure specified and unless otherwise specified, shall be exclusive of state and local taxes. The price quoted for work shall be stated in figures. In the event there is a difference in unit prices and totals, the unit price shall prevail.

Quantities listed are for bidding purposes only. Actual requirements may be more or less than quantities listed.

Bidders are not to exclude from participation in, deny the benefits of, or subject to discrimination under any program or activity, any person in the United States on the grounds of race, color, national origin, or sex; nor discriminate on the basis of age under the Age Discrimination Act of 1975, or with respect to an otherwise qualified handicapped individual as provided in Section 504 of the Rehabilitation Act of 1973, or on the basis of religion, except that any exemption from such prohibition against discrimination on the basis of religion as provided in the Civil Rights Act of 1964, or Title VI and VII of the Act of April 11, 1968, shall also apply. This assurance includes compliance with the administrative requirements of the Revenue Sharing final handicapped discrimination provisions contained in Section 51.55 (c), (d), (e), and (k)(5) of the Regulations. New construction or renovation projects must comply with Section 504 of the 1973 Rehabilitation Act, as amended, in accordance with the American National Standard Institute's specifications (ANSI A17.1-1961).

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Jefferson Parish and its partners as the recipients of federal funds are fully committed to awarding a contract(s) to firm(s) that will provide high quality services and that are dedicated to diversity and to containing costs. Thus, Jefferson Parish strongly encourages the involvement of minority and/or woman-owned business enterprises (DBE's, including MBE's, WBE's and SBE's) to stimulate participation in procurement and assistance programs.

The purpose and intention of this invitation to bid is to afford all suppliers an equal opportunity to bid on all construction, maintenance, repair, operating supplies and/or equipment listed in this bid proposal. JEFFERSON PARISH WILL ACCEPT ONE BID ONLY FROM EACH VENDOR. Items bid must meet specifications.

Advertised bids will be tabulated and a copy of the tabulation will be forwarded to each responding bidder.

IN ACCORDANCE WITH STATE REGULATIONS JEFFERSON PARISH OFFERS ELECTRONIC PROCUREMENT TO ALL VENDORS

This electronic procurement system allows vendors the convenience of reviewing and submitting bids online. This is a secure site and authorized personnel have limited read access only. Bidders are to submit electronically using this free service; while the website accepts various file types, one single PDF file containing all appropriate and required bid documents is preferred. Bidders submitting uploaded images of bid responses are solely responsible for clarity. If uploaded images/documents are not legible, then bidder's submission will be rejected. Please note all requirements contained in this bid package for electronic bid submission.

Please visit our E-Procurement Page at www.jeffparishbids.net to register and view Jefferson Parish solicitations. For more information, please visit the Purchasing Department page at <http://purchasing.jeffparish.net>.

The general specifications for construction projects and the purchase of materials, services and/or supplies are those adopted by the JEFFERSON PARISH Council by Resolution No. 136353 or 141125 as amended. The general conditions adopted by this resolution shall be considered as much a part of this document as if they were written wholly herein. A copy may be obtained from the Office of the Parish Clerk, Suite 6700, Jefferson Parish General Government Building, 200 Derbigny Street, Gretna, LA 70053. You may also obtain a copy by visiting the Purchasing Department webpage at <http://purchasing.jeffparish.net> and clicking on Online Forms.

ADDITIONAL REQUIREMENTS FOR THIS BID

PLEASE MATCH THE NUMBERS PRINTED IN THIS BOX WITH THE CORRESPONDING INSTRUCTIONS BELOW.

10, 12, 13, 15, 16

1. All bidders must attend the MANDATORY pre-bid conference and will be required to sign in and out as evidence of attendance. In accordance with LSA R.S. 38:2212(1), all prospective bidders shall be present at the beginning of the MANDATORY pre-bid conference and shall remain in attendance for the duration of the conference. Any prospective bidder who fails to attend the conference or remain for the duration shall be prohibited from submitting a bid for the project.
2. Attendance to this pre-bid conference is optional. However, failure to attend the pre-bid conference shall not relieve the bidder of responsibility for information discussed at the conference. Furthermore, failure to attend the pre-bid conference and inspection does not relieve the successful bidder from the necessity of furnishing materials or performing any work that may be required to complete the work in accordance with the specification with no additional cost to the owner.
3. Contractor must hold current applicable JEFFERSON PARISH licenses with the Department of Inspection and Code Enforcement. Contractor shall obtain any and all permits required by the JEFFERSON PARISH Department of Inspection and Code Enforcement. The contractor shall be responsible for the payment of these permits. All permits must be obtained prior to the start of the project. Contractor must also hold any and all applicable Federal and State licenses. Contractor shall be responsible for the payment of these permits and shall obtain them prior to the start of the project.

INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

4. A LA State Contractor's License will be required in accordance with LSA R.S. 37-2150 et. seq. and such license number will be shown on the outside of the bid electronic envelope. Failure to comply will cause the bid to be rejected. When submitting the bid electronically, the license number must be entered in the appropriate field in the electronic procurement system. Failure to comply will cause the bid to be rejected.
5. It is the bidder's responsibility to visit the job site and evaluate the job before submitting a bid.
6. Job site must be clean and free of all litter and debris daily and upon completion of the contract. Passageways must be kept clean and free of material, equipment, and debris at all times. Flammable material must be removed from the job site daily because storage will not be permitted on the premises. Precaution must be exercised at all times to safeguard the welfare of JEFFERSON PARISH and the general public.
7. PUBLIC WORKS BIDS: All awards for public works in excess of \$5,000.00 will be reduced to a formal contract which shall be recorded at the contractor's expense with the Clerk of Court and Ex-Officio Recorder of Mortgages for the Parish of Jefferson. A price list of recordation costs may be obtained from the Clerk of Court and Ex-Officio Recorder of Mortgages for the Parish of Jefferson. All awards in excess of \$25,000.00 will require both a performance and a payment bond. Unless otherwise stated in the bid specifications, the performance bond requirements shall be 100% of the contract price. Unless otherwise state in the bid specifications, the payment bond requirements shall be 100% of the contract price. Both bonds shall be supplied at the signing of the contract.
8. NON-PUBLIC WORKS BIDS: A performance bond will be required for this bid. The amount of the bond will be 100% of the contract price unless otherwise indicated in the specifications. The performance bond shall be supplied at the signing of the contract.
9. NON-PUBLIC WORKS BIDS: A payment bond will be required for this bid. The amount of the bond will be 100% of the contract price unless otherwise indicated in the specifications. The payment bond shall be supplied at the signing of the contract.
10. All bidders must comply with the requirements stated in the attached "Standard Insurance Requirements" sheet attached to this bid solicitation. Failure to comply with this instruction will result in bid rejection.
11. A bid bond will be required with bid submission in the amount of 5% of the total bid, unless otherwise stated in the bid specifications. All sureties must be in original format (no copies) When submitting a bid online, vendors must submit an electronic bid bond through the respective online clearinghouse bond management system(s) as indicated in the electronic bid solicitation on Central Auction House. No scanned paper copies of any bid bond will be accepted as part of the electronic bid submission.
12. This is a requirements contract to be provided on an as needed basis. JEFFERSON PARISH makes no representations on warranties with regard to minimum guaranteed quantities unless otherwise stated in the bid specifications.
13. Freight charges should be included in total cost when quoting. If not quoted FOB DELIVERED, freight must be quoted as a separate item. Bid may be rejected if not quoted FOB DELIVERED or if freight charges are not indicated on bid form.
14. PUBLIC WORKS BIDS - Completed, Signed and Properly Notarized Affidavits Required; This applies to all solicitations for construction, alteration or demolition of public buildings or projects, in conformity with the provisions contained in LSA-RS 38:2212.9, LSA-RS 38:2212.10, LSA-RS 38:2224, and Sec 2-923.1 of the Jefferson Parish Code of Ordinances. For bidding purposes, all bidders must submit with bid submission COMPLETED, SIGNED and PROPERLY NOTARIZED Affidavits, including: Non-Conviction Affidavit, Non-Collusion Affidavit, Campaign Contribution Affidavit, Debt Disclosures Affidavit and E-Verify Affidavit. For the convenience of vendors, all affidavits have been combined into one form entitled PUBLIC WORKS BID AFFIDAVIT. This affidavit must be submitted in its original format, and without material alteration, in order to be compliant and for the bid to be considered responsive. A scanned copy of the completed, signed and properly notarized affidavit may be submitted with the bid, however, the successful bidder must submit the original affidavit in its original format and without material alteration upon contract execution. Failure to comply will result in the bid submission being rejected as non-responsive. The Parish reserves the right to award bid to the next lowest responsive and responsible bidder in this event.

INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

15. NON PUBLIC WORK BIDS - Completed, Signed and Properly Notarized Affidavits Required in conformity with the provisions contained in LSA – RS 38:2224 and Sec 2-923.1 of the Jefferson Parish Code of Ordinances. For bidding purposes, all bidders must submit with bid submission COMPLETED, SIGNED and PROPERLY NOTARIZED Affidavits, including: Non-Collusion Affidavit, Debt Disclosures Affidavit and Campaign Contribution Affidavit. For the convenience of vendors, all affidavits have been combined into one form entitled NON PUBLIC WORKS BID AFFIDAVIT. This affidavit must be submitted in its original format, and without material alteration, in order to be compliant and for the bid to be considered responsive. A scanned copy of the completed, signed and properly notarized affidavit may be submitted with the bid, however, the successful bidder must submit the original affidavit in its original format and without material alteration upon contract execution. Failure to comply will result in the bid submission being rejected as non-responsive. The Parish reserves the right to award bid to the next lowest responsive and responsible bidder in this event.

16. The ensuing contract for this bid solicitation may be eligible for FEMA reimbursement and/or Federal funding/reimbursement. As such, the referenced appendix will be applicable accordingly and shall be considered a part of the bid documents. All applicable certifications must be duly completed, signed and submitted as per the appendix instructions. Failure to submit applicable certifications per the appendix instructions will result in bid rejection.

17. For this project, the Contractor shall not pay any state or local sales or use taxes on materials and equipment which are affixed and made part of the immovable property of the project or which is permanently incorporated in the project (hereinafter referred to as "applicable materials and equipment."). All purchases of applicable materials or equipment shall be made by the contractor on behalf of and as the agent of Jefferson Parish (Owner), a political subdivision of the State of Louisiana. No state and local sales and use taxes are owed on applicable materials and equipment under the provisions of Act 1029 of the 1991 Regular Session - Louisiana Revised Statute 47:301(8)(c). Owner will furnish to contractor a certificate form which certifies that Owner is not required to pay such state or local sales and use taxes, and contractor shall furnish a copy of such certificate to all vendors or suppliers of the applicable materials and equipment, and report to Owner the amount of taxes not incurred.

It shall be the duty of every parish officer, employee, department, agency, special district, board, and commission: and the duty of every contractor, subcontractor, and licensee of the parish, and the duty of every applicant for certification of eligibility for a parish contract or program, to cooperate with the Inspector General in any investigation, audit, inspection, performance review, or hearing pursuant to JPCO 2-155.10(19). By signing this document, every corporation, partnership, or person contracting with PARISH, whether by cooperative endeavor, intergovernmental agreement, bid, proposal, application or solicitation for a parish contract, and every application for certification of eligibility for a parish contract or program, attests that it understands and will abide by all provisions of JPCO 2-155.10.

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BID FORM
Non Public Works

All Public Work Projects are required to use the Louisiana Uniform Public Work Bid Form

All prices must be held firm unless an escalation provision is requested in this bid. Jefferson Parish will allow one escalation during the term of the contract, which may not exceed the U.S. Bureau of Labor Statistics National Index for all Urban Consumers, unadjusted 12 month figure. The most recently published figure issued at the time an adjustment is requested will be used. A request must be made in writing by the vendor, and the escalation will only be applied to purchases made after the request is made.

Are you requesting an escalation provision?

YES _____ NO _____

MAXIMUM ESCALATION PERCENTAGE REQUESTED _____%

INITIAL BID PRICES WILL REMAIN FIRM THROUGH THE DATE OF _____.

For the purposes of comparison of bids when an escalation provision is requested, Jefferson Parish will apply the maximum escalation percentage quoted by the bidder to the period to which it is applied in the bid. The initial price and the escalation will be used to calculate the total bid price. It will be assumed, for comparison of prices only, that an equal amount of material or labor is purchased each month throughout the entire contract.

DELIVERY: FOB JEFFERSON PARISH

INDICATE DELIVERY DATE ON EQUIPMENT AND SUPPLIES _____

LOUISIANA CONTRACTOR'S LICENSE NO.: (if applicable) _____

THIS SECTION MUST BE COMPLETED BY BIDDER:

FIRM NAME: _____

ADDRESS: _____

CITY, STATE: _____ ZIP: _____

TELEPHONE: () _____ FAX: () _____

EMAIL ADDRESS: _____

In the event that addenda are issued with this bid, bidders MUST acknowledge all addenda on the bid form. Bidder must acknowledge receipt of an addendum on the bid form by placing the addendum number as indicated. Failure to acknowledge any addendum on the bid form will result in bid rejection.

Acknowledge Receipt of Addenda: NUMBER: _____

NUMBER: _____

NUMBER: _____

NUMBER: _____

TOTAL PRICE OF ALL BID ITEMS: \$ _____

AUTHORIZED SIGNATURE: _____

Printed Name

TITLE: _____

SIGNING INDICATES YOU HAVE READ AND COMPLY WITH THE INSTRUCTIONS AND CONDITIONS.

NOTE: All bids should be returned with the BID NUMBER and BID OPENING DATE indicated on the outside of the envelope submitted to the Purchasing Department.

INVITATION TO BID FROM JEFFERSON PARISH - continued

BID NO.: 50-00145018

SEALED BID

ITEM NUMBER	QUANTITY	U/M	DESCRIPTION OF ARTICLES	UNIT PRICE QUOTED	TOTALS
1	10.00	EA	<p>FIVE YEAR CONTRACT TO FURNISH LABOR, MATERIALS TO PROVIDE AND DELIVER ONE TO TEN HEAVY DUTY TRANSIT BUSES FOR THE DEPARTMENT OF TRANSIT ADMINISTRATION</p> <p>0010 BUS, DIESEL, 35 FOOT LOW FLOOR 102" WIDE SECTION 1.2.3</p>	\$ _____	\$ _____
2	10.00	EA	<p>FIVE YEAR CONTRACT TO FURNISH LABOR, MATERIAL AND EQUIPMENT NECESSARY TO PROVIDE AND DELIVER ONE (1) TO TEN (10) 35' AND OR 40' HEAVY DUTY TRANSIT BUSES WITH AN OPTION TO PURCHASE UP TO AN ADDITIONAL THIRTY (30) AS PER THE FOLLOWING TECHNICAL SPECIFICATIONS TO THE JEFFERSON PARISH DEPARTMENT OF TRANSIT ADMINISTRATION</p> <p>0011 BUS, DIESEL, 40 FOOT LOW FLOOR 102" WIDE SECTION 1.2.3</p>	\$ _____	\$ _____
3	10.00	EA	<p>0012 BUS, HYBRID, 35 FOOT LOW FLOOR 102"WIDE SECTION 1.2.3</p>	\$ _____	\$ _____
4	10.00	EA	<p>0013 BUS, HYBRID 40 FOOT LOW FLOOR 102" WIDE SECTION 1.2.3</p>	\$ _____	\$ _____
5	10.00	EA	<p>0014 WEIGHTED DELIVERY CHARGE FOR YOUR LOUISIANA AGENCIES</p>	\$ _____	\$ _____
6	10.00	EA	<p>0015 OPTION 1:-BODY STYLING-BRT SECTION 1.2.2</p>	\$ _____	\$ _____
7	10.00	EA	<p>0016 OPTION 2: BODY STYLING-BRT PLUS SECTION 1.2.2</p>	\$ _____	\$ _____
8	10.00	EA	<p>0017 OPTION 3: BODY STYLING TROLLEY PACKAGE SECTION 1.2.2</p>	\$ _____	\$ _____
9	40.00	EA	<p>0018 OPERATIONS-ELECTRICAL ASSISTED STEERING SECTION 1.16.1</p>	\$ _____	\$ _____
10	10.00	EA	<p>0019 OPTIONS-FIRE SUPPRESSION DELETE SECTION 1.7.5</p>	\$ _____	\$ _____

ITEM NUMBER	QUANTITY	U/M	DESCRIPTION OF ARTICLES	UNIT PRICE QUOTED	TOTALS
11	10.00	EA	0020 OPTIONS-THERMO KING TK 14 SECTION 1.32.1	\$ _____	\$ _____
12	10.00	EA	0021 OPTIONS-THERMO KING S391 COMPRESSOR SECTION 1.32.1	\$ _____	\$ _____
13	10.00	EA	0022 OPTIONS-THERMO KING X430 COMPRESSOR SECTION 1.32.1	\$ _____	\$ _____
14	10.00	EA	0023 OPTIONS-THERMO KING ALL ELECTRIC SECTION 1.32.1	\$ _____	\$ _____
15	10.00	EA	0024 OPTIONS-QUANTUM GEN II SECTION 1.41.4	\$ _____	\$ _____
16	10.00	EA	0025 OPTIONS-2 POSITION STAINLESS STEEL BIKE RACK SECTION 1.36.2	\$ _____	\$ _____
17	10.00	EA	0026 OPTIONS-2 POSITION BLACK POWDER BIKE RACK SECTION 1.36.2	\$ _____	\$ _____
18	10.00	EA	0027 OPTIONS-DASH MOUNTED BIKE DEPLOYED LAMP SECTION 1.36.2	\$ _____	\$ _____
19	10.00	EA	0028 OPTIONS-CLEVER DEVICES ITS SYSTEM	\$ _____	\$ _____
20	10.00	EA	0029 OPTIONS-NIEHOFF 803 ALTERNATOR SECTION 1.22.6	\$ _____	\$ _____
21	10.00	EA	0030 OPTIONS-DELCO 450 DN ALTERNATOR SECTION 1.22.6	\$ _____	\$ _____
22	10.00	EA	0031 OPTIONS-ADJUSTABLE BRAKE/ ACCELERATOR PEDALS SECTION 1.25.7	\$ _____	\$ _____
23	10.00	EA	0032 OPTION-FRAMELESS BONDED WINDOWS SECTION 1.31.4	\$ _____	\$ _____

INVITATION TO BID FROM JEFFERSON PARISH - continued

BID NO.: 50-00145018

SEALED BID

ITEM NUMBER	QUANTITY	U/M	DESCRIPTION OF ARTICLES	UNIT PRICE QUOTED	TOTALS
24	10.00	EA	0033 OPTIONS-FAST FARE FAREBOX SECTION 1.43.10	\$ _____	\$ _____
25	10.00	EA	0034 OPTIONS-ALCOA FULL POLISH ALUMINUM WHEELS SECTION 1.15.2	\$ _____	\$ _____
26	10.00	EA	0035 OPTIONS-Q-POD RESTRAINT SYSTEM SECTION 1.41.4	\$ _____	\$ _____
27	10.00	EA	0036 OPTIONS-OIL SEALS SECTION 1.16.2	\$ _____	\$ _____
28	10.00	EA	0037 OPTIONS-WEIGHTED DELIVERY CHARGE FOR YOUR LOUISIANA AGENCIES	\$ _____	\$ _____
29	10.00	EA	0038 OPTIONS-FOUR(4) GROUP 31 BATTERIES SECTION 1.22.1	\$ _____	\$ _____

STANDARD INSURANCE REQUIREMENTS FOR BIDDING PURPOSES

All required insurance under this bid shall conform to Jefferson Parish Resolution No. 113646 or No. 113647, as applicable. Contractors may not commence any work under any ensuing contract unless and until all required insurance and associated evidentiary requirements thereto have been met, along with any additional specifications contained in the **Invitation to Bid**. Except as where otherwise precluded by law, the Parish Attorney or his designee, with the concurrence of the Director of Risk Management or his designee, may agree on a case-by-case basis, to deviate from Jefferson Parish's standard insurance requirements, as provided in this Section. Vendors requesting deviation therefrom shall submit such requests in writing, along with compelling substantiation, to the Purchasing Department prior to the bid's due date. Any changes to the insurance requirements will be reflected in the bid specifications and addenda. Prior to contract execution and at all times thereafter during the term of such contract, contractors must provide and continuously maintain all coverages as required by the foregoing Resolutions, and the contract documents. Failure to do so shall be grounds for suspension, discontinuation or termination of the contract.

For bidding purposes, bidders must submit with bid submission a current (valid) insurance certificate evidencing the required coverages. Failure to comply will cause bid to be rejected. The current insurance certificate will be used for proof of insurance at time of evaluation. Thereafter, and prior to contract execution, the low bidder will be required to provide final insurance certificates to the Parish which shall name **the Jefferson Parish, its Districts Departments and Agencies under the direction of the Parish President and the Parish Council** as additional insureds regarding negligence by the contractor for the Commercial General Liability, Workmen's Compensation Insurance and the Comprehensive Automobile Liability policies. Additionally, said certificates should reflect the name of the Parish Department receiving goods and services and reference the respective Jefferson Parish bid number.

JEFFERSON PARISH REQUIRED STANDARD INSURANCE

WORKER'S COMPENSATION INSURANCE

As required by Louisiana State Statute, exception; Employer's Liability, Section B shall be \$1,000,000 per occurrence when Work is to be over water and involves maritime exposures to cover all employees not covered under the State Worker's Compensation Act, otherwise this limit shall be no less than \$500,000 per occurrence.

Note: If your company is not required by law to carry workmen's compensation insurance, i.e. not a Louisiana company, sole employee of the company, then bidders must request a workmen's compensation insurance declaration affidavit prior to the bid opening date. This insurance declaration affidavit must be fully completed, signed, properly notarized and submitted with the bid. A scanned copy may be submitted with the bid; however, the successful bidder must submit the original affidavit in its original format and without material alteration upon contract execution. Failure to comply will result in the bid submission being

rejected as non-responsive. The Parish reserves the right to award bid to the next lowest responsive and responsible bidder in this event.

COMMERCIAL GENERAL LIABILITY

Shall provide limits not less than the following: \$1,000,000.00 Combined Single Limit per Occurrence for bodily injury and property damage.

COMPREHENSIVE AUTOMOBILE LIABILITY

Bodily injury liability \$1,000,000.00 each person; \$1,000,000.00 each occurrence.
Property Damage Liability \$1,000,000.00 each occurrence.

Note: This category may be omitted if bidders do not/will not utilize company vehicles for the project or do not possess company vehicles. Bidder must request an automobile insurance declaration affidavit prior to the bid opening date. This insurance declaration affidavit must be fully completed, signed, properly notarized and submitted with the bid. A scanned copy of the completed, signed and properly notarized affidavit may be submitted with the bid; however, the successful bidder must submit the original affidavit in its original format and without material alteration upon contract execution. Failure to comply will result in the bid submission being rejected as non-responsive. The Parish reserves the right to award bid to the next lowest responsive and responsible bidder in this event.

DEDUCTIBLES - The Parish Attorney with concurrence of the Director of Risk Management have waived the deductible section of the Terms and Conditions for all Invitations to Bid, until further notice.

UMBRELLA LIABILITY COVERAGE

An umbrella policy or excess may be used to meet minimum requirements.

FOR CONSTRUCTION AND RENOVATION PROJECTS:

The following are required unless otherwise specified in the bid. Such insurance is due upon contract execution.

1) **OWNER'S PROTECTIVE LIABILITY**

To be for the same limits of liability for bodily injury and property damage liability established for commercial general liability.

2) **BUILDER'S RISK INSURANCE**

The contractor shall maintain Builder's Risk Insurance at his own expense to insure both the owner (Parish of Jefferson) and contractor as their interest may appear.

CORPORATE RESOLUTION

EXCERPT FROM MINUTES OF MEETING OF THE BOARD OF DIRECTORS OF

INCORPORATED.

AT THE MEETING OF DIRECTORS OF _____
INCORPORATED, DULY NOTICED AND HELD ON _____,
A QUORUM BEING THERE PRESENT, ON MOTION DULY MADE AND SECONDED. IT
WAS:

RESOLVED THAT _____, BE AND IS HEREBY
APPOINTED, CONSTITUTED AND DESIGNATED AS AGENT AND ATTORNEY-IN-
FACT OF THE CORPORATION WITH FULL POWER AND AUTHORITY TO ACT ON
BEHALF OF THIS CORPORATION IN ALL NEGOTIATIONS, BIDDING, CONCERNS
AND TRANSACTIONS WITH THE PARISH OF JEFFERSON OR ANY OF ITS AGENCIES,
DEPARTMENTS, EMPLOYEES OR AGENTS, INCLUDING BUT NOT LIMITED TO, THE
EXECUTION OF ALL BIDS, PAPERS, DOCUMENTS, AFFIDAVITS, BONDS, SURETIES,
CONTRACTS AND ACTS AND TO RECEIVE ALL PURCHASE ORDERS AND NOTICES
ISSUED PURSUANT TO THE PROVISIONS OF ANY SUCH BID OR CONTRACT, THIS
CORPORATION HEREBY RATIFYING, APPROVING, CONFIRMING, AND ACCEPTING
EACH AND EVERY SUCH ACT PERFORMED BY SAID AGENT AND ATTORNEY-IN-
FACT.

I HEREBY CERTIFY THE FOREGOING TO BE
A TRUE AND CORRECT COPY OF AN
EXCERPT OF THE MINUTES OF THE ABOVE
DATED MEETING OF THE BOARD OF
DIRECTORS OF SAID CORPORATION, AND
THE SAME HAS NOT BEEN REVOKED OR
RESCINDED.

SECRETARY-TREASURER

DATE

Non-Public Works Bid Affidavit Instructions

- **Affidavit is supplied as a courtesy to Affiants, but it is the responsibility of the affiant to insure the affidavit they submit to Jefferson Parish complies, in both form and content, with federal, state and parish laws.**
- **Affidavit must be signed by an authorized representative of the entity or the affidavit will not be accepted.**
- **Affidavit must be notarized or the affidavit will not be accepted.**
- **Notary must sign name, print name, and include bar/notary number, or the affidavit will not be accepted.**
- **Affiant MUST select either A or B when required or the affidavit will not be accepted.**
- **Affiants who select choice A must include an attachment or the affidavit will not be accepted.**
- **If both choice A and B are selected, the affidavit will not be accepted.**
- **Affidavit marked N/A will not be accepted.**
- **It is the responsibility of the Affiant to submit a new affidavit if any additional campaign contributions are made after the affidavit is executed but prior to the time the council acts on the matter.**

Instruction sheet may be omitted when submitting the affidavit

Non-Public Works Bid

AFFIDAVIT

STATE OF _____

PARISH/COUNTY OF _____

BEFORE ME, the undersigned authority, personally came and appeared: _____
_____, (Affiant) who after being by me duly sworn, deposed and said that
he/she is the fully authorized _____ of _____ (Entity),
the party who submitted a bid in response to Bid Number _____, to the Parish of
Jefferson.

Affiant further said:

Campaign Contribution Disclosures

(Choose A or B, if option A is indicated please include the required attachment):

Choice A _____ Attached hereto is a list of all campaign contributions, including the date and amount of each contribution, made to current or former elected officials of the Parish of Jefferson by Entity, Affiant, and/or officers, directors and owners, including employees, owning 25% or more of the Entity during the two-year period immediately preceding the date of this affidavit or the current term of the elected official, whichever is greater. Further, Entity, Affiant, and/or Entity Owners have not made any contributions to or in support of current or former members of the Jefferson Parish Council or the Jefferson Parish President through or in the name of another person or legal entity, either directly or indirectly.

Choice B _____ there are **NO** campaign contributions made which would require disclosure under Choice A of this section.

Debt Disclosures

(Choose A or B, if option A is indicated please include the required attachment):

Choice A _____ Attached hereto is a list of all debts owed by the affiant to any elected or appointed official of the Parish of Jefferson, and any and all debts owed by any elected or appointed official of the Parish to the Affiant.

Choice B _____ There are **NO** debts which would require disclosure under Choice A of this section.

Affiant further said:

That Affiant has employed no person, corporation, firm, association, or other organization, either directly or indirectly, to secure the public contract under which he received payment, other than persons regularly employed by the Affiant whose services in connection with the construction, alteration or demolition of the public building or project or in securing the public contract were in the regular course of their duties for Affiant; and

[The remainder of this page is intentionally left blank.]

That no part of the contract price received by Affiant was paid or will be paid to any person, corporation, firm, association, or other organization for soliciting the contract, other than the payment of their normal compensation to persons regularly employed by the Affiant whose services in connection with the construction, alteration or demolition of the public building or project were in the regular course of their duties for Affiant.

Signature of Affiant

Printed Name of Affiant

SWORN AND SUBSCRIBED TO BEFORE ME

ON THE _____ DAY OF _____, 20__.

Notary Public

Printed Name of Notary

Notary/Bar Roll Number

My commission expires _____.

(5) Year Contract to furnish Labor, Material and Equipment Necessary to provide and Deliver one (1) to Ten (10) 35' and/or 40' Heavy Duty Transit Buses with an Option to Purchase Up to an Additional Thirty (30) as per the Following Technical Specifications to the Jefferson Parish Department of Transit Administration

1.0 Chassis

1.1 General

1.1.1 Vehicle Chassis shall meet all applicable SAE and FMVSS requirements

1.1.2 Manufacturer/Vehicle Alterer shall attest that they are certified by the Federal Transit Administration's TVM Program at the time they are supplying a response.

1.2 Dimensions

1.2.1 Physical Size

With exceptions such as exterior mirrors, marker and signal lights, bumpers, fender skirts, washers, wipers, ad frames, cameras, object detection systems, bicycle racks, feelers and rub rails, the bus shall have the following overall dimensions.

1.2.2 Bus Length

35 Foot Bus (35' TO 39' 11")
40 Foot Bus (40' TO 44' 11")

As Options, all available body styling packages shall be priced separately.

Option 1: **BRT Body Styling**

Option 2: **BRT Plus Body Styling**

Option 3: **Trolley package** - Trolley package should include pricing for oak seats, brass stanchions, cupola lighting, cow catcher and Bell.

1.2.3 Bus Width

Body width shall be 102 inches (+0, -1 inch)

1.2.4 Bus Height

Maximum overall height shall be 133 inches, including all rigid, roof-mounted items.

1.2.5 Step Height

The step height shall not exceed 16.5 inches at either doorway without kneeling and shall not exceed 15.5 inches at the step. A maximum of two steps is allowed to accommodate a raised aisle floor in the rear of the bus.

1.2.6 Underbody Clearance

The bus shall maintain the minimum clearance dimensions as defined in SAE Standard J689, regardless of load up to the gross vehicle weight rating.

1.2.7 Ramp Clearances

(1) The approach angle is the angle measured between a line tangent to the front tire static loaded radius arc and the initial point of structural interference forward of the front tire to the ground.

(2) The departure angle is the angle measured between a line tangent to the rear tire static loaded radius arc and the initial point of structural interference rearward of the rear tire to the ground.

(3) The breakover angle is the angle measured between two lines tangent to the front and rear tire static loaded radius and intersecting at a point on the underside of the vehicle that defines the largest ramp over which the vehicle can roll.

TABLE 2
Breakover Angle

Angle	35-ft to 40-ft Bus
Approach	8.6 degrees (min.)
Front breakover	8 degrees (min.)
Departure	8.1 degrees (min.)

1.2.8 Ground Clearance

(1) Ground clearance shall be no less than 9 inches, (8 inches at jacking pad) except within the axle zone and wheel area.

(2) Axle zone clearance, which is the projected area between tires and wheels on the same axial centerline, shall be no less than 5.4 inches.

(3) Wheel area clearance shall be no less than 8 inches for parts fixed to the bus body and 6 inches for parts that move vertically with the axles.

1.2.9 Floor Height

(1) Height of the step above the street shall be no more than 16 inches measured at the centerline of the front and rear doorway.

(2) The floor may be inclined along the longitudinal axis of the bus, and the incline shall not exceed 3.5 degrees off the horizontal except locally at the doors where 2-degree slope toward the door is allowed.

(3) All floor measurements shall be with the bus at the design running height and on a level surface and with the standard installed tires.

(4) A maximum of two steps is allowed to accommodate a raised aisle floor in the rear of the bus.

1.2.10 Interior Headroom

(1) Headroom above the aisle and at the centerline of the aisle seats shall be no less than 78 inches in the forward half of the bus tapering to no less than 74 inches forward of the rear settee.

(2) At the centerline of the window seats, headroom shall be no lower than 65 inches, except for parcel racks and reading lights, if specified.

(3) Headroom at the back of the rear bench seat may be reduced to a minimum of 56 inches, but it shall increase to the ceiling height at the front of the seat cushion.

(4) In any area of the bus directly over the head of a seated passenger and positioned where a passenger entering or leaving the seat is prone to strike his or her head, padding shall be provided on the overhead paneling.

1.2.11 Aisle Width

(1) The minimum clear aisle width between pairs of transverse seats with all attached hardware shall be at least 22 inches.

(2) The aisle width between the front wheelhouses shall be at least 35.5 inches, and the entire area between the front wheelhouses shall be available for passengers and mobility aid devices.

1.3 Vehicle Performance

1.3.1 Power Requirements

The propulsion system shall be sized to provide sufficient power to enable the bus to meet the defined acceleration, top speed, and gradeability requirements, and operate all propulsion-driven accessories using actual road test results and computerized vehicle performance data.

1.3.2 Top Speed

The bus shall be capable of achieving a top speed of 65 mph on a straight, level road at GVWR with all accessories operating. The bus shall be capable of safely maintaining the vehicle speed according to the recommendations by the tire manufacturer.

NOTE: Values are assumed to be sustained. Manufacturer shall supply Parish with data with bid if there is a variance between peak performance and sustained vehicle performance.

1.3.3 Gradeability

Gradeability requirements shall be met on grades with a dry commercial asphalt or concrete pavement at GVWR with all accessories operating.

1.3.4 Default

The propulsion system and drivetrain shall enable the bus to achieve and maintain a speed of 40 mph on a 2½ percent ascending grade and 15 mph on a 10 percent ascending grade continuous.

NOTE: Values are assumed to be sustained. Manufacturer shall supply Parish with data with bid if there is a variance between peak performance and sustained vehicle performance.

1.3.5 Acceleration

The acceleration shall meet the requirements below and shall be sufficiently gradual and smooth to prevent throwing standing passengers off-balance. Acceleration measurement shall commence when the accelerator is depressed.

TABLE 3

Maximum Start Acceleration Times on a Level Surface¹

Speed (mph)	Maximum time (seconds)
10	5
20	10
30	18
40	30
50	60
Top Speed	

1. Vehicle weight = GVWR

1.3.6 Operating Range

The operating range of the bus shall be designed to meet the operating profile as stated in the “Design Operating Profile” section.

1.3.7 Diesel

The operating range of the bus when run on the Altoona Test cycle shall be at least 350 miles with full fuel capacity.

1.4 Powerplant

1.4.1 Engine - Diesel

(1) The bus shall be powered by a Cummins L9 HP diesel engine capable of providing the performance to satisfy the operating conditions in geographical areas throughout the state of Louisiana. The engine shall have a minimum design life of 12

years or 500,000 miles, whichever comes first, and it shall be designed to require no more than one (1) major overhaul to achieve this lifetime. The engine and the transmission shall be compatible with each other in that the electronic controls of the engine shall interface with the transmission and vice versa, if controls are used. Engine shall meet all current Federal EPA requirements. A copy of the engine certification shall be supplied with the proposal.

(2) The engine shall comply with applicable local, state, and/or federal emissions and useful life requirements. Components of the fuel management and/or control system shall have a design life of not less than 150,000 miles without replacement or major service. The lifetime estimate is based on the design operating profile.

(3) The engine shall be equipped with an electronically controlled management system, compatible with either 12- or 24-volt power distribution. The engine control system shall be capable of transmitting and receiving electronic inputs and data from other drivetrain components and broadcasting that data to other vehicle systems. Communication between electronic drivetrain components and other vehicle systems shall be made using the communications networks. The engine's electronic management system shall monitor operating conditions and provide instantaneous adjustments to optimize both engine and bus performance. The system shall be programmable to allow optimization of programmable features.

(4) The engine starting system shall be protected by an interlock that prevents its engagement when the engine is running. Special equipment or procedures may be employed to start the bus when exposed to temperatures less than 30°F for a minimum of four hours without the engine in operation. All cold weather starting aids, engine heating devices and procedures shall be of the type recommended by the engine manufacturer and approved by the Parish. The integration of all systems on the vehicle relative to engine idle speed shall be the responsibility of the vehicle manufacturer to meet the requirements of the

transit property. A 120 volt @ 100-watt engine block heater will be located in the rear engine compartment.

1.4.2 Automatic Engine Protection/Shutdown Override Feature

(1) The engine control system shall protect the engine against progressive damage. The system shall monitor conditions critical for safe operation and automatically de-rate power and/or speed and initiate engine shutdown as needed. The on-board diagnostic system shall trigger an audible alarm and warning light to signal the operator when the engine control unit detects a malfunction and the engine protection system is activated.

(2) Automatic shutdown shall occur when parameters established for the functions below are exceeded:

- i. Coolant Level
- ii. Coolant Temperature
- iii. Oil Pressure

- iv. Oil Temperature
- v. 15 minutes of Idling
- vi. Exhaust Temperature
- vii. Fire Suppression

(3) The automatic shutdown for the Fire Suppression feature shall occur when the Fire Suppression system is discharged.

(4) A control shall be available to the operator, to allow temporary override (30-45 seconds) of the engine protection/shutdown system if engine power is required to move the bus in emergency conditions. Override action shall be recorded. This data shall be retrievable by the Parish.

(5) The fast idle device shall be activated and controlled automatically by the engine control system. This device will operate only when the transmission is in neutral.

(6) The integration of all systems on the vehicle relative to engine idle speed shall be the responsibility of the vehicle manufacturer and shall meet the requirements of the transit property.

(7) The engine starting system shall be protected by an interlock that prevents its engagement when the engine is running.

(8) Engine throttle operation shall be inhibited, through interlocks, whenever:

- I. Front or rear door open
(Front door optional: selection made by Transit Parish)
- ii. The vehicle is kneeled
- iii. Wheelchair ramp is in operation
- iv. Rear door emergency release
- v. Fast Idle Operation

(9) Failure of the engine throttle control shall not result in an unsafe condition. Loss of air or electrical throttle control shall inhibit throttle.

(10) A rear mounted engine speed control (hand throttle) will be provided.

(11) The engine shall have on-board diagnostic capabilities, able to monitor vital functions, store out-of-parameter conditions in memory, and communicate faults and vital conditions to service personnel. Diagnostic reader device connector ports, suitably protected against dirt and moisture, shall be provided in operator's area and near or inside engine compartment. The on-board diagnostic system shall inform the operator via visual and/or audible alarms when out-of-parameter conditions exist for vital engine functions. All removable caps shall be tethered including the caps for the diagnostic connector ports in the operator's area and in the engine compartment.

1.4.3 Propulsion System Service

The propulsion system 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 propulsion system or any subsystems. However, the Parish shall recognize that properly rated test equipment and safe electrical work practices are essential when servicing high voltage hybrid components. The exhaust system, air cleaner, air compressor, starter (if used), alternator, radiator, all engine accessories, and any other component requiring service or replacement shall be easily removable.

1.4.4 Standard Requirements for a Fast Idle Device

The fast idle device shall be activated and controlled automatically by the control system.

1.4.5 Cooling Systems

(1) The cooling systems shall be of sufficient size to maintain all engine and transmission fluids and engine intake air at safe, continuous operating temperatures during the most severe operations possible and in accordance with engine and transmission manufacturers' cooling system requirements. The cooling system fan controls should sense the temperatures of the operating fluids and the intake air, and if either is above safe operating conditions the cooling fan should be engaged. The fan control system shall be designed with a fail-safe mode of "fan on." The cooling system shall meet the requirements stated in the operating environment.

(2) The engine shall be cooled by a water-based, pressure type, cooling system that does not permit boiling or coolant loss during the operations described above. Engine thermostats shall be easily accessible for replacement. Shutoff valves shall allow filter replacement without coolant loss. Valves shall permit complete shutoff of lines for the heating and defroster units, and water booster pumps. The water boost pump shall be a long-life brushless design. All low points in the water-based cooling system shall be equipped with a standard with a 1/4" MPT brass hex plug. Air vent valves shall be fitted at high points in the cooling system unless it can be demonstrated that the system is self-purging.

(3) An electric fan system will be provided. Electric fans shall be brushless, variable speed, reversible and have a corrosion resistant metal shroud with finger guards that meet SAE spec J1308_200808. The fans should provide electronic feedback control and have diagnostics capability through the standard SAE J1939 diagnostics port. The cooling system shall consist of multiple electric DC brushless pusher type variable speed fans with electronic feedback controls. Electric fan motor speeds shall have a minimum operating range of 0-5500 rpm with capability of manual or automatic reverse operation in order to assist in debris removal. The cooling system shall be equipped with a master controller with the following capabilities; automatically reduce fan speed when the vehicle stops to minimize noise.

(4) A means of determining satisfactory engine coolant level shall be provided. A spring-loaded, push-button type valve or lever shall be provided to safely release pressure or vacuum in the cooling system with both it and the water filler no more

than +/- 60 inches above the ground. Radiator and charge air cooler fan(s) shall be electrically driven and capable of a manual reverse operation for periodic self-cleaning of the radiator and charge air cooler.

1.4.6 Charge Air Cooling

The charge air cooling system also referred to as after-coolers or inter-coolers shall provide maximum air intake temperature reduction with minimal pressure loss. The charge air radiator shall be sized and positioned to meet engine manufacturer's requirements. The charge air radiator shall not be stacked ahead of or behind the engine radiator and shall be positioned as close to the engine as possible unless integrated with the radiator. Air ducting and fittings shall be protected against heat sources and shall be configured to minimize restrictions and maintain sealing integrity.

1.4.7 Transmission Cooling

The transmission shall be cooled by a dedicated heat exchanger sized to maintain operating fluid within the transmission manufacturer's recommended parameters of flow, pressure and temperature. The transmission cooling system shall be matched to retarder and engine cooling systems to ensure that all operating fluids remain within recommended temperature limits established by each component manufacturer. The engine cooling system should provide coolant bypass flow to the transmission cooling system with the engine thermostats closed.

1.4.8 Transmission - Conventional Powertrain

(1) The transmission shall be an Allison B400R automatic shift with torque converter, retarder and electronic controls. Gross input power, gross input torque and rated input speed shall be compatible with the engine. The transmission shall be designed to operate for not less than 300,000 miles on the design operating profile without replacement or major service. The transmission should be easily removable without disturbing the engine and accessible for service.

(2) The electronic controls shall be capable of transmitting and receiving electronic inputs and data from other drivetrain components and broadcasting that data to other vehicle systems. Communication between electronic drivetrain components and other vehicle systems shall be made using the communications networks. Electronic controls shall be compatible with either 12- or 24-volt power distribution, provide consistent shift quality and compensate for changing conditions such as variations in vehicle weight and engine power.

(3) A nominal brake pedal application of 6 to 10 psi shall be required by the operator to engage forward or reverse range from the neutral position to prevent sudden acceleration of the bus from a parked position.

(4) The electronically controlled transmission shall have on-board diagnostic capabilities, be able to monitor functions, store and time stamp out-of-parameter conditions in memory, and communicate faults and vital conditions to service

personnel. The transmission shall contain built-in protection software to guard against severe damage. The on-board diagnostic system shall trigger a visual alarm to the operator when the electronic control unit detects a malfunction.

(5) Models with remote mounted transmission vents shall have vents mounted to prevent plugging and/or the entry of foreign materials.

1.4.9 Retarder

(1) The powertrain shall be equipped with a retarder designed to extend brake lining service life. The application of the retarder shall cause a smooth blending of both retarder and service brake function and shall not activate the brake lights.

(2) Actuation of ABS and/or automatic traction control (ATC) shall override the operation of the brake retarder.

1.4.10 Standard Requirement for Retarder Activation

The retarder shall be adjustable within the limits of the powertrain and activated when the brake pedal is depressed. The Parish will work with the OEM/drive system manufacturer to determine retarder performance settings. A retarder disable switch shall be accessible to the seated operator. Disabling retarder shall be recorded for Parish data collection.

1.4.11 Mounting

All powerplant mounting shall be mechanically isolated to minimize transfer of vibration to the body structure and provide a minimum clearance of 0.75 inches. Mounts shall control the movement of the powerplant so as not to affect performance of belt-driven accessories or cause strain in piping and wiring connections to the powerplant.

1.4.12 Engine / Transmission Oil Fill / Filters

Engine oil and the radiator filler caps shall be hinged to the filler neck and closed with spring pressure or positive locks to prevent leakage. All fluid fill locations shall be properly labeled to help ensure that correct fluid is added. All fillers shall be easily accessible with standard funnels, pour spouts and automatic dispensing equipment. All lubricant sumps shall be fitted with magnetic-type drain plugs. The engine and transmission shall be equipped with sufficient heavy-duty fuel and oil filters for efficient operation and to protect the engine and transmission between scheduled filter changes. All filters shall be easily accessible and the filter bases shall be plumbed to ensure correct reinstallation.

1.4.13 Engine Compartment Gauges

Engine oil pressure, transmission and coolant temperature gauges are required in engine compartment.

1.4.14 Engine Air Cleaner

An air cleaner with a dry filter element and a graduated air filter restriction indicator shall be provided. The location of the air intake system shall be designed to minimize

the entry of dust and debris and to maximize the life of the air filter. The engine air duct shall be designed to minimize the entry of water into the air intake system. Drainage provisions shall be included to allow any water/moisture to drain prior to entry into air filter.

1.4.15 Hydraulic Systems

(1) Hydraulic system service tasks shall be minimized and scheduled no more frequently than those of other major bus systems. All elements of the hydraulic system shall be easily accessible for service or unit replacement. Critical points in the hydraulic system shall be fitted with service ports so that portable diagnostic equipment may be connected or sensors for an off-board diagnostic system permanently attached to monitor system operation when applicable. A tamper-proof priority system shall prevent the loss of power steering during operation of the bus if other devices are also powered by the hydraulic system.

(2) The hydraulic system shall operate within the allowable temperature range as specified by the lubricant manufacturer.

1.4.16 Fluid Lines

(1) All lines shall be rigidly supported to prevent chafing damage, Fatigue Failures, degradation and tension strain. Lines should be sufficiently flexible to minimize mechanical loads on the components. Lines passing through a panel, frame or bulkhead shall be protected by grommets (or similar devices) that fit snugly to both the line and the perimeter of the hole that the line passes through to prevent chafing and wear. Pipes and fluid hoses shall not be bundled with or used to support electrical wire harnesses.

(2) Lines shall be as short as practicable and shall be routed or shielded so that failure of a line shall not allow the contents to spray or drain onto any component operable above the auto-ignition temperature of the fluid.

(3) All hoses, pipes, lines and fittings shall be specified and installed per the manufacturer's recommendations.

1.4.17 Fittings and Clamps

(1) All clamps shall maintain a constant tension at all times, expanding and contracting with the line in response to temperature changes and aging of the line material. The lines shall be designed for use in the environment where they are installed. For example, high-temperature resistant in the engine compartment, resistant to road salts near the road surface, and so on.

(2) Compression fittings shall be standardized to prevent the intermixing of components. Compression fitting components from more than one manufacturer shall not be mixed, even if the components are known to be interchangeable.

1.4.18 Charge Air Piping

(1) Charge air piping and fittings shall be designed to minimize air restrictions and leaks. Piping shall be as short as possible, and the number of bends shall be minimized. Bend radii shall be maximized to meet the pressure drop and temperature rise requirements of the engine manufacturer. The cross-section of all charge air piping shall not be less than the cross-section of the intake manifold inlet. Any changes in pipe diameter shall be gradual to ensure a smooth passage of air and to minimize restrictions. Piping shall be routed away from heat sources as practicable and shielded as required to meet the temperature rise requirements of the engine manufacturer.

(2) Charge air piping shall be constructed of stainless steel, aluminized steel or anodized aluminum, except between the air filter and turbocharger inlet, where piping may be constructed of fiberglass. Connections between all charge air piping sections shall be sealed with a short section of reinforced hose and secured with stainless steel constant tension clamps that provide a complete 360-degree seal.

1.4.19 Radiator

Radiator piping shall be stainless steel or brass tubing, and if practicable, hoses shall be eliminated. Necessary hoses shall be impervious to all bus fluids. All hoses shall be secured with stainless steel clamps that provide a complete 360-degree seal. The clamps shall maintain a constant tension at all times, expanding and contracting with the hose in response to temperature changes and aging of the hose material. Radiator must be street level mounted.

1.4.20 Oil and Hydraulic Lines

Oil and hydraulic lines shall be compatible with the substances they carry. The lines shall be designed and intended for use in the environment where they are installed. For example, high-temperature resistant in the engine compartment, resistant to road salts near the road surface, and so on. Lines within the engine compartment shall be composed of steel tubing where practicable, except in locations where flexible lines are required.

1.5 Fuel

1.5.1 Fuel Lines

(1) Fuel lines shall be securely mounted, braced and supported as designed by the bus manufacturer to minimize vibration and chafing and shall be protected against damage, corrosion or breakage due to strain or wear.

(2) Manifolds connecting fuel containers shall be designed and fabricated to minimize vibration and shall be installed in protected locations to prevent line or manifold damage from unsecured objects or road debris.

(3) Fuel hose and hose connections, where permitted, shall be made from materials resistant to corrosion and fuel and protected from fretting and high heat. Fuel hoses shall be accessible for ease of serviceability.

1.5.2 Fuel Lines - Diesel

Fuel lines shall be capable of carrying the type of fuel specified by the Parish (i.e., up to B20 type fuel).

1.6 Design and Construction

1.6.1 Design and Construction - Diesel Fuel Tank(s)

(1) The fuel tank(s) shall be made of corrosion resistant materials. The fuel tank(s) shall be securely mounted to the bus to prevent movement during bus maneuvers.

(2) The fuel tank(s) shall be equipped with an external, hex head, drain plug. It shall be at least a 3/8-inch size and shall be located at the lowest point of the tank(s). The fuel tank(s) shall have an inspection plate or easily removable filler neck to permit cleaning and inspection of the tank(s) without removal from the bus. The tank(s) shall be baffled internally to prevent fuel-sloshing noise regardless of fill level. The baffles or fuel pickup location shall assure continuous full power operation on a 6 percent upgrade for 15 minutes starting with no more than 25 gallons of fuel over the unusable amount in the tank(s). The bus shall operate at idle on a 6 percent downgrade for 30 minutes starting with no more than 10 gallons of fuel over the unusable amount in the tank(s). All systems/engines on all model buses will be compatible with all blends of Bio-Diesel fuel based on manufacturer's recommendations.

(3) The materials used in mounting shall withstand the adverse effects of road salts, fuel oils, and accumulation of ice and snow for the life of the bus

1.6.2 Labeling

The capacity, date of manufacture, manufacturer name, location of manufacture, and certification of compliance to Federal Motor Carrier Safety Regulation shall be permanently marked on the fuel tank(s). The markings shall be readily visible and shall not be covered with an undercoating material.

1.6.3 Fuel Filler

(1) The fuel filler shall be located 7 to 32 feet behind the centerline of the front door on the curbside of the bus. The filler cap shall be retained to prevent loss and shall be recessed into the body so that spilled fuel will not run onto the outside surface of the bus.

(2) The fuel lines forward of the engine bulkhead shall be in conformance to SAE Standards.

1.6.4 Dry-Break Fuel Filler

The fuel filler shall accommodate a nozzle that forms a locked and sealed connection during the refueling process to eliminate spills. Fuel shall not be allowed to flow into the tank unless the nozzle has been properly coupled, locked and sealed to the filler. With the nozzle open, fuel shall enter the tank at a fill rate of not less than 40 gallons per minute of foam-free fuel without causing the nozzle to shut off before the tank is

full. The nozzle shall automatically shut off when the tank is essentially full. Once disconnected, fuel shall not be allowed to flow through the nozzle at any time. Any pressure over 3 psi shall be relieved from the fuel tank automatically. An audible signal shall indicate when the tank is essentially full. The dry brake system shall be compatible with the Parish's system. The fuel filler cap shall be hinged. Equipment will be finalized at pre-production meeting.

1.7 Emissions and Exhaust

1.7.1 Exhaust Emissions

The engine and related systems shall meet all applicable emission and engine design guidelines and standards.

1.7.2 Exhaust System

Exhaust gases and waste heat shall be discharged from the roadside rear corner of the roof. The exhaust pipe shall be of sufficient height to prevent exhaust gases and waste heat from discoloring or causing heat deformation to the bus. The entire exhaust system shall be adequately shielded to prevent heat damage to any bus component, including the exhaust after-treatment compartment area. The exhaust outlet shall be designed to minimize rain, snow or water generated from high-pressure washing systems from entering into the exhaust pipe and causing damage to the after-treatment. An exhaust after-treatment system will be provided to ensure compliance to all applicable EPA regulations in effect.

1.7.3 Diesel Exhaust Fluid (DEF) Injection

If required by the engine manufacturer to meet NOx level requirements specified by EPA, a DEF injection system will be provided. The DEF system will minimally include a tank, an injector, a pump, an ECM and a selective catalytic converter. The tanks shall be designed to store DEF in the operating environment described in the "Operating Environment" section. The DEF fluid lines shall be designed to prevent the DEF from freezing. The DEF injection system shall not be damaged from a cold soak at 10°F.

1.7.4 Particulate After-Treatment

If required by the engine manufacturer to meet particulate level requirements specified by EPA, a particulate trap will be provided. The particulate trap shall regenerate itself automatically if it senses clogging. Regeneration cycles and conditions will be defined by the engine manufacturer.

1.7.5 Fire Suppression System

(1) An Amerex V25 automatic fire suppression system will be provided to ensure adequate coverage in the engine compartment and main electrical box areas should a fire event happens. The system shall incorporate a telltale, dash mounted operator warning light, audible indicator and switch, automatically shutting off all fans and climate control systems in the event of discharge.

(2) The system installed shall be certified by the vehicle manufacturer that it is suitable for use in the proposed vehicle in case the unit fails to function during an on-board vehicle event or fire. Each vehicle shall be delivered with a certificate identifying the vehicle identification number (VIN) for which it applies. The system shall be U.L., U.C.L., and F.M. listed and meet all D.O.T. and F.M.V.S.S. and be certified by the vehicle and equipment manufacturer.

NOTE: Fire Suppression shall be mandatory on all Hybrid buses and shall be included in the price.

As an option, a delete for the Fire Suppression for the diesel bus will be included.

1.8 Hybrid System

1.8.1 The hybrid drive system shall be an Allison eGen Flex™ Max parallel drive system. Operator selection of ranges shall be accomplished with an electronic push-button control. The hybrid drive system shall be designed to operate not less than 300,000 miles on the design operating profile without replacement or major service. The hybrid system shall be factory filled with TranSynd™ synthetic transmission fluid. The rechargeable energy storage system shall be provided sufficient cooling for proper life expectancy.

1.8.2 The hybrid drive system and axle gear ratios shall be appropriate for the normal functioning of the vehicle with full seated loads in hilly terrain. Vehicle launch performance and speed on grades capability shall be analyzed using Allison iSCAAN.

1.8.3 The drive system shall be a 2-mode compound split parallel hybrid. The design of the 2-mode compound split parallel hybrid drive unit shall be robust and designed for transit duty. The drive unit or generator shall be designed to have a maximum gross continuous input horsepower rating of 280 horsepower. There shall be a self-contained oil system or oil/WEG system for lubrication and cooling of the drive unit. The drive unit shall enclose appropriate gear reduction of a planetary design. The high voltage connections to the traction drive shall be of “lugged” design. The lugs shall be in an electrical enclosure for safety to personnel. The enclosure shall feature a design that shall take the voltage to zero potential if the enclosure is opened for repair. Non-enclosed high-voltage studs shall not be acceptable.

1.8.4 The hybrid drive system shall provide sufficient support of 24-volt DC and 230-volt AC exportable power to enable electrification of all vehicle accessories including air compressor, cabin air conditioning, 24-volt DC power steering, engine and hybrid cooling systems, wheelchair ramps, lighting systems and low voltage hotel loads.

1.8.5 The hybrid drive system shall be equipped with a starter interlock preventing operator initiated starting of the engine unless the hybrid system is in neutral.

1.8.6 A brake pedal application of 15 - 20 psi shall be required by the operator to engage forward or reverse range from the neutral position. Auxiliary Function Range inhibit input function needs to be enabled.

1.8.7 A diagnostic connector port for the Hybrid private network as well as the public powertrain network shall be provided in the operator's and the engine compartment.

1.8.8 The hybrid system shall perform automatic engine stop-starts when the vehicle is stopped to save fuel, provided that the engine, hybrid system and vehicle interface controls all consent to an engine shut down. Operator release of the service brakes shall initiate the engine re-start sequence and the vehicle shall launch in forward range with throttle apply. Brake interlocks that use the throttle as the release signal should not be used.

1.8.9 The hybrid system shall be capable of switching to zero emissions, engine off EV mode operation shortly before arriving at a bus stop. Geo-fencing or route radio signal beacons shall be used to define zero emissions, engine off bus stop zone. The vehicle body controller or telematics device shall determine when entering zero emissions, engine off bus stop zone and communicate the request to the hybrid system, via SAE 1939 messaging. The hybrid system shall operate in engine off EV mode until exiting the zero emissions, bus stop zone, unless there is some critical fault or condition which requires exit of the EV mode. The drive unit shall decouple from the engine, via a disconnect clutch, to stop unnecessary engine rotation. It shall remain in engine off EV mode at a bus stop, while the rechargeable energy storage system is powering necessary accessories such as (air compressor, cabin air conditioning, power steering, engine and hybrid cooling systems, wheel chair ramps, lighting systems and low voltage hotel loads). It shall launch in EV mode and then automatically restart the engine shortly after departing the bus stop. Engine off EV mode operation shall be subject to the engine, hybrid system and vehicle interface controls all consenting to the request.

1.8.10 The hybrid system shall be capable of switching to engine off EV mode operation in pre-determined bus depot and zero emissions zones for up to 50% engine off time during daily in-route operation and up to 50 minutes of EV continuous operation, with the electric range being dependent upon duty cycle and electric accessory loads. Geo-fencing or route radio signal beacons shall be used to define a zero emissions zone. The vehicle body controller or telematics device shall determine when entering a bus depot or zero emissions zone and communicate the request to the hybrid system, via SAE 1939 messaging. The hybrid system shall operate in engine off EV mode until exiting the depot or zero emissions zone, unless there is some critical fault or condition which requires exit of the EV mode. The drive unit shall decouple from the engine via a disconnect clutch to stop unnecessary

engine rotation. The hybrid system shall remain in engine off EV mode operation while in a bus depot or zero emission zone and continue powering necessary accessories such as (air compressor, cabin air conditioning, power steering, engine and hybrid cooling systems, wheel chair ramps, lighting systems and low voltage hotel loads). It shall then automatically restart the engine upon departing the bus depot or zero emission zone. Engine off EV mode operation shall be subject to the engine, hybrid system and vehicle interface controls all consenting to the request.

1.8.11 The rechargeable energy storage system (RESS) shall be of a commercial design for transit duty cycles. Battery chemistry shall be Lithium Titanate (LTO) or Lithium-Ion. The RESS components shall have a design life of 8-years, (96) months after the bus is placed in revenue service. The RESS shall not exceed hazard severity level 5 per SAE J2464 Safety and Abuse Testing. The high voltage connectors shall be of an Amphenol Power Lok type. Charging of the RESS shall only come from the drive unit or on-board generator or regenerative braking and not from external charging. The RESS must have a dedicated 600VDC liquid thermal management system providing heating and cooling for the lithium batteries. Trouble codes shall be stored in the ECU for retrieval by the same diagnostic reader device as for the hybrid system.

1.8.12 The power inverter shall be of a commercial design for transit duty cycles. It shall be WEG cooled. The high voltage connectors shall be of an Amphenol Power Lok type. The inverter shall assure smooth vehicle acceleration and deceleration of the entire vehicle operating speed range. Communication shall be SAE 1939 protocol. Trouble codes shall be stored in the ECU for retrieval by the same diagnostic reader device as for the hybrid system. The hybrid propulsion regenerative braking system shall provide a minimum of 0.08G deceleration, at GVWR up to (50) mph vehicle speed.

1.8.13 The hybrid system shall be able to achieve a continuous system traction performance of 240 HP (including energy storage). The system shall protect all persons from electrical shock. The use of high voltage interlocks shall be a requirement. The interlocks shall de-energize the system of all voltage potential (with the exception of the rechargeable energy storage) if the system is intruded.

1.8.14 The installation of the hybrid system shall be done in accordance with the hybrid system manufacturer's technical data requirements. Also, the hybrid system installation shall be certified in writing by the vehicle manufacturer as being designed, manufactured and assembled in accordance with the hybrid system's manufacturer's technical data requirements. The bus shall meet or exceed the hybrid system's manufacturer's technical data cooling requirements prior to customer's acceptance of the first production bus. The vehicle manufacturer shall certify to customer that the pilot production bus meets or exceeds the hybrid systems manufacturer's technical data cooling system requirements. Cooling documentation and vehicle certification shall be provided to the customer prior to the pilot bus being accepted by customer. The vehicle manufacturer shall be ISO-9000 registered.

1.8.15 All flexible hose that carries hybrid drive system fluid shall be Teflon with braided stainless-steel sheathing. An easily accessible, external spin-on hybrid system fluid filter shall be installed.

1.8.16 A Baldwin Filters brass probalyzer plug (OTK5062), or approved equal designed to allow uncontaminated oil samples to be taken shall be placed in a convenient location on the hybrid drive system to extract oil samples.

1.9 Structure

1.9.1 Design

The structure of the bus shall be designed to withstand the transit service conditions typical of an urban duty cycle throughout its service life. The vehicle structural frame shall be designed to operate with minimal maintenance throughout the 12-year design operating profile. The design operating profile specified by the Parish shall be considered for this purpose. The Chassis will be made of Stainless Steel.

1.9.2 Altoona Testing

Prior to acceptance of first bus, the vehicle must have completed any FTA-required Altoona testing. Any items that required repeated repairs or replacement must undergo the corrective action with supporting test and analysis. A report clearly describing and explaining the failures and corrective actions taken to ensure any and all such failures will not occur shall be submitted to the Parish.

1.9.3 Altoona Test Report Provided to Parish Prior to Start of Bus Production

Prior to the start of any bus manufacturing or assembly processes, the structure of the proposed bus model shall have undergone appropriate structural testing and/or analysis, including the complete regimen of FTA required Altoona tests. Prior to assembly of the first bus, the OEM shall provide the Parish with a completed report of Altoona testing for the proposed bus model along with a plan of corrective action to address deficiencies, breakdowns and other issues identified during Altoona testing. The bus model tested shall match the bus model proposed for procurement, including structure, axles and drive-train. Base model and partial Altoona test reports are acceptable when the combination of these tests adequately represents the proposed bus model. The bus structure must be qualified for 12 year/500,000 mile design life in urban transit service through the dynamic shaker table testing, or approved equal dynamic testing. Report of all structural testing and corrective actions shall be supplied. The design, construction and materials used to build buses shall be the same as the bus qualified, with the exception of modifications that are required as a consequence of the qualification process. The Contractor shall notify the Project Manager of any modification of the design, materials or processes, used in the manufacture of the buses, which has occurred since the buses were qualified by the property. A design validation process for any structural changes must be submitted for technical review by the property.

1.10 Structural Validation Baseline

1.10.1 Structural Analysis

The structure of the bus shall have undergone appropriate structural testing and/or analysis. At minimum, appropriate structural testing and analysis shall include Altoona testing or Finite Element Analysis (FEA).

1.10.2 Distortion

The bus, loaded to GVWR and under static conditions, shall not exhibit deflection or deformation that impairs the operation of the steering mechanism, doors, windows, passenger escape mechanisms or service doors. Static conditions shall include the vehicle at rest with any one wheel or dual set of wheels on a 6-inch curb or in a 6-inch-deep hole.

1.10.3 Resonance and Vibration

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

1.10.4 Engine Compartment Bulkheads

The passenger and engine compartment shall be separated by fire-resistant bulkheads. The engine compartment shall include areas where the engine and exhaust system are housed. This bulkhead shall preclude or retard propagation of an engine compartment fire into the passenger compartment. Only necessary openings shall be allowed in the bulkhead, and these shall be fire-resistant. Any passageways for the climate control system air shall be separated from the engine compartment by fire-resistant material. Piping through the bulkhead shall have fire-resistant fittings sealed at the bulkhead.

Wiring may pass through the bulkhead only if connectors or other means are provided to prevent or retard fire propagation through the bulkhead. Engine access panels in the bulkhead shall be fabricated of fire-resistant material and secured with fire-resistant fasteners. These panels, their fasteners and the bulkhead shall be constructed and reinforced to minimize warping of the panels during a fire that will compromise the integrity of the bulkhead.

1.10.5 Crashworthiness

(1) The bus body and roof structure shall withstand a static load equal to 150 percent of the curb weight evenly distributed on the roof with no more than a 6-inch reduction in any interior dimension. Windows shall remain in place and shall not open under such a load. These requirements must be met without the roof-mounted equipment installed.

(2) The bus shall withstand a 25-mph impact by a 4000-pound automobile at any side, excluding doorways, along either side of the bus with no more than 3 inches of permanent structural deformation at seated passenger hip height. This impact shall not result in sharp edges or protrusions in the bus interior.

(3) Exterior panels below 35 inches from ground level shall withstand a static load of 2000 lbs. applied perpendicular to the bus by a pad no larger than 5 sq. inches. This load shall not result in deformation that prevents installation of new exterior panels to restore the original appearance of the bus. The transit bus, at GVWR and under static conditions, shall not exhibit deformation or deflection that impairs operation of doors, windows, or other mechanical elements. Static conditions include the vehicle at rest with any one wheel or dual set of wheels on a 6-inch curb or in a 6-inch-deep hole.

(4) The sidewall structure shall be capable of withstanding impacts of 200-foot pounds of energy from a steel faced spherical missile no less than 9 inches in diameter and of a 500-pound load applied anywhere along their length by a rigid plate 1 foot in length with no visible damage to the supporting structure. A damaged portion of the supporting structure shall be replaceable without requiring removal or replacement of the entire structure.

(5) The bus chassis shall be stainless steel.

1.10.6 Corrosion

(1) The bus flooring, sides, roof, understructure and axle suspension components shall be designed to resist corrosion or deterioration from atmospheric conditions and de-icing materials for a period of 12 years or 500,000 miles, whichever comes first. It shall maintain structural integrity and nearly maintain original appearance throughout its service life, with the Parish's use of proper cleaning and neutralizing agents.

(2) All materials that are not inherently corrosion resistant shall be protected with corrosion-resistant coatings. All joints and connections of dissimilar metals shall be corrosion resistant and shall be protected from galvanic corrosion. Representative samples of all materials and connections shall withstand a two-week (336-hour) salt spray test in accordance with ASTM Procedure B-117 with no structural detrimental effects to normally visible surfaces and no weight loss of over 1 percent.

1.10.7 Corrosion-Resistance Requirements for Exposed and Interior Surfaces of Tubing Below Lower Window Level

All exposed surfaces and the interior surfaces of tubing and other enclosed members below lower window line shall be corrosion resistant through application of a corrosion protection system.

1.10.8 Towing

(1) Each towing device shall withstand, without permanent deformation, tension loads up to 1.2 times the curb weight of the bus within 20 degrees of the longitudinal axis of the bus. If applicable, the rear towing device(s) shall not provide a toehold for unauthorized riders. The method of attaching the towing device shall not require the removal, or disconnection, of front suspension or steering components. Removal of the bike rack is permitted for attachment of towing devices.

(2) A plug connector permanently mounted at the front of the bus shall provide for bus tail lamp, marker, stop and turn signal lamp operation as controlled from the towing vehicle. The connector shall include a spring-loaded dust- and water-resistant cap. Shop air connectors shall be provided at the front and rear of the bus and shall be capable of supplying all pneumatic systems of the bus with externally sourced compressed air. The location of these shop air connectors shall facilitate towing operations.

1.10.9 Lifted (Supported) Front Axle and Flat Towing Capability

(1) The front towing devices shall allow attachment of adapters for a rigid tow bar and shall permit the lifting of the bus until the front wheels are clear off the ground in order to position the bus on the towing equipment by the front wheels. These devices shall also permit common flat towing.

(2) Two rear recovery devices/tie downs shall permit lifting and towing of the bus for a short distance, such as in cases of an emergency, to allow access to provisions for front towing of bus. The method of attaching the tow bar or adapter shall require the specific approval of the Parish. Any tow bar or adapter exceeding 50 lbs. should have means to maneuver or allow for ease of use and application. Each towing device shall accommodate a crane hook with a 1-inch throat.

1.10.10 Jacking

It shall be possible to safely jack up the bus, at curb weight, with a common 10-ton floor jack with or without special adapter, when a tire or dual set is completely flat and the bus is on a level, hard surface, without crawling under any portion of the bus. Jacking from a single point shall permit raising the bus sufficiently high to remove and reinstall a wheel and tire assembly. Jacking pads located on the axle or suspension near the wheels shall permit easy and safe jacking with the flat tire or dual set on a 6-inch-high run-up block not wider than a single tire. The bus shall withstand such jacking at any one or any combination of wheel locations without permanent deformation or damage.

1.10.11 Hoisting

The bus axles or jacking plates shall accommodate the lifting pads of a two-post hoist system. Jacking plates, if used as hoisting pads, shall be designed to prevent the bus from falling off the hoist. Other pads or the bus structure shall support the bus on jack stands independent of the hoist.

1.11 Floor

1.11.1 Design

The floor shall be essentially a continuous plane, except at the wheel housings and platforms. Where the floor meets the walls of the bus, as well as other vertical surfaces such as platform risers, the surface edges shall be blended with a circular section of radius not less than 1/4 inch or installed in a fully sealed butt joint. Similarly, a molding or cover shall prevent debris accumulation between the floor and

wheel housings. The vehicle floor in the area of the entrance and exit doors shall have a lateral slope not exceeding 2 degrees to allow for drainage.

1.11.2 Strength

(1) The floor deck may be integral with the basic structure or mounted on the structure securely to prevent chafing or horizontal movement and designed to last the life of the bus. Sheet metal screws shall not be used to retain the floor, and all floor fasteners shall be serviceable from one side only. Any adhesives, bolts or screws used to secure the floor to the structure shall last and remain effective throughout the life of the bus. Tapping plates, if used for the floor fasteners, shall be no less than the same thickness as a standard nut, and all floor fasteners shall be secured and protected from corrosion for the service life of the bus.

(2) 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 0.60 inches from the normal plane. The floor shall withstand the application of 2.5 times gross load weight without permanent detrimental deformation. The floor, with coverings applied, shall withstand a static load of at least 150 lbs. applied through the flat end of a 1/2-inch diameter rod, with 1/32-inch radius, without permanent visible deformation.

1.11.3 Construction

The floor shall consist of the subfloor and the floor covering that will last the life of the bus. The floor as assembled, including the sealer, attachments and covering, shall be waterproof, non-hygroscopic and resistant to mold growth. The subfloor shall be resistant to the effects of moisture, including decay (dry rot). It shall be impervious to wood-destroying insects such as termites.

1.11.4 Pressure-Preserved Plywood Panel

Plywood shall be certified at the time of manufacturing by an industry-approved third-party inspection parish such as APA – The Engineered Wood Association (formerly the American Plywood Association). Plywood shall be of a thickness adequate to support design loads, manufactured with exterior glue, satisfy the requirements of a Group I Western panel as defined in PS 1-95 (Voluntary Product Standard PS 1-95, “Construction and Industrial Plywood”) and be of a grade that is manufactured with a solid face and back. Plywood shall be installed with the highest-grade, veneer side up. Plywood shall be pressure-treated with a preservative chemical and process such as alkaline copper quaternary (ACQ) that prevents decay and damage by insects. Preservative treatments shall utilize no EPA-listed hazardous chemicals. The concentration of preservative chemicals shall be equal to or greater than required for an above ground level application. Treated plywood will be certified for preservative penetration and retention by a third-party inspection parish. Pressure-preservative treated plywood shall have a moisture content at or below 15 percent.

1.12 Platforms

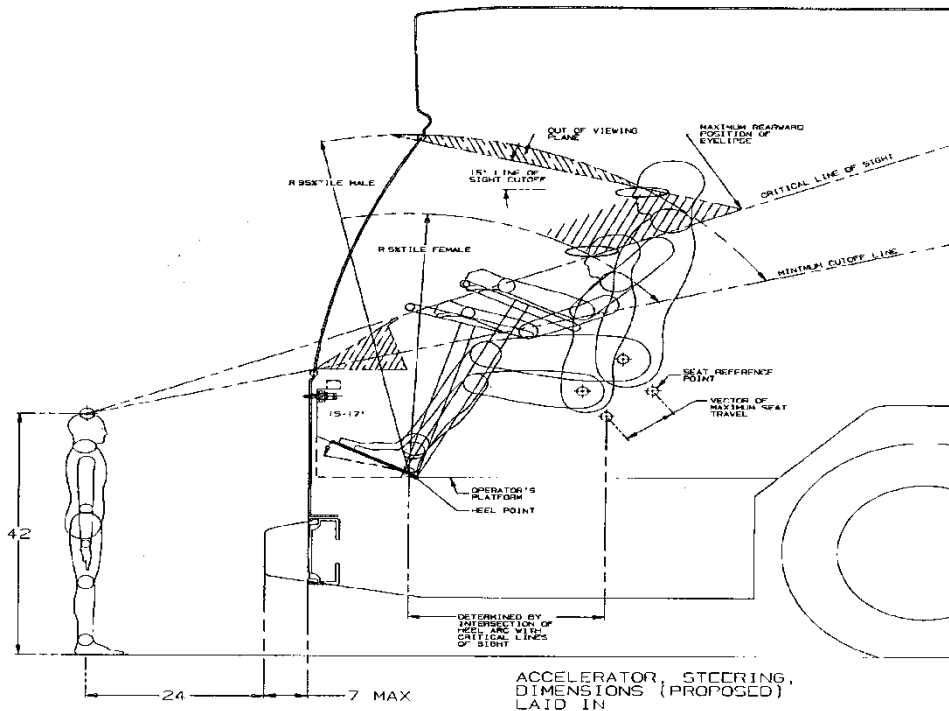
1.12.1 Operator’s Area

The covering of platform surfaces and risers, except where otherwise indicated, shall be the same material as specified for floor covering. Trim shall be provided along top edges of platforms unless integral nosing is provided.

1.12.2 Operator's Platform

The operator's platform shall be of a height such that, in a seated position, the operator can see an object located at an elevation of 42 inches above the road surface, 24 inches from the leading edge of the bumper. Notwithstanding this requirement, the platform height shall not position the operator such that the operator's vertical upward view is less than 15 degrees. A warning decal or sign shall be provided to alert the operator to the change in floor level. Figure 3 illustrates a means by which the platform height can be determined, using the critical line of sight.

FIGURE 3
Determining Platform Height



1.12.3 Farebox

Farebox placement should minimize impact to passenger access and minimize interference with the operator's line of sight.

1.12.4 Rear Step Area to Rear Area

If the vehicle is of a bi-level floor design, a rear step area shall be provided along the center aisle of the bus to facilitate passenger traffic between the upper and lower floor levels. This step area shall be cut into the rear platform and shall be approximately the aisle width, a minimum 12 inches deep and approximately half the height of the upper level relative to the lower level. The horizontal surface of this

platform shall be covered with skid-resistant material with a visually contrasting nosing and shall be sloped slightly for drainage. A warning decal or sign shall be provided at the immediate platform area to alert passengers to the change in floor level.

1.13 Wheel Housing

1.13.1 Design and Construction

(1) Sufficient clearance and air circulation shall be provided around the tires, wheels and brakes to preclude overheating when the bus is operating on the design operating profile. Wheel housings shall be constructed of stainless steel.

(2) Interference between the tires and any portion of the bus shall not be possible in maneuvers up to the limit of tire adhesion with weights from curb weight to GVWR. Wheel housings shall be adequately reinforced where seat pedestals are installed. Wheel housings shall have sufficient sound insulation to minimize tire and road noise and meet all noise requirements of this specification.

(3) Design and construction of front wheel housings shall allow for the installation of a radio or electronic equipment storage compartment on the interior top surface, or its use as a luggage rack.

(4) The finish of the front wheel housings shall be scratch-resistant and complement interior finishes of the bus to minimize the visual impact of the wheel housing. If fiberglass wheel housings are provided, then they shall be color-impregnated to match interior finishes. The lower portion extending to approximately 10 to 12 inches above floor shall be equipped with scuff-resistant coating or stainless-steel trim.

(5) Wheel housings, as installed and trimmed, shall withstand impacts of a 2- inch steel ball with at least 200 ft.-lbs. of energy without penetration.

(6) Wheel housings not equipped with seats or equipment enclosure shall have a horizontal assist mounted on the top portion of the housing no more than 4 inches higher than the wheel well housing.

1.14 Chassis

1.14.1 Suspension

(1) General Requirements

The front, rear suspensions shall be pneumatic type. The basic suspension system shall last the service life of the bus without major overhaul or replacement.

Adjustment points shall be minimized and shall not be subject to a loss of adjustment in service. Routine adjustments shall be easily accomplished by limiting the removal or disconnecting the components.

(2) Alignment

All axles should be properly aligned so the vehicle tracks accurately within the size and geometry of the vehicle.

1.14.2 Springs and Shock Absorbers

(1) Suspension Travel

The suspension system shall permit a minimum wheel travel of 2.75-inch jounce-upward travel of a wheel when the bus hits a bump (higher than street surface), and 2.75 inch rebound-downward travel when the bus comes off a bump and the wheels fall relative to the body. Urethane bumpers shall be provided at the limit of jounce travel. Rebound travel may be limited by urethane bumpers or hydraulically within the shock absorbers. Suspensions shall incorporate appropriate devices for automatic height control so that regardless of load the bus height relative to the centerline of the wheels does not change more than 1/2 inch at any point from the height required. The safe operation of a bus cannot be impacted by ride height up to 1 inch from design normal ride height.

(2) 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 bus motion to three cycles or less after hitting road perturbations. The shock absorber bushing shall be made of urethane material that will last the life of the shock absorber. The damper shall incorporate a secondary hydraulic rebound stop.

1.14.3 Lubrication

(1) Standard Grease Fittings

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 from a pit or with the bus on a hoist. Each element requiring lubrication shall have its own grease fitting with a relief path. The lubricant specified shall be standard for all elements on the bus serviced by standard fittings and shall be required no less than every 6000 miles.

1.14.4 Kneeling

(1) A kneeling system shall lower the entrance(s) of the bus a minimum of 2.0 inches during loading or unloading operations regardless of load up to GVWR, measured at the longitudinal centerline of the entrance door(s) by the operator. The kneeling control shall provide the following functions:

- i. Downward control must be held to allow downward kneeling movement.
- ii. Release of the control during downward movement must completely stop the lowering motion and hold the height of the bus at that position.

iii. Upward control actuation must allow the bus to return to normal floor height without the operator having to hold the control.

(2) The brake and throttle interlock shall prevent movement when the bus is kneeled. The kneeling control shall be disabled when the bus is in motion. The bus shall kneel at a maximum rate of 1.25 inches per second at essentially a constant rate. After kneeling, the bus shall rise within 3 seconds to a height permitting the bus to resume service and shall rise to the correct operating height within 7 seconds regardless of load up to GVWR. During the lowering and raising operation, the maximum vertical acceleration shall not exceed 0.2g, and the jerk shall not exceed 0.3g/second.

(3) An indicator visible to the operator shall be illuminated until the bus is raised to a height adequate for safe street travel. An audible warning alarm will sound simultaneously with the operation of the kneeler to alert passengers and bystanders. A warning light mounted near the curbside of the front door, a minimum 2.5 inches diameter amber lens, shall be provided that will blink when the kneel feature is activated. Kneeling shall not be operational while the wheelchair ramp is deployed or in operation.

1.15 Wheels and Tires

1.15.1 Wheels

All wheels shall be interchangeable and shall be removable without a puller. Wheels shall be compatible with tires in size and load-carrying capacity. Front wheels and tires shall be balanced as an assembly per SAE J1986.

1.15.2 Painted Steel

Wheels and rims shall be hub-piloted steel with white powder coat (maximum 3.5 mil) and shall resist rim flange wear.

As an option, Alcoa full polish aluminum wheels will be made available and priced separately.

1.15.3 Tires

(1) Tires shall be suitable for the conditions of transit service and sustained operation at the maximum speed capability of the bus. Load on any tire at GVWR shall not exceed the tire Supplier's rating. 35' and 40' buses will have required tires.

(2) If Procuring Parish has a tire supplier, either purchase or lease, arrangements will be made for the supplier to furnish tires. Tires will be approved for transit application with a load range appropriate to bus weight and size.

1.16 Steering

1.16.1 Hydraulically assisted steering shall be provided.

The steering gear shall be an integral type with the number and length of flexible lines minimized or eliminated. Engine driven hydraulic pump shall be provided for power steering.

As an option, electrically assisted steering will be made available and priced separately.

1.16.2 Steering Axle

(1) Solid Beam Axle and Grease-Type Front Bearings and Seals

The front axle shall be a Meritor solid beam, non-driving with a load rating sufficient for the bus loaded to GVWR and shall be equipped with grease type front wheel bearings and seals. All friction points on the front axle shall be equipped with replaceable bushings or inserts and lubrication fittings easily accessible from a pit or hoist.

(2) All friction points on the front axle shall be equipped with replaceable bushings or inserts and, if needed, lubrication fittings easily accessible from a pit or hoist.

(3) The steering geometry of the outside (front lock) wheel shall be within 2 degrees of true Ackerman up to 50 percent lock measured at the inside (back lock) wheel. The steering geometry shall be within 3 degrees of true Ackerman for the remaining 100 percent lock measured at the inside (back lock) wheel.

As an option, oil seals will be made available and priced separately.

1.17 Steering Wheel

1.17.1 Turning Effort

(1) Steering effort shall be measured with the bus at GVWR, 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.

(2) Under these conditions, the torque required to turn the steering wheel 10 degrees shall be no less than 5 ft.-lbs. and no more than 10 ft.-lbs. Steering torque may increase to 70 ft.-lbs. when the wheels are approaching the steering stops, as the relief valve activates.

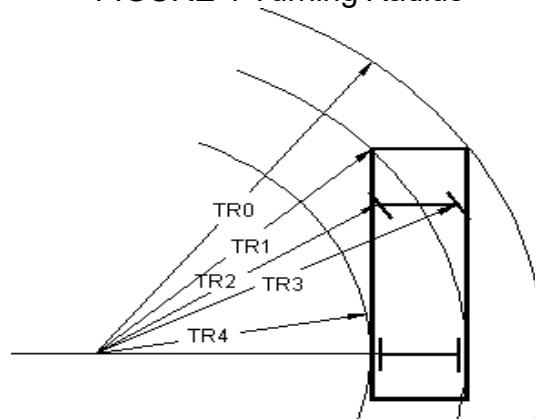
(3) Power steering failure shall not result in loss of steering control. With the bus in operation, the steering effort shall not exceed 55 lbs. at the steering wheel rim, and perceived free play in the steering system shall not materially increase as a result of power assist failure. Gearing shall require no more than seven turns of the steering wheel lock-to-lock.

(4) 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 operator.

Turning Radius

Bus Length	Maximum Turning Radius
35 ft.	39 ft. (TR0)
40 ft.	46 ft. (TR0)

FIGURE 4 Turning Radius



1.17.2 Steering Wheel, General

(1) The steering wheel diameter shall be approximately 18-20 inches; the rim diameter shall be 7/8 inch to 1-1/4 inches and shaped for firm grip with comfort for long periods of time.

(2) Steering wheel spokes and wheel thickness shall ensure visibility of the dashboard so that vital instrumentation is clearly visible at center neutral position (within the range of a 95th-percentile male, as described in SAE 1050a, Sections 4.2.2 and 4.2.3). Placement of steering column must be as far forward as possible, but either in line with or behind the instrument cluster.

1.17.3 Steering Column Tilt

The steering column shall have full tilt capability with an adjustment range of no less than 40 degrees from the vertical and easily adjustable by the operator.

1.17.4 Steering Wheel Telescopic Adjustment

The steering wheel shall have full telescoping capability and have a minimum telescopic range of 1.8 inches and a minimum low-end adjustment of 28 inches, measured from the top of the steering wheel rim in the horizontal position to the cab floor at the heel point.

1.17.5 Drive Axle

(1) The bus shall be driven by a heavy-duty single reduction axle with a load rating sufficient for the bus loaded to GVWR. The drive axle shall have a design life to operate for not less than 300,000 miles on the design operating profile without replacement or major repairs. The lubricant drain plug shall be magnetic type. If a planetary gear design is employed, the oil level in the planetary gears shall be easily checked through the plug or sight gauge. The axle and driveshaft components shall be rated for both propulsion and retardation modes with respect to duty cycle.

NOTE: The retardation duty cycle can be more aggressive than propulsion.

(2) The drive shaft shall be guarded to prevent hitting any critical systems, including brake lines, bus floor or the ground, in the event of a tube or universal joint failure.

1.18 Brakes

1.18.1 Service Brake

Brakes shall be self-adjusting. Brake wear indicators (visible brake sensors) shall be provided on exposed push rods.

1.18.2 Actuation

(1) Air-Actuated Brakes

i. Service brakes shall be controlled and actuated by a compressed air system. Force to activate the brake pedal control shall be an essentially linear function of the bus deceleration rate and shall not exceed 70 lbs. at a point 7 inches above the heel point of the pedal to achieve maximum braking. The heel point is the location of the operator's heel when his or her foot is rested flat on the pedal and the heel is touching the floor or heel pad of the pedal. The ECU for the ABS system shall be protected, yet in an accessible location to allow for ease of service.

ii. The total braking effort shall be distributed between all wheels in such a ratio as to ensure equal friction material wear rate at all wheel locations. Manufacturer shall demonstrate compliance by providing a copy of a thermo dynamic brake balance test upon request.

(2) Automatic Traction Control - Microprocessor controlled automatic traction control (ATC) shall be provided.

1.18.3 Friction Material

The brake linings shall be made of non-asbestos material. In order to aid maintenance personnel in determining extent of wear, a provision such as a scribe line or chamfer indicating the thickness at which replacement becomes necessary shall be provided on each brake lining. The complete brake lining wear indicator shall be clearly visible from the hoist or pit without removing backing plates.

1.18.4 Hubs

Replaceable wheel bearing seals shall run on replaceable wear surfaces or be of an integral wear surface sealed design. Wheel bearing and hub seals and unitized hub assemblies shall not leak or weep lubricant when operating on the design operating profile for the duration of the initial manufacturer's warranty.

1.18.5 Drum/Discs

(1) Replaceable wheel bearing seals shall run on replaceable wear surfaces or be of an integral wear surface sealed design. Wheel bearing and hub seals and unitized hub assemblies shall not leak or weep lubricant when operating on the design operating profile for the duration of the initial manufacturer's warranty. The bus shall be equipped with disc brakes on all axles, and the brake discs shall allow machining of each side of the disc to obtain smooth surfaces per manufacturer's specifications. The brake system material and design shall be selected to absorb and dissipate heat quickly so that the heat generated during braking operation does not glaze the brake linings.

(2) Spring brake chambers shall be provided, and shall comply with requirements of State and Federal regulations FMVSS 121 in effect at time of manufacturer on the front and rear of these buses. At a minimum the front chamber shall be size 24 and the rear shall be size 36. The emergency air tank shall be piped to a service valve at the left front corner of the bus to fill the tank for towing the vehicle.

(3) Brake shoe effective area shall total a minimum of 932 square inches. Brake shoes shall be operated by cams which in return are operated by automatic slack adjusters. Slack adjusters shall be equipped with grease fittings and be capable of automatic adjustments throughout the life of the lining and drum assembly. Brake lines shall be installed so that the possibility of damage is minimized.

(4) Lines and hoses shall be clamped and supported in a manner which minimizes long, unsupported hose lengths and precludes rubbing against any part of the bus.

(5) The parking and emergency brakes shall be with a 40 PSI setting, controlled by a manual valve located convenient to the operator for safe, convenient access. Valve operation shall be "pull to set brakes" and "push to release" type brake system.

(6) This brake shall have stopping ability that is equal to or better than required by Federal and State regulations. It shall automatically apply if air system pressure falls below half the normal value or such other value as is recommended by the manufacturer. This parking/emergency brake shall be of spring brake design. The manufacturer will provide in their bid pricing a statement of brake efficiency at empty and loaded capacity.

1.18.6 Parking/Emergency Brake

Air Brakes - The parking brake shall be a spring-operated system, actuated by a valve that exhausts compressed air to apply the brakes. The parking brake may be manually enabled when the air pressure is at the operating level per FMVSS 121.

1.19 Interlocks

1.19.1 Passenger Door Interlocks

(1) To prevent opening mid and rear passenger doors while the bus is in motion, a speed sensor shall be integrated with the door controls to prevent the mid/rear doors from being enabled or opened unless the bus speed is less than 2 mph.

(2) To preclude movement of the bus, an accelerator interlock shall lock the accelerator in the closed position, and a brake interlock shall engage the service brake system to stop movement of the bus when the operator's door control is moved to a mid/rear door enable or open position, or a mid or rear door panel is opened more than 3 inches from the fully closed position (as measured at the leading edge of the door panel). The interlock engagement shall bring the bus to a smooth stop and shall be capable of holding a fully loaded bus on a 6 percent grade, with the engine at idle and the transmission in gear, until the interlocks are released. These interlock functions shall be active whenever the vehicle Master Run Switch is in any run position.

(3) All door systems employing brake and accelerator interlocks shall be supplied with supporting failure mode effects analysis documentation (FEMA), which demonstrates that failure modes are of a failsafe type; thereby, never allowing the possibility of release of interlock while an interlocked door is in and unsecured condition, unless the door master switch has been actuated to intentionally release the interlocks.

(4) An accelerator interlock shall lock the accelerator in the closed position, and a brake interlock shall engage the service brake system to stop movement of the bus whenever front doors are open, selection to be made by Procuring Parish at pre-production meeting.

1.20 Pneumatic System

1.20.1 General

(1) The bus air system shall operate the air-powered accessories and the braking system with reserve capacity. New buses shall not leak down more than 5 psi over a 15-minute period of time as indicated on the dash gauge.

(2) Provision shall be made to apply shop air to the bus air systems. A quick disconnect fitting shall be easily accessible and located in the engine compartment and near the front bumper area for towing. Retained caps shall be installed to protect fitting against dirt and moisture when not in use. Air for the compressor shall be filtered. The air system shall be protected per FMVSS 121.

1.20.2 Air Compressor

An engine-driven air compressor shall be sized to charge the air system from 40 psi to the governor cut-off pressure in less than four (4) minutes while not exceeding the fast idle speed setting of the engine.

1.20.3 Air Lines and Fittings

(1) Air lines, except necessary flexible lines, shall conform to the installation and material requirements of SAE Standard J1149 for copper tubing with standard, brass, flared or ball sleeve fittings, or SAE Standard J844 for nylon tubing if not subject to temperatures over 200°F. The air on the delivery side of the compressor where it enters nylon housing shall not be above the maximum limits as stated in SAE J844. Nylon tubing shall be installed in accordance with the following color-coding standards:

- Green:** Indicates primary brakes and supply
- Red:** Indicates secondary brakes
- Brown:** Indicates parking brake
- Yellow:** Indicates compressor governor signal
- Black:** Indicates accessories

(2) Line supports shall prevent movement, flexing, tension, strain and vibration. Copper lines shall be supported to prevent the lines from touching one another or any component of the bus. 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 at no more than 5-ft intervals. Nylon lines may be grouped and shall be supported at 30-inch intervals or less.

(3) The compressor discharge line between powerplant and body-mounted equipment shall be flexible convoluted copper or stainless-steel line, or may be flexible Teflon hose with a braided stainless-steel jacket. Other lines necessary to maintain system reliability shall be flexible Teflon hose with a braided stainless-steel jacket. End fittings shall be standard SAE or JIC brass or steel, flanged, 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 bus except for the supporting grommets. Flexible lines shall be supported at 2-ft intervals or less.

(4) Air lines shall be clean before installation and shall be installed to minimize air leaks. All air lines shall be routed to prevent water traps to the extent possible. Grommets or insulated clamps shall protect the air lines at all points where they pass through understructure components.

1.20.4 Air Reservoirs

All air reservoirs shall meet the requirements of FMVSS Standard 121 and SAE Standard J10. Major structural members shall protect these valves and any automatic moisture ejector valves from road hazards. Reservoirs shall be sloped toward the drain valve. All air reservoirs shall have drain valves that discharge below floor level with lines routed to eliminate the possibility of water traps and/or freezing in the drain line.

1.20.5 Air System Dryer

An air dryer shall prevent accumulation of moisture and oil in the air system. The air dryer system shall include one or more replaceable desiccant cartridges. The air

system shall be equipped with an air dryer located before the no. 1 air tank and as far from the compressor as possible to allow air to cool prior to entering the air dryer.

1.21 Electrical, Electronic and Data Communication Systems

1.21.1 Overview

(1) The electrical system will consist of vehicle battery systems and components that generate, distribute and store power throughout the vehicle. (e.g., generator, voltage regulator, wiring, relays, and connectors).

(2) Electronic devices are individual systems and components that process and store data, integrate electronic information or perform other specific functions.

(3) The data communication system consists of the bi-directional communications networks that electronic devices use to share data with other electronic devices and systems. Communication networks are essential to integrating electronic functions, both onboard the vehicle and off.

(4) Information level systems that require vehicle information for their operations or provide information shall adhere to J1939 data standard.

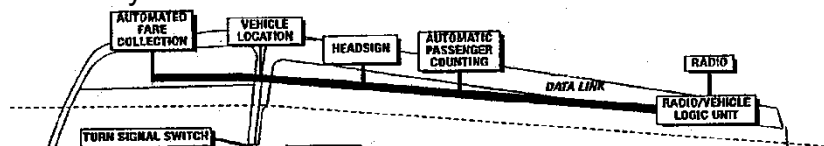
(5) Data communications systems are divided into three levels to reflect the use of multiple data networks:

i. Drivetrain level: Components related to the drivetrain including the propulsion system components (engine, transmission and hybrid units), and anti-lock braking system (ABS), which may include traction control.

ii. Information level: Components whose primary function is the collection, control or display of data that is not necessary to the safe drivability of the vehicle (i.e., the vehicle will continue to operate when those functions are inoperable). These components typically consist of those required for automatic vehicle location (AVL) systems, destination signs, fare boxes, passenger counters, radio systems, automated voice and signage systems, video surveillance and similar components.

iii. Multiplex level: Electrical or electronic devices controlled through input/output signals such as discrete, analog and serial data information (i.e., on/off switch inputs, relay or relay control outputs). Multiplexing is used to control components not typically found on the drivetrain or information levels, such as lights; wheelchair lifts; doors; heating, ventilation and air conditioning (HVAC) systems; and gateway devices.

FIGURE 5
Data Communications Systems Levels



Information level

Multiplex level

Drivetrain level

1.21.2 Modular Design

(1) Design of the electrical, electronic and data communication systems shall be modular so that each electronic device, apparatus panel, or wiring bundle is easily separable from its interconnect by means of connectors.

(2) Powerplant wiring shall be an independent wiring harness. Replacement of the engine compartment wiring harness(es) shall not require pulling wires through any bulkhead or removing any terminals from the wires.

1.21.3 Environmental and Mounting Requirements

(1) The electrical system and its electronic components shall be capable of operating in the area of the vehicle in which they will be installed, as recommended in SAE J1455.

(2) Electrical and electronic equipment shall not be located in an environment that will reduce the performance or shorten the life of the component or electrical system when operating within the design operating profile. As a recommendation, no vehicle component shall generate, or be affected by, electromagnetic interference or radio frequency interference (EMI/RFI) that can disturb the performance of electrical/electronic equipment as defined in SAE J1113 and UNECE Council Directive 95/54 (R-10).

(3) The Parish shall follow recommendations from bus manufacturers and subsystem Suppliers regarding methods to prevent damage from voltage spikes generated from welding, jump starts, shorts, etc.

(4) All electrical/electronic hardware mounted in the interior of the vehicle shall be inaccessible to passengers and hidden from view unless intended to be viewed. The hardware shall be mounted in such a manner as to protect it from splash or spray.

(5) All electrical/electronic hardware mounted on the exterior of the vehicle, that is not designed to be installed in an exposed environment, shall be mounted in a sealed enclosure.

(6) All electrical/electronic hardware and its mounting shall comply with the shock and vibration requirements of SAE J1455.

(7) Electrical cables and wiring shall be adequate for all anticipated loads. The main wiring harness shall, to the maximum extent practical, be installed inside the bus body passenger compartment and, where that is not practical, shall be secured in frame rail raceways. The Contractor shall route and secure all wiring so that it does not rub anywhere. Routing of step well light wiring shall be such as to avoid rubbing door posts, etc. When wires or looms pass through metal, the wires shall be protected by a rubber grommet.

(8) Each electrical panel, i.e. front and exit door panels, battery compartment, and front electrical panel shall provide an explanation of the respective electrical circuits and components contained within and shall be furnished in a silk-screened or water/oil proof diagram on the inside of the door panel.

(9) All engine compartment wiring and light wiring shall be insulated from the heat and be resistant to oil and grease. Electrical equipment, junction boxes and connectors shall not be placed where they are subjected to excessive heat, oil, grease, or road spray. All multiple terminal connectors shall be military (cannon plug) type, fully sealed and protected with a potting compound to prevent outside dirt and corrosives from entering the wiring, connectors, or plugs.

(10) All main power supply terminals shall be covered with electric post rubber cover.

(11) All electrical end plugs shall be covered. The wiring harnesses shall incorporate ten percent (10%) spare wires. Wiring located in the engine compartment shall be routed away from high-heat sources or shielded and/or insulated from temperatures exceeding the wiring and connector operating requirements. All cables and harnesses shall be secured to prevent chafing or shorting against each other or any part of the vehicle.

(12) Clamps shall be rubber or PVC clad aircraft type. Grommets or other protective material shall be installed at points where wiring penetrates metal structures.

(13) All wiring shall start and end at a junction block or component.

(14) All inline and bulkhead connectors are to be of the weather pack sealed type.

(15) Multi-pin connectors shall be protected internally from corrosion with silicone dielectric grease (Dow Corning #4). All circuits except the engine emergency shut-off and speedometer circuits must be protected by reset circuit breakers that clearly indicate their position when tripped. Each breaker must be labeled. Circuit breakers must have plastic dust caps.

(16) Provide constant power for powering systems, such as but not limited to the fire suppression, radio, farebox, and DC-DC converter that require constant power when battery cutoff switch is off.

(17) The windshield wiper and headlamps electric circuit shall be protected by modified auto-reset circuit breakers sized to the requirement of the load.

(18) Rubber Covers shall be provided for all the Electric Posts.

(19) All junction boxes located in the engine compartment shall be designed to allow thorough steam cleaning of the engine compartment area without intrusion of water.

(20) Major junction panels shall be readily accessible for maintenance, not located behind or alongside seat or other fixed/semi-fixed obstructions. Access panels and junction box covers shall have seals which will preclude entry of rain, wash water, road debris, etc. All wiring and junction panel terminals shall be numbered and color coded for easy identification. A diagram showing the coding as the bus was built shall be furnished.

(21) The Contractor shall supply at least two spare circuits in the main harness between the front and rear of the bus. The main harness from the engine compartment shall be equipped with multiple circuit cannon type connectors.

1.21.4 Hardware Mounting

(1) The mounting of the hardware shall not be used to provide the sole source ground, and all hardware shall be isolated from potential EMI/RFI, as referenced in SAE J1113.

(2) All electrical/electronic hardware mounted in the interior of the vehicle shall be inaccessible to passengers and hidden from view unless intended to be viewed. The hardware shall be mounted in such a manner as to protect it from splash or spray.

(3) All electrical/electronic hardware mounted on the exterior of the vehicle that is not designed to be installed in an exposed environment shall be mounted in a sealed enclosure.

(4) All electrical/electronic hardware and its mounting shall comply with the shock and vibration requirements of SAE J1455.

1.22 General Electrical Requirements

1.22.1 Batteries

(1) Low-Voltage Batteries (24V)

Two (2) twelve-volt (12V) lead acid filled thermal battery units, size 8D, with side post connectors with minimum 1300 cold cranking amps at zero degrees Fahrenheit with a reserve capacity of 425 minutes or greater will be required.

As an option, four (4) Group 31 Batteries will be made available and priced separately.

1.22.2 Battery Cables

The battery terminal ends and cables shall be color-coded with red for the primary positive, black for negative and another color for any intermediate voltage cables. Positive and negative battery cables shall not cross each other, if at all possible, be flexible and sufficiently long to reach the batteries with the tray in the extended position without stretching or pulling on any connection and shall not lie directly on top of the batteries. Except as interrupted by the master battery switch, battery and starter wiring shall be continuous cables with connections secured by bolted terminals and shall conform to specification requirements of SAE Standard J1127 – Type SGT, SGX or GXL and SAE Recommended Practice J541.

1.22.3 Master Battery Switch

(1) A single master switch shall be provided near the battery compartment for the disconnecting of all battery positives (12V and 24V), except for safety devices such as the fire suppression system and other systems as specified. The location of the master battery switch shall be clearly identified on the exterior access panel, be accessible in less than 10 seconds for deactivation and prevent corrosion from fumes and battery acid when the batteries are washed off or are in normal service. The access door shall be labeled "Battery Emergency Shut-Off Switch."

(2) Turning the master switch off with the powerplant operating shall shut off the engine and shall not damage any component of the electrical system. The master switch shall be capable of carrying and interrupting the total circuit load.

1.22.4 Jump-Start Connector

A jump-start connector, red for 24V and blue for 12V, shall be provided at a location determined at the pre-production meeting and shall be equipped with dust cap and adequately protected from moisture, dirt and debris.

1.22.5 Battery Compartment

(1) The battery compartment must be well-ventilated to prevent hydrogen buildup while protecting the compartment from road spray, water intrusion and de-icing chemicals. Batteries shall be mounted in a stainless steel slide out tray on rollers, with less than 50 lbs. of effort. The battery tray shall have drain holes. The batteries shall not be located in the engine compartment.

(2) The vehicle shall be equipped with a 12VDC and 24VDC quick disconnect switch(es). The battery compartment door shall conveniently accommodate operation of the 12VDC and 24VDC quick disconnect switch(es).

1.22.6 Alternator / Regulator

A Niehoff 703 alternator shall supply the entire nighttime operating electrical load of the coach while providing at least 20 percent (20%) of its current output for battery charging when the battery is fully discharged.

As an option, the Niehoff 803 alternator will be made available and priced as an option.

As an option, the Delco 450 DN will be made available and price separately.

1.22.7 Circuit Protection

(1) All branch circuits, except battery-to-starting motor and battery-to-generator/alternator circuits, shall be protected by current-limiting devices such as circuit breakers, fuses or solid-state devices sized to the requirements of the circuit. Electronic circuit protection for the cranking motor shall be provided to prevent engaging of the motor for more than 30 seconds at a time to prevent overheating. The circuit breakers or fuses shall be easily accessible for authorized personnel. Fuses shall be used only where it can be demonstrated that circuit breakers are not practicable. This requirement applies to in-line fuses supplied by either the Contractor or a Supplier. Fuse holders shall be constructed to be rugged and waterproof. All manual reset circuit breakers critical to the operation of the bus shall be mounted in a location convenient to the Parish mechanic with visible indication of open circuits.

(2) The Parish shall consider the application of automatic reset circuit breakers on a case-by-case basis. The Contractor shall show all in-line fuses in the final harness drawings. Any manually resettable circuit breakers shall provide a visible indication of open circuits. Circuit breakers or fuses shall be sized to a minimum of 15 percent larger than the total circuit load. The current rating for the wire used for each circuit must exceed the size of the circuit protection being used.

1.22.8 Grounds

The battery shall be grounded to the vehicle chassis/frame at one location only, as close to the batteries as possible. When using a chassis ground system, the chassis shall be grounded to the frame in multiple locations, evenly distributed throughout the vehicle to eliminate ground loops. No more than four ground ring/spade terminal connections shall be made per ground stud. Electronic equipment requiring an isolated ground to the battery (i.e., electronic ground) shall not be grounded through the chassis.

1.22.9 Low Voltage/Low Current Wiring and Terminals

(1) All power and ground wiring shall conform to specification requirements of SAE Recommended Practice J1127, J1128 and J1292. Double insulation shall be maintained as close to the junction box, electrical compartment or terminals as possible. The requirement for double insulation shall be met by wrapping the harness with plastic electrical tape or by sheathing all wires and harnesses with non-conductive, rigid or flexible conduit.

(2) Wiring shall be grouped, numbered and/or color-coded. Wiring harnesses shall not contain wires of different voltage classes unless all wires within the harness are insulated for the highest voltage present in the harness. Kinking, grounding at multiple points, stretching, and exceeding minimum bend radius shall be prevented.

(3) Strain-relief fittings shall be provided at all points where wiring enters electrical compartments. Grommets or other protective material shall be installed at points where wiring penetrates metal structures outside of electrical enclosures. Wiring supports shall be protective and non-conductive at areas of wire contact and shall not be damaged by heat, water, solvents or chafing.

(4) To the extent practicable, wiring shall not be located in environmentally exposed locations under the vehicle. Wiring and electrical equipment necessarily located under the vehicle shall be insulated from water, heat, corrosion and mechanical damage. Where feasible, front to rear electrical harnesses should be installed above the window line of the vehicle.

(5) All wiring harnesses over 5 ft. long and containing at least five wires shall include 10 percent (minimum one wire) excess wires for spares. This requirement for spare wires does not apply to data links and communication cables. Wiring harness length shall allow end terminals to be replaced twice without pulling, stretching or replacing the wire.

(6) Terminals shall be crimped to the wiring according to the connector manufacturer's recommendations for techniques and tools. All cable connectors shall be locking type, keyed and sealed, unless enclosed in watertight cabinets or vehicle interior. Pins shall be removable, crimp contact type, of the correct size and rating for the wire being terminated. Unused pin positions shall be sealed with sealing plugs. Adjacent connectors shall either use different inserts or different insert orientations to prevent incorrect connections.

(7) Terminals shall be crimped, corrosion-resistant and full ring type or interlocking lugs with insulating ferrules. When using pressure type screw terminal strips, only stranded wire shall be used. Insulation clearance shall ensure that wires have a minimum of "visible clearance" and a maximum of two times the conductor diameter or 1/16 inch, whichever is less. When using shielded or coaxial cable, upon stripping of the insulation, the metallic braid shall be free from frayed strands that can penetrate the insulation of the inner wires.

(8) Ultra-sonic and T-splices may be used with 7 AWG or smaller wire. When a T-splice is used, it shall meet these additional requirements:

- i. It shall include a mechanical clamp in addition to solder on the splice.
- ii. The wire shall support no mechanical load in the area of the splice.
- iii. The wire shall be supported to prevent flexing.

(9) All splicing shall be staggered in the harness so that no two splices are positioned in the same location within the harness.

(10) Wiring located in the engine compartment shall be routed away from high-heat sources or shielded and/or insulated from temperatures exceeding the wiring and connector operating requirements.

(11) The instrument panel and wiring shall be easily accessible for service from the operator's seat or top of the panel. The instrument panel shall be separately removable and replaceable without damaging the instrument panel or gauges. Wiring shall have sufficient length and be routed to permit service without stretching or chafing the wires.

1.22.10 Electrical Components

(1) All electrical components, including switches, relays, flashers and circuit breakers, shall be heavy-duty designs with either a successful history of application in heavy-duty vehicles or design specifications for an equivalent environment.

(2) All electric motors shall be heavy-duty brushless type where practical, and have a continuous duty rating of no less than 40,000 hours (except cranking motors, washer pumps and wiper motors). All electric motors shall be easily accessible for servicing.

1.22.11 Electrical Compartments

(1) All relays, controllers, flashers, circuit breakers and other electrical components shall be mounted in easily accessible electrical compartments. All compartments exposed to the outside environment shall be corrosion-resistant and sealed. The components and their functions in each electrical compartment shall be identified and their location permanently recorded on a drawing attached to the inside of the access panel or door. The drawing shall be protected from oil, grease, fuel and abrasion.

(2) The front compartment shall be completely serviceable from the operator's seat, vestibule or from the outside. "Rear start and run" controls shall be mounted in an accessible location in the engine compartment and shall be protected from the environment.

1.22.12 General Electronic Requirements

(1) If an electronic component has an internal real-time clock, it shall provide its own battery backup to monitor time when battery power is disconnected, and/or it may be updated by a network component. If an electronic component has an hour meter, it shall record accumulated service time without relying on battery backup.

(2) All electronic component Suppliers shall ensure that their equipment is self-protecting in the event of shorts in the cabling, and also in over-voltage (over 32V DC on a 24V DC nominal voltage rating with a maximum of 50V DC) and reverse polarity conditions. If an electronic component is required to interface with other components, it shall not require external pull-up and/or pull-down resistors. Where this is not

possible, the use of a pull-up or pull-down resistor shall be limited as much as possible and easily accessible and labeled.

1.22.13 Wiring and Terminals

Kinking, grounding at multiple points, stretching and reducing the bend radius below the manufacturer's recommended minimum shall not be permitted.

1.22.14 Discrete Inputs/Outputs (I/O)

All wiring to I/O devices, either at the harness level or individual wires, shall be labeled, stamped or color coded in a fashion that allows unique identification at a spacing not exceeding 4 inches. Wiring for each I/O device shall be bundled together. If the I/O terminals are the same voltages, then jumpers may be used to connect the common nodes of each I/O terminal.

1.22.15 Shielding

(1) All wiring that requires shielding shall meet the following minimum requirements. A shield shall be generated by connecting to a ground, which is sourced from a power distribution bus bar or chassis. A shield shall be connected at one location only, typically at one end of the cable. However certain standards or special requirements, such as SAE J1939 or RF applications, have separate shielding techniques that also shall be used as applicable.

NOTE: A shield grounded at both end forms a ground loop, which can cause intermittent control or faults.

(2) When using shielded or coaxial cable, upon stripping of the insulation, the metallic braid shall be free from frayed strands, which can penetrate the insulation of the inner wires. To prevent the introduction of noise, the shield shall not be connected to the common side of a logic circuit.

1.22.16 Communications

(1) The data network cabling shall be selected and installed according to the selected protocol requirements. The physical layer of all network communication systems shall not be used for any purpose other than communication between the system components, unless provided for in the network specifications.

(2) Communications networks that use power line carriers (e.g., data modulated on a 24V-power line) shall meet the most stringent applicable wiring and terminal specifications.

1.22.17 Radio Frequency (RF)

RF components, such as radios, video devices, cameras, global positioning systems (GPS), etc., shall use coaxial cable to carry the signal. All RF systems require special design consideration for losses along the cable. Connectors shall be minimized, since each connector and crimp has a loss that will attribute to

attenuation of the signal. Cabling should allow for the removal of antennas or attached electronics without removing the installed cable between them. If this cannot be done, then a conduit of sufficient size shall be provided for ease of attachment of antenna and cable assembly. The corresponding component vendors shall be consulted for proper application of equipment, including installation of cables.

1.22.18 Audio

Cabling used for microphone level and line level signals shall be 22 AWG minimum with shielded twisted pair. Cabling used for amplifier level signals shall be 18 AWG minimum.

1.22.19 Multiplexing - General

(1) The multiplexing system shall control of components necessary to operate the vehicle. This is accomplished by processing information from input devices and controlling output devices through the use of an internal logic program.

(2) Versatility and future expansion shall be provided for by expandable system architecture. The multiplex system shall be capable of accepting new inputs and outputs through the addition of new modules and/or the utilization of existing spare inputs and outputs.

(3) All like components in the multiplex system shall be modular and interchangeable with self-diagnostic capabilities. The modules shall be easily accessible for troubleshooting electrical failures and performing system maintenance. Multiplex input/output modules shall use solid-state devices to provide extended service life and individual circuit protection.

(4) Ten percent (10%) of the total number of inputs and outputs, or at least one each for each voltage type utilized (0V, 12V, 24V) at each module location shall be designated as spares.

1.22.20 Data Communications - General

(1) All data communication networks shall be either in accordance with a nationally recognized interface standard, such as those published by SAE, IEEE or ISO, or shall be published to the Parish with the following minimum information:

- i. Protocol requirements for all timing issues (bit, byte, packet, inter-packet timing, idle line timing, etc.) packet sizes, error checking and transport (bulk transfer of data to/from the device).
- ii. Data definition requirements that ensure access to diagnostic information and performance characteristics.
- iii. The capability and procedures for uploading new application or configuration data.

- iv. Access to revision levels of data, application software and firmware.
- v. The capability and procedures for uploading new firmware or application software.
- vi. Evidence that applicable data shall be broadcast to the network in an efficient manner such that the overall network integrity is not compromised.

(2) Any electronic vehicle components used on a network shall be conformance tested to the corresponding network standard.

1.22.21 Drivetrain Level

Drivetrain components, consisting of the engine, transmission, retarder, anti-lock braking system and all other related components, shall be integrated and communicate fully with respect to vehicle operation with data using SAE Recommended Communications Protocols such as J1939 and/or J1708/J1587 with forward and backward compatibilities or other open protocols.

1.22.22 Diagnostics, Fault Detection and Data Access

(1) Drivetrain performance, maintenance and diagnostic data, and other electronic messages shall be formatted and transmitted on the communications networks.

(2) The drivetrain level shall have the ability to record abnormal events in memory and provide diagnostic codes and other information to service personnel. At a minimum, this network level shall provide live/fail status, current hardware serial number, software/data revisions and uninterrupted timing functions.

1.22.23 Programmability (Software)

The drivetrain level components shall be programmable by the Parish with limitations as specified by the sub-system Supplier.

1.23 Multiplex Level

1.23.1 Data Access

At a minimum, information shall be made available via a communication port on the multiplex system. The location of the communication port shall be easily accessible. A hardware gateway and/or wireless communications system are options if requested by the Parish.

1.23.2 Diagnostics and Fault Detection

(1) The multiplex system shall have a proven method of determining its status (system health and input/output status) and detecting either active (online) or inactive (offline) faults through the use of on-board visual/audible indicators.

(2) In addition to the indicators, the system shall employ an advanced diagnostic and fault detection system, which shall be accessible via either a personal computer or a handheld unit. Either unit shall have the ability to check logic function. The diagnostic data can be incorporated into the information level network or the central data access system.

1.23.3 Programmability (Software)

(1) The multiplex system shall have security provisions to protect its software from unwanted changes. This shall be achieved through any or all of the following procedures:

- i. password protection
- ii. limited distribution of the configuration software
- iii. limited access to the programming tools required to change the software
- iv. hardware protection that prevents undesired changes to the software

(2) Provisions for programming the multiplex system shall be possible through a PC or laptop. The multiplex system shall have proper revision control to ensure that the hardware and software are identical on each vehicle equipped with the system. Revision control shall be provided by all of the following:

- i. hardware component identification where labels are included on all multiplex hardware to identify components
- ii. hardware series identification where all multiplex hardware displays the current hardware serial number and firmware revision employed by the module
- iii. software revision identification where all copies of the software in service displays the most recent revision number
- iv. a method of determining which version of the software is currently in use in the multiplex system

1.23.4 Electronic Noise Control

(1) Electrical and electronic sub-systems and components on all buses shall not emit electromagnetic radiation that will interfere with on-board systems, components or equipment, telephone service, radio or TV reception or violate regulations of the Federal Communications Commission.

(2) Electrical and electronic sub-systems on the buses shall not be affected by external sources of RFI/EMI. This includes, but is not limited to, radio and TV transmission, portable electronic devices including computers in the vicinity of or onboard the buses, A/C or D/C power lines and RFI/EMI emissions from other vehicles.

1.24 Operator Provisions, Controls and Instrumentation

1.24.1 Operator's Area Controls

(1) General

i. In general, when designing the operator's area, it is recommended that SAE J833, "Human Physical Dimensions," be used.

ii. Switches and controls shall be divided into basic groups and assigned to specific areas, in conformance with SAE Recommended Practice J680, Revised 1988, "Location and Operation of Instruments and Controls in Motor Truck Cabs," and be essentially within the hand reach envelope described in SAE Recommended Practice J287, "Driver Hand Control Reach."

(2) Glare

The operator's work area shall be designed to minimize glare to the extent possible. Objects within and adjacent to this area shall be matte black or dark gray in color wherever

possible to reduce the reflection of light onto the windshield. The use of polished metal and light-colored surfaces within and adjacent to the operator's area shall be avoided.

1.25 Visors/Sun Shades

1.25.1 Front and Side Sun Shade/Visor

(1) An adjustable roller type sunscreen shall be provided over the operator's windshield and/or the operator's side window. The sunscreen shall be capable of being lowered to the midpoint of the operator's window. When deployed, the screen shall be secure, stable and shall not rattle, sway or intrude into the operator's field of view due to the motion of the bus or as a result of air movement. Once lowered, the screen shall remain in the lowered position until returned to the stowed position by the operator. Sunscreen shall be shaped to minimize light leakage between the visor and windshield pillars to the extent possible.

(2) Visors shall store out of the way and shall not obstruct airflow from the climate control system or interfere with other equipment, such as the radio handset or the destination control. Deployment of the visors shall not restrict vision of the rearview mirrors. Visor adjustments shall be made easily by hand with positive locking and releasing devices and shall not be subject to damage by over-tightening. Sun visor construction and materials shall be strong enough to resist breakage during adjustments.

1.25.2 Operator's Controls

(1) Frequently used controls must be in easily accessible locations. These include the door control, kneel control, windshield wiper/washer controls, ramp, and lift and run switch. Any switches and controls necessary for the safe operation of the bus shall be conveniently located and shall provide for ease of operation. They shall be identifiable by shape, touch and permanent markings. Controls also shall be located so that passengers may not easily tamper with control settings.

(2) All panel-mounted switches and controls shall be marked with easily read identifiers. Graphic symbols shall conform to SAE Recommended Practice J2402, "Road Vehicles – Symbols for Controls, Indicators, and Tell Tales," Where available and applicable. Color of switches and controls shall be dark with contrasting typography or symbols.

(3) Mechanical switches and controls shall be replaceable, and the wiring at these controls shall be serviceable from a convenient location. Switches, controls and instruments shall be dust- and water- resistant.

1.25.3 Normal Bus Operation Instrumentation and Controls

(1) The following list identifies bus controls used to operate the bus. These controls are either frequently used or critical to the operation of the bus. They shall be located within easy reach of the operator. The operator shall not be required to stand or turn to view or actuate these controls unless specified otherwise.

(2) Systems or components monitored by onboard diagnostics system shall be displayed in clear view of the operator and provide visual and/or audible indicators. The intensity of indicators shall permit easy determination of on/off status in bright sunlight but shall not cause a distraction or visibility problem at night. All indicators shall be illuminated using backlighting.

(3) The indicator panel shall be located in Area 1 or Area 5, within easy view of the operator instrument panel. All indicators shall have a method of momentarily testing their operation. The audible alarm shall be tamper-resistant and shall have an outlet level between 80 and 83 dBA when measured at the location of the operator's ear.

(4) On-board displays visible to the operator shall be limited to indicating the status of those functions described herein that are necessary for the operation of the bus. All other indicators needed for diagnostics and their related interface hardware shall be concealed and protected from unauthorized access. Table 6 represents instruments and alarms. The intent of the overall physical layout of the indicators shall be in a logical grouping of systems and severity nature of the fault.

(5) Consideration shall be provided for future additions of spare indicators as the capability of onboard diagnostic systems improves. Blank spaces shall contain LEDs.

**TABLE 6
Transit Bus Instruments and Alarms**

Device	Description	Location	Function	Visual/ Audible
Master run switch	Rotary, four-position detent	Side console	Master control for bus, off, day run, night run and clearance ID lights	
Engine start, front	Approved momentary switch	Side console	Activates engine starter motor	
Device	Description	Location	Function	Visual/ Audible
Engine start, rear	Approved momentary switch	Engine compartment	Activates engine starter motor	
Engine run, rear	Three-position toggle switch	Engine compartment	Permits running engine from rear start, normal front run position and off	Amber light
Drive selector	Touch panel switch	Side console	Provides selection of propulsion: forward, reverse and neutral	Gear selection
HVAC	Switch or switches to control HVAC	Upper Sawtooth	Permits selection of passenger ventilation: off, cool, heat, low fan, high fan or full auto with on/off	
Operator's ventilation	Rotary, three-position detent	Side console or Dash left wing	Permits supplemental ventilation: fan off, low or high	
Defroster fan	Rotary, three-position detent	Side console or Dash left wing	Permits defroster: fan off, low, medium or high	
Defroster temperature	Variable position	Side console or Dash left wing	Adjusts defroster water flow and temperature	
Windshield wiper	One-variable rotary position operating both	Dash left wing	Variable speed control of left and right windshield wipers	
Windshield washer	Push button	Dash left wing	Activates windshield washers	
Dash panel lights	Rotary rheostat or stepping switch	Side Console or Dash left wing	Provides adjustment for light intensity in night run position	
Interior lights	Three-position switch	Side console	Selects mode of passenger compartment lighting: off, on, normal	
Fast idle	Two-position switch	Side console	Selects high idle speed of engine	
WC ramp/ kneel enable	Two-position switch ¹	Side console or Dash right wing	Permits operation of ramp and kneel operations at each door remote panel	Amber light

Front door ramp/kneel enable	Two-position keyed switch ¹	Front door remote or Dash right wing	Permits ramp and kneel activation from front door area, key required ¹	Amber light
Front door ramp	Three-position momentary switch	Right side of steering wheel	Permits deploy and stow of front ramp	Red light
Front kneel	Three-position momentary switch	Right Side of Steering Wheel	Permits kneeling activation and raise and normal at front door remote location	Amber or red dash indicator. Ext alarm and Amber light
Device	Description	Location	Function	Visual/ Audible
Rear door ramp/kneel enable	Two-position keyed switch ¹	Rear door remote	Permits ramp and kneel activation from rear door area, key required ¹	Red light
Rear door ramp	Three-position momentary switch	Rear door remote	Permits deploy and stow of rear ramp	
Rear kneel	Three-position momentary switch	Rear door remote	Permits kneeling activation and raise and normal at rear door remote location	
Silent alarm	Recessed push button, NO and NC contacts momentary	Side console	Activates emergency radio alarm at dispatch and permits covert microphone and/or enables destination sign emergency message	
Video system event switch	Momentary on/off momentary switch with plastic guard	Side console	Triggers event equipment, triggers event light on dash	Amber light
Left remote mirror	Four-position toggle type	Side console	Permits two-axis adjustment of left exterior	
Right remote mirror	Four-position toggle type	Side console	Permits two-axis adjustment of right	
Mirror heater	Switch or temperature activated	Side console	Permits heating of outside mirrors when required	
Passenger door control	Five-position handle type detent or two momentary push	Side console, forward	Permits open/close control of front and rear passenger doors	Red light
Rear door override	Two-position switch in approved location	Side console, forward	Allows operator to override activation of rear door passenger tape	

Engine shutdown override	Momentary switch with operation protection	Side console	Permits operator to override auto engine shutdown	
Hazard flashers	Two-position switch	Side console or Dash right wing	Activates emergency flashers	Two green lights
Fire suppression	Red push button with protective cover	Dash left wing or dash center	Permits operator to override and manually discharge fire suppression	Red light
Mobile data terminal	Mobile data terminal bus operator interface panel	Above right dash wing	Facilitates operator interaction with communication system and master log-on	LCD display with visual status and text messages
Farebox interface	Farebox bus operator interface panel	Near farebox	Facilitates operator interaction with farebox system	LCD display
Device	Description	Location	Function	Visual/ Audible
Destination sign interface	Destination sign interface panel	In approved location	Facilitates operator interaction with destination sign system, manual entry	LCD display
Turn signals	Momentary push button (two required) raised from other switches	Left foot panel	Activates left and right turn signals	Two green lights and optional audible indicator
PA manual	Momentary push button	In approved location	Permits operator to manually activate public address microphone	
Low profile microphone	Low-profile discrete Mounting	Steering column	Permits operator to make announcements with both hands on the wheel and focusing on road conditions	
High beam	Detented push button	In approved location	Permits operator to toggle between low and high beam	Blue light
Parking brake	Pneumatic PPV	Side console or Dash left wing	Permits operator to apply and release parking brake	Red light

Park brake release	Pneumatic PPV	Vertical side of the side console or dash center	Permits operator to push and hold to release brakes	
Hill holder	Two-position momentary switch	Side console	Applies brakes to prevent bus from rolling	
Remote engine speed	Rotary rheostat	Engine compartment	Permits technician to raise and lower engine RPM from engine compartment	
Master door/interlock	Multi-pole toggle, detented	Out of operator's reach	Permits operator override to disable door and brake/throttle interlock	Red light
Warning interlocks deactivated	Red indicator light	Dash panel center	Illuminates to warn driver that interlocks have been deactivated.	Red light
Retarder disable	Multi-pole switch detented	Within reach of Operator or approved location	Permits operator override to disable brake retardation/regeneration	Red light
Alarm acknowledge	Push button momentary	Approved location	Permits operator to acknowledge alarm condition	
Rear door passenger sensor disable	Multi-pole toggle, detented	In sign compartment or Operator's barrier compartment	Permits operator to override rear door passenger sensing system	
Device	Description	Location	Function	Visual/ Audible
Indicator / alarm test button	Momentary switch or programming ¹	Dash center panel	Permits operator to activate test of sentry, indicators and audible	All visuals and audibles
Auxiliary power	110-volt power receptacle	Approved location	Property to specify what function to supply	
Speedometer	Speedometer, odometer, and diagnostic capability, 5-mile increments	Dash center panel	Visual indication of speed and distance traveled, accumulated vehicle mileage, fault condition display	Visual
Air pressure gauge	Primary and secondary, 5 psi increments	Dash center panel	Visual indication of primary and secondary air systems	Red light and buzzer
Fire detection	Bus operator display	Property specific or dash center	Indication of fire detection activation by zone/location	Buzzer and red light

Door obstruction	Sensing of door obstruction	Dash center	Indication of rear door sensitive edge activation	Red light and buzzer
Door ajar	Door not properly closed	Property specific or dash center	Indication of rear door not properly closed	Buzzer or alarm and red light
Low system air pressure	Sensing low primary and secondary air tank pressure	Dash center	Indication of low air system pressure	Buzzer and red light
Methane detection function	Detection of system integrity	Property specific or dash center	Detects system failure	No start condition, amber light
Methane detection	Indication of 20% LED emergency light (LEL)	Property specific or dash center	Detects levels of methane	Flashing red at 20% LEL
Methane detection	Indication of 50% LEL	Property specific or dash center	Detects levels of methane	Solid red at 50% LEL
Engine coolant indicator	Low coolant indicator may be supplied as audible alert and visual and/or text message	Within operator's sight	Detects low coolant condition	Amber light
Hot engine indicator	Coolant temperature indicator may be supplied as audible alert and visual and/or text message	Within operator's sight	Detects hot engine condition and initiates time delay shutdown	Red light
Device	Description	Location	Function	Visual/ Audible
Low engine oil pressure indicator	Engine oil pressure indicator may be supplied as audible alert and visual and/or text message	Within operator's sight	Detects low engine oil pressure condition and initiates time- delayed shutdown	Red light
ABS indicator	Detects system status	Dash center	Displays system failure	Amber light
HVAC indicator	Detects system status	Dash center	Displays system failure	Amber or red light
Charging system indicator (12/24 V)	Detect charging system status	Dash center	Detects no charge condition and optionally detects battery high, low, imbalance, no charge condition, and initiates	Red light flashing or solid based on condition

Bike rack deployed indicator	Detects bike rack position	Dash center	Indication of bike rack not being in fully stowed position	Amber or red light
Fuel tank level	Analog gauge, graduated based on fuel type	Dash center	Indication of fuel tank level/pressure	
DEF gauge	Level Indicator	Center dash	Displays level of DEF tank and indicates with warning light when low	Red light
Active regeneration	Detects Status	Dash center	Indication of electric regeneration	Aber or red light

1. Indicate area by drawing. Break up switches control from indicator lights.

1.25.5 Operator Foot Controls

Accelerator and brake pedals shall be designed for ankle motion. Foot surfaces of the pedals shall be faced with wear-resistant, nonskid, replaceable material.

1.25.6 Pedal Angle

(1) The vertical angle of the accelerator and brake pedals shall be determined from a horizontal plane regardless of the slope of the cab floor. The accelerator and brake pedals shall be positioned at an angle of 37 to 50 degrees at the point of initiation of contact and extend downward to an angle of 10 to 18 degrees at full throttle.

(2) The location of the brake and accelerator pedals shall be determined by the manufacturer, based on space needs, visibility, lower edge of windshield, and vertical H-point.

1.25.7 Pedal Dimensions and Position

The floor-mounted accelerator pedal shall be 10 to 12 inches long and 3 to 4 inches wide. Clearance around the pedal must allow for no interference precluding operation.

As an option, Adjustable Brake / Accelerator Pedals will be made available and priced separately.

1.26 Operator Foot Switches

1.26.1 Floor-Mounted Foot Control Platform

The angle of the turn signal platform shall be determined from a horizontal plane, regardless of the slope of the cab floor. The turn signal platform shall be angled at a minimum of 10 degrees and a maximum of 37 degrees. It shall be located no closer to the seat front than the heel point of the accelerator pedal.

1.26.2 Turn Signal Controls

Turn signal controls shall be floor-mounted, foot-controlled, water-resistant, heavy-duty, momentary contact switches.

1.26.3 Foot Switch Control

(1) The control switches for the turn signals shall be mounted on an inclined, floor-mounted stainless-steel enclosure or metal plate mounted to an incline integrated into the operator's platform, located to the left of the steering column. The location and design of this enclosure shall be such that foot room for the operator is not impeded. The inclined mounting surface shall be skid-resistant. All other signals, including high beam and public address system shall be in approved location.

(2) The foot switches shall be UL-listed, heavy-duty type, of a rugged, corrosion-resistant metal construction. The foot switches for the directionals shall be momentary type, while those for the PA system and the high beam shall be latching type. The spacing of the switches shall be such that inadvertent simultaneous deflection of switches is prevented.

1.26.4 Other Floor-Mounted Controls

The following may be floor mounted, momentary or latching, as identified by the Parish at the pre-production meeting.

- (1) hazard
- (2) silent alarm
- (3) PA system

1.27 Operator's Amenities

1.27.1 Coat Hook

A hook and tie-back loop shall be provided to secure the operator's coat. It shall be mounted above and to the left rear of the operator's head level behind the operator's seat.

1.28 Windshield Wipers and Washers

1.28.1 Windshield Wipers

The bus shall be equipped with a windshield wiper for each half of the windshield. At 60 mph, no more than 10 percent of the wiped area shall be lost due to windshield wiper lift. For two-piece windshields, both wipers shall park along the center edges of the windshield glass. For single-piece windshields, wipers shall park along the bottom edge of the windshield. Windshield wiper motors and mechanisms shall be easily accessible for repairs or service. The fastener that secures the wiper arm to the drive mechanism shall be corrosion-resistant. Electric wipers will be used.

1.28.2 Intermittent Wiper with Variable Control

A variable-speed feature shall be provided to allow adjustment of wiper speed for each side of the windshield between approximately five (5) and twenty-five (25) cycles per minute.

1.28.3 Non-Synchronized Wipers

For non-synchronized wipers, separate controls for each side shall be supplied.

1.28.4 Windshield Washers

(1) The windshield washer system, when used with the wipers, shall deposit washing fluid evenly and completely wet the entire wiped area.

(2) The windshield washer system shall have a minimum 3-gallon reservoir, located for easy refilling from outside of the bus. Reservoir pumps, lines and fittings shall be corrosion-resistant and must include a means to determine fluid level.

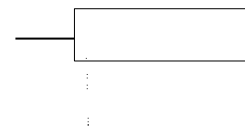
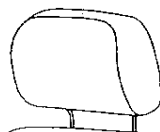
1.29 Operator's Seat

1.29.1 Dimensions

(1) The Operator's seat shall be comfortable and adjustable so that people ranging in size from a 95th-percentile male to a 5th-percentile female may operate the bus.

(2) The seat will be a Recaro AM80 Vinyl with a two-point seat belt.

**Operator's Seat
FIGURE 6**



Head Rest

Seat Back Lumbar Support

Seat Back

Arm Rest

Seat Belt

Seat Pan Cushion

Seat Base

1.29.2 Seat Pan Cushion Length

Measurement shall be from the front edge of the seat pan to the rear at its intersection with the seat back. The adjustment of the seat pan length shall be no less than 16.5 inches at its minimum length and no more than 20.5 inches at its maximum length.

1.29.3 Seat Pan Cushion Height Dimensions

Measurement shall be from the cab floor to the top of the level seat at its center midpoint. The seat shall adjust in height from a minimum of 14 inches, with a minimum 6 inches vertical range of adjustment.

1.29.4 Seat Pan Cushion Slope

Measurement is the slope of the plane created by connecting the two high points of the seat, one at the rear of the seat at its intersection with the seat back and the other at the front of the seat just before it waterfalls downward at the edge. The slope can be measured using an inclinometer and shall be stated in degrees of incline relative to the horizontal plane (0 degrees). The seat pan shall adjust in its slope from no less than plus 12 degrees (rearward "bucket seat" incline), to no less than minus 5 degrees (forward slope).

1.29.5 Seat Base Fore/Aft Adjustment

Measurement is the horizontal distance from the heel point to the front edge of the seat. The minimum and maximum distances shall be measured from the front edge of the seat when it is adjusted to its minimum seat pan depth (approximately 15 inches). On all low-floor buses, the seat-base shall travel horizontally a minimum of 9 inches. It shall adjust no closer to the heel point than 6 inches.

1.29.6 Seat Pan Cushion Width

Measurement is the horizontal distance across the seat cushion. The seat pan cushion shall be 17 to 21 inches across at the front edge of the seat cushion and 20 to 23 inches across at the side bolsters.

1.29.7 Seat Suspension

(1) The operator's seat shall be appropriately dampened to support a minimum weight of 380 lbs. The suspension shall be capable of dampening adjustment in both directions.

(2) Rubber snubbers shall be provided to prevent metal-to-metal contact.

1.29.8 Seat Back Width

Measurement is the distance between the outermost points of the front of the seat back, at or near its midpoint in height. The seat back width shall be no less than 19 inches. Seat back will include dual recliner gears on both sides of the seat.

1.29.9 Seat Back Lumbar Support

Measurement is from the bottom of the seat back at its intersection with the seat pan to the top of the lumbar cushioning. The seat back shall provide adjustable depth lumbar back support with three individual operating lumbar cells within a minimum range of 7 to 11 inches.

1.29.10 Seat Back Angle Adjustment

(1) The seat back angle shall be measured relative to a level seat pan, where 90 degrees is the upright position and 90 degrees-plus represents the amount of recline.

(2) The seat back shall adjust in angle from a minimum of no more than 90 degrees (upright) to at least 105 degrees (reclined), with infinite adjustment in between.

1.29.11 Seat Belt

(1) The belt assembly should be an auto-locking retractor (ALR) lap seat belt only. All seat belts should be stored in automatic retractors. The belts shall be mounted to the seat frame so that the operator may adjust the seat without resetting the seat belt.

(2) The seat and seat belt assemblies as installed in the bus shall withstand static horizontal forces as required in FMVSS 207 and 210. Seatbelt webbing shall be black in color.

1.29.12 Seat Control Locations

While seated, the operator shall be able to make seat adjustments by hand without complexity, excessive effort or being pinched. Adjustment mechanisms shall hold the adjustments and shall not be subject to inadvertent changes.

1.29.13 Seat Structure and Materials

(1) Cushions

Cushions shall be fully padded with at least 3 inches of materials in the seating areas at the bottom and back.

(2) Cushion Materials

All materials used on the seat assembly, passenger and operator's seat shall meet the flammability requirements of the FMVSS #302. Proof of Compliance must be submitted with bid pricings.

1.29.14 Pedestal

Exposed portions of frame and hardware shall be stainless steel or chrome plated.

1.30 Mirrors

1.30.1 Exterior Mirrors

Exterior mirrors shall be 8" x 15" 2-piece flat and convex. Mirrors shall be remote controlled motorized with black powder coated stainless steel arms that return to original position when moved. Left mirror shall be mounted near the front or upper edge of the operator's window. Right mirror shall be viewed through the upper right corner of windshield and mounted so as to provide maximum practical clearance to the ground. Mirrors must fold out of way of automatic washer. Metal mirror parts to be chrome plated or stainless steel. Exterior mirrors must utilize a "quick disconnect" for electrical wiring.

1.30.2 Interior Mirrors

(1) Mirrors shall be provided for the operator to observe passengers throughout the bus without leaving the seat and without shoulder movement. The operator shall be able to observe passengers in the front/entrance and rear/exit areas, anywhere in the aisle, and in the rear seats.

(2) A (min) 8½" x 16" rear view mirror shall be provided on the front sign header.

(3) A 6" diameter adjustable convex mirror over and forward of the front door shall be provided. An adjustable convex mirror shall be provided over/above and to the rear of the rear exit door. (Convex mirrors described above are to be used in conjunction with each other.) The glass in this mirror shall be replaceable.

1.31 Windows

1.31.1 Windshield (Single Piece Windshield – NOT PERMITTED)

(1) The windshield shall permit an operator's field of view as referenced in SAE Recommended Practice J1050. The vertically upward view shall be a minimum of 14 degrees, measured above the horizontal and excluding any shaded band. The vertically downward view shall permit detection of an object 3½ ft. high no more than 2 ft. in front of the bus. The horizontal view shall be a minimum of 90 degrees above the line of sight. Any binocular obscuration due to a center divider may be ignored when determining the 90-degree requirement, provided that the divider does not exceed a 3-degree angle in the operator's field of view. Windshield pillars shall not exceed 10 degrees of binocular obscuration. The windshield shall be designed and installed to minimize external glare as well as reflections from inside the bus.

(2) The windshield shall be easily replaceable by removing zip-locks from the windshield retaining moldings. Bonded-in-place windshields shall not be used. Winglets may be bonded.

1.31.2 Glazing

The windshield glazing material shall have a 1/4-inch nominal thickness laminated safety glass conforming to the requirements of ANSI Z26.1 Test Grouping 1A and the Recommended Practices defined in SAE J673.

1.31.3 Operator's Side Window

(1) The operator's side window shall be the sliding type, requiring only the rear half of sash to latch upon closing, and shall open sufficiently to permit the seated operator to easily adjust the street-side outside rearview mirror. When in an open position, the window shall not rattle or close during braking. This window section shall slide in tracks or channels designed to last the service life of the bus. The operator's side window shall not be bonded in place and shall be easily replaceable. The glazing material shall have a single-density tint.

(2) The operator's view, perpendicular through operator's side window glazing, should extend a minimum of 33 inches (840 mm) to the rear of the heel point on the accelerator, and in any case must accommodate a 95th percentile male operator. The view through the glazing at the front of the assembly should begin not more than 26 inches (560 mm) above the operator's floor to ensure visibility of an under-mounted convex mirror.

(3) Operator's window construction shall maximize ability for full opening of the window.

(4) The operator's side window glazing material shall have a 1/4-inch nominal thickness laminated safety glass conforming with the requirements of ANSI Z26.1-1996 Test Grouping 2 and the Recommended Practices defined in SAE J673.

(5) The design shall prevent sections from freezing closed in the winter. Light transmittance shall be 75 percent on the glass area below 53 inches from the operator platform floor. On the top fixed over bottom slider configuration, the top fixed area above 53 inches may have a maximum 5 percent light transmittance.

1.31.4 Passenger Side Windows

(1) With the exception of the upper portion of first right-hand and /or left-hand window where the side destination sign shall be located, all other shall be tinted 7/32" 28% gray tinted safety glass and frame windows will have black (dark) polyester powder coat aluminum frames inside and out. Windows shall be flat panel, transit application with approved laminated safety glass (ANSI 25.1). Glazing in the sash shall be easily replaced without removing the sash from the bus. Side window sliders shall be equipped with metal latches. All windows shall be of glass shall be mounted in removable rubber retaining strips/seals.

Arrow Global, Framed/Full Height Slider

(2) A positive lock type emergency latch meeting the FMVSS-217 shall be furnished on each window frame. Each window shall have a permanent decal describing emergency window operation procedures.

(3) Side windows shall be designed to prevent the entrance of air and water when windows are closed. The window seal rubber must be installed so that passengers

cannot remove it and rubber shall be of such quality to resist adhering to other sash sill.

As an option, frameless bonded windows will be priced.

1.32 Heating, Ventilating and Air Conditioning

1.32.1 Capacity and Performance

(1) The Heating, Ventilation and Air Conditioning (HVAC) climate control system shall be rear-mounted or roof mounted Carrier MCC with Screw Compressor, Brushless Evaporator & Condenser Motors with R134a Freon capable of maintaining the interior of the bus at the temperature and humidity levels defined in the following paragraphs. Accessibility and serviceability of components preferably shall be provided without requiring maintenance personnel to climb up on the roof of the bus.

(2) The following climatic factors shall be used as design guidelines and shall be considered as operational requirements.

- Temperature and Solar Load

Ambient air temperature, external equipment:

Minimum.....-20°F

Maximum.....120°F

- Humidity:

Minimum 5%

Maximum..... 100%

- Precipitation

Maximum rainfall rate 6 inches per hour

Maximum snowfall rate 5 inches per hour

Maximum snow accumulation..... 18 inches

(3) With the bus running at the design operating profile with corresponding door opening cycle, and carrying a number of passengers equal to 150 percent of the seated load, the HVAC system shall maintain an average passenger compartment temperature within a range between 65° and 80°F, while controlling the relative humidity to a value of 50 percent or less. The system shall maintain these conditions while subjected to any outside ambient temperatures within a range of 10° to 95°F and at any ambient relative humidity levels between 5 and 50 percent.

Reheat system water control valve to be pulsing type to provide even heat distribution.

(4) When the bus is operated in outside ambient temperatures of 95° to 115°F, the interior temperature of the bus shall be permitted to rise one degree for each degree of exterior temperature in excess of 95°F. When bus is operated in outside ambient temperatures in the range of -10°F to +10°F, the interior temperature of the bus shall not fall below 55°F while bus is running on the Design Operating Profile.

(5) System capacity testing, including pull down/warm-up, stabilization and profile, shall be conducted in accordance to the APTA "Recommended Instrumentation and Performance Testing for Transit Bus Air Conditioning System". Temperature measurements shall be made in accordance to this document with the following modifications:

I. The temperatures measured from a height of 6 inches below the ceiling shall be within plus or minus 3°F of the average temperature at the top surface of the seat cushions.

II. Temperatures measured more than 3 inches above the floor shall be within plus or minus 5°F of the average temperature at the top surface of the seat cushions. The interior temperatures, from front to rear of the bus, shall not vary more than plus or minus 3°F from the average.

III. The recommended locations of temperature probes are only guidelines and may require slight modifications to address actual bus design. Care must be taken to avoid placement of sensing devices in immediate path of air duct outlet. In general, the locations are intended to accurately represent the interior passenger area.

(6) The air conditioning portion of the HVAC system shall be capable of reducing the passenger compartment temperature from 110° to 90°F in less than 20 minutes after engine start-up. Engine temperature shall be within the normal operating range at the time of start-up of the cool-down test and the engine speed shall be limited to fast idle that may be activated by an operator-controlled device. During the cool-down period the refrigerant pressure shall not exceed safe high-side pressures and the condenser discharge air temperature, measured 6 inches from the surface of the coil, shall be less than 45°F above the condenser inlet air temperature. The appropriate solar load as recommended in the APTA "Recommended Instrumentation and Performance Testing for Transit Bus Air Conditioning System," representing 4 P.M. on August 21, shall be used. There shall be no passengers on board, and the doors and windows shall be closed. The air conditioning system shall meet these performance requirements using HFC R134a. The climate control blower motors and fan shall be designed such that their operation complies with the interior noise level requirements. There shall be manual shut off valves to isolate the drier, receiver, and compressor.

As an option, the Thermo King TK 14 will be made available and priced separately.

As an option, the Thermo King S391 Compressor will be made available and priced separately.

As an option, the Thermo King X430 Compressor will be made available and priced separately.

As an option, the Thermo King all electric HVAC will be made available and priced separately.

1.32.2 Controls and Temperature Uniformity

(1) The HVAC system excluding the operator's heater/defroster shall be centrally controlled with an advanced electronic/diagnostic control system with provisions for extracting/reading data. The system shall be compliant with J1939 Communication Protocol for receiving and broadcasting of data.

(2) Hot engine coolant water shall be delivered to the HVAC system operator's defroster/heater and other heater cores by means of an auxiliary coolant pump, sized for the required flow, which is brushless and seamless having a minimum maintenance free service life for both the brushless motor and the pump of at least 40,000 hours at full power.

1.32.3 Manual Mode Selection of Climate Control System

After manual selection and/or activation of climate control system operation mode, all interior climate control system requirements for the selected mode shall be attained automatically to within plus or minus 2°F of specified temperature control set-point.

1.32.4 Manually Adjustable Temperature Control Set Point

(1) The climate control system shall have the provision to allow the operator to adjust the temperature control set-point at a minimum of between 68° and 72°F. From then on, all interior climate control system requirements shall be attained automatically, unless re-adjusted by operator.

(2) The operator shall have full control over the defroster and operator's heater. The operator shall be able to adjust the temperature in the operator's area through air distribution and fans. The interior climate control system shall switch automatically to the ventilating mode if the refrigerant compressor or condenser fan fails.

(3) Interior temperature distribution shall be uniform to the extent practicable to prevent hot and/or cold spots. After stabilization with doors closed, the temperatures between any two points in the passenger compartment in the same vertical plane, and 6 to 72 inches above the floor, shall not vary by more than 5°F with doors closed. The interior temperatures, measured at the same height above the floor, shall not vary more than plus or minus 5°F from the front to the rear from the average temperature determined in accordance with APTA's "Recommended

Instrumentation and Performance Testing for Transit Bus Air Conditioning System.” Variations of greater than plus or minus 5°F will be allowed for limited, localized areas provided the majority of the measured temperatures fall within the specified requirement.

1.33 Air Flow

1.33.1 Passenger Area

(1) The cooling mode of the interior climate control system shall introduce air into the bus at or near the ceiling height at a minimum rate of 25 cubic ft. per minute (cfm) per passenger based on the standard configuration bus carrying a number of passengers equal to 150 percent of the seated load. Airflow shall be evenly distributed throughout the bus, with air velocity not exceeding 100 ft. per minute on any passenger. The ventilating mode shall provide air at a minimum flow rate of 20 cfm per passenger.

(2) Airflow may be reduced to 15 cfm per passenger (150 percent of seated load) when operating in the heating mode. The fans shall not activate until the heating element has warmed sufficiently to ensure at least 70°F air outlet temperature. The heating air outlet temperature shall not exceed 120°F under any normal operating conditions.

(3) The climate control blower motors and fan shall be designed such that their operation complies with the interior noise level requirements.

1.33.2 Operator’s Area

The bus interior climate control system shall deliver at least 100 cfm of air to the operator’s area when operating in the ventilating and cooling modes. Adjustable nozzles shall permit variable distribution or shutdown of the airflow. Airflow in the heating mode shall be reduced proportionally to the reduction of airflow into the passenger area. The windshield defroster unit shall meet the requirements of SAE Recommended Practice J382, “Windshield Defrosting Systems Performance Requirements,” and shall have the capability of diverting heated air to the operator’s feet and legs. The defroster or interior climate control system shall maintain visibility through the operator’s side window.

1.33.3 Controls for the Climate Control System (CCS)

The controls for the operator’s compartment for heating, ventilation and cooling systems shall be integrated and shall meet the following requirements:

(1) The heat/defrost system fan shall be controlled by a separate switch that has an “off” position and at least two positions for speed control. All switches and controls shall preclude the possibility of clothing becoming entangled, and shields shall be provided, if required. If the fans are approved by the Parish, an “on-off” switch shall be located to the right of or near the main defroster switch.

(2) A manually operated control valve shall control the coolant flow through the heater core.

(3) If a cable-operated manual control valve is used, the cable length shall be kept to a minimum to reduce cable seizing. Heater water control valves shall be “positive” type, closed or open. The method of operating remote valves shall require the concurrence of the Parish project manager.

1.33.4 Operator’s Compartment Requirements

(1) The heating, ventilation and defroster system for the operator’s area shall be controlled by the operator. The system shall meet the following requirements:

i. The heater and defroster system shall provide heating for the operator and heated air to completely defrost and defog the windshield, operator’s side window, and the front door glasses in all operating conditions. Fan(s) shall be able to draw air from the bus body interior and/or the exterior through a control device and pass it through the heater core to the defroster system and over the operator’s feet. A minimum capacity of 100 cfm shall be provided. The operator shall have complete control of the heat and fresh airflow for the operator’s area.

ii. The defroster supply outlets shall be located at the lower edge of the windshield. These outlets shall be durable and shall be free of sharp edges that can catch clothes during normal daily cleaning. The system shall be such that foreign objects such as coins or tickets cannot fall into the defroster air outlets. Adjustable ball vents or louvers shall be provided at the left of the operator’s position to allow direction of air onto the side windows.

(2) The bus interior climate control system shall deliver at least 100 cubic feet per minute of air to the operator’s area when operating in the ventilation, heating, and cooling modes without use of the operator’s booster fan. The climate control system blower motors will operate at the set speed during all operating modes. All return air ducts will be protected by guards constructed of a sturdy mesh which will resist damage.

(3) Adjustable nozzles shall permit variable distribution or shut down of all air flow. The defroster and/or interior climate control system shall maintain visibility through the operator’s side window. A booster fan with operator control shall be provided in the ductwork at the operator’s area, forward of the operator’s position, for increased air flow to the operator. The windshield defroster unit shall meet or exceed all requirements of SAE Recommended Practice J382, Windshield Defrosting Systems Performance Requirements, and shall have the capability of diverting heated air to the operator’s feet and legs.

1.33.5 Air Filtration

Air shall be filtered before discharge into the passenger compartment. The filter shall meet the ANSI/ASHRAE 52.1 requirement for 5 percent or better atmospheric dust

spot efficiency, 50 percent weight resistance, and a minimum dust holding capacity of 120 g per 1000 cfm cell. Air filters shall be easily removable for service.

1.33.6 Filters

Hogs Hair filters shall be provided.

1.33.7 Roof Ventilators

(1) One roof ventilator shall be provided in the roof of the bus, approximately over or just forward of the front axle of the bus.

(2) The ventilator shall be easily opened and closed manually. When open with the bus in motion, this ventilator shall provide fresh air inside the bus. The ventilator shall cover an opening area no less than 425 sq. inches and shall be capable of being positioned as a scoop with either the leading or trailing edge open no less than 4 inches, or with all four edges raised simultaneously to a height of no less than 3½ inches. An escape hatch shall be incorporated into the roof ventilator. Roof ventilator shall be sealed to prevent entry of water when closed.

1.34 Exterior Panels, Finishes and Exterior Lighting

1.34.1 Design

(1) The bus shall have a clean, smooth, simple transit bus design, primarily derived from bus performance requirements and passenger service criteria. The exterior and body features, including grilles and louvers, shall be shaped to facilitate cleaning by automatic bus washers without snagging washer brushes. Water and dirt shall not be retained in or on anybody feature to freeze or bleed out onto the bus after leaving the washer. The 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 bus.

(2) Exterior panels shall be sufficiently stiff to minimize vibration, drumming or flexing while the bus is in service. When panels are lapped, the upper and forward panels shall act as a watershed. However, if entry of moisture into the interior of the vehicle is prevented by other means, then rear cap panels may be lapped otherwise. The windows, hatches and doors shall be able to be sealed. Accumulation of spray and splash generated by the bus's wheels shall be minimized on windows and mirrors.

1.34.2 Materials

Body materials shall be selected and the body fabricated to reduce maintenance, extend durability and provide consistency of appearance throughout the service life of the bus. Detailing shall be kept simple, and add-on devices and trim shall be minimized and integrated into the basic design. The lower section of the side body panels shall be made of aluminum material and shall be easily and quickly replaceable.

1.34.3 Pedestrian Safety

(1) Exterior protrusions along the side and front of the bus greater than 1/2 inch and within 80 inches of the ground shall have a radius no less than the amount of the protrusion. The exterior rearview mirrors, cameras and required lights and reflectors are exempt from the protrusion requirement. Advertising frames shall protrude no more than 7/8 inch from the body surface. Grilles, doors, bumpers and other features on the sides and rear of the bus shall be designed to minimize toeholds or handholds.

(2) Exterior protrusions shall not cause a line-of-sight blockage for the operator.

1.34.4 Rain Gutters

Rain gutters shall be provided to prevent water flowing from the roof onto the passenger doors and operator's side window. When the bus is decelerated, the gutters shall not drain onto the windshield, operator's side window or door boarding area. Cross-sections of the gutters shall be adequate for proper operation.

1.34.5 License Plate Provisions

Provisions shall be made to mount standard-size U.S. license plates per SAE J686 on the rear of the bus. These provisions shall direct-mount or recess the license plates so that they can be cleaned by automatic bus-washing equipment without being caught by the brushes. The rear license plate provision shall be illuminated per SAE J587.

1.34.6 Fender Skirts

Features to minimize water spray from the bus in wet conditions shall be included in wheel housing design. Any fender skirts shall be easily replaceable. They shall be flexible if they extend beyond the allowable body width. Wheels and tires shall be removable with the fender skirts in place.

1.34.7 Standard Splash Aprons

Splash aprons, composed of 1/4-inch minimum composition or rubberized fabric, shall be installed behind and/or in front of wheels as needed to reduce road splash and protect under floor components. The splash aprons shall extend downward to within 6 inches off the road surface at static conditions. Apron widths shall be no less than tire widths. Splash aprons shall be bolted to the bus understructure. Splash aprons and their attachments shall be inherently weaker than the structure to which they are attached. The flexible portions of the splash aprons shall not be included in the road clearance measurements. Splash apron shall be installed as necessary to protect the wheelchair loading device from road splash. Other splash aprons shall be installed where necessary to protect bus equipment. An approved method of grounding static electricity shall be provided on each bus such as a conductive nylon grounding strap.

1.35 Service Compartments and Access Doors

1.35.1 Access Doors

(1) Conventional or pantograph 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 and transmission fluid. Access openings shall be sized for easy performance of tasks within the compartment, including tool operating space.

(2) Access doors shall be of rugged construction and shall maintain mechanical integrity and function under normal operations throughout the service life of the bus. They shall close flush with the body surface. All 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 bus washing operations. All access doors shall be retained in the open position by props or counterbalancing with over-center or gas-filled springs with safety props and shall be easily operable by one person. Springs and hinges shall be corrosion resistant. Latch handles shall be flush with, or recessed behind, the body contour and shall be sized to provide an adequate grip for opening. Access doors, when opened, shall not restrict access for servicing other components or systems.

(3) If precluded by design, the manufacturer shall provide door design information specifying how the requirements are met.

1.35.2 Access Door Latch/Locks

(1) The engine compartment, including the exhaust duct plenum, shall be completely sealed to prevent smoke or fumes from entering the bus interior. The engine bulkhead and exhaust duct plenum shall be insulated adequately to prevent discomfort to passengers due to heat, to minimize hazard in case of fire in the engine compartment, and to aid in controlling noise to meet required levels.

(2) An engine air intake designed to minimize noise shall be provided. Insulation shall be provided as needed in the engine compartment area for sound suppression.

(3) An adequate number of fire detectors shall be furnished in the engine compartment, as determined by the bus manufacturer. The detectors shall activate an alarm (visual as well as audible) at the operator's station.

(4) Access panels to the left and right side of the engine compartment shall be provided with expanded metal inserts to provide heat dissipation in the engine compartment. Panels shall also be constructed so that maintenance personnel can easily reach all under the floor and engine compartment equipment requiring access from outside the bus body. Access panels will be hinged to swing up and out of the way, and be secured with a 5/16-inch square latch.

(5) Gas operated shocks with safety locks shall secure access doors in the open position during inspection and servicing. The engine compartment doors will be equipped with handles. Louvers shall be provided in the rear engine compartment door to optimize airflow. Access doors are not required in the engine door.

(6) Forward edge hinges with positive action hold open springs shall be provided on the fuel connector and lay flat against the adjacent panel when fully opened. The battery access door shall have top edge hinges with gas operated shocks with safety devises when the battery is being serviced. A small access door shall be provided to the battery disconnect switch. Battery disconnect switch, fuel and air tank drain valve doors will be equipped with a well type securing latch.

1.36 Bumpers

1.36.1 Location

Bumpers shall provide impact protection for the front and rear of the bus with the top of the bumper being 27 inches, plus or minus 2 inches, above the ground. Bumper height shall be such that when one bus is parked behind another, a portion of the bumper faces will contact each other.

1.36.2 Front Bumper

(1) No part of the bus, including the bumper, shall be damaged as a result of a 5-mph impact of the bus at curb weight with a fixed, flat barrier perpendicular to the bus's longitudinal centerline. The bumper shall return to its pre-impact shape within 10 minutes of the impact. The bumper shall protect the bus from damage as a result of 6.5 mph impacts at any point by the common carriage with contoured impact surface defined in Figure 2 of FMVSS 301 loaded to 4000 lbs. parallel to the longitudinal centerline of the bus. It shall protect the bus from damage as a result of 5.5 mph impacts into the corners at a 30-degree angle to the longitudinal centerline of the bus.

(2) The energy absorption system of the bumper shall be independent of every power system of the bus and shall not require service or maintenance in normal operation during the service life of the bus. The bumper may increase the overall bus length specified by no more than 7 inches. Mounting provisions will be made for integrating bike rack if necessary.

As an option, a 2-position stainless steel and black powder coated bike rack will be made available and priced separately.

As an option a dash mounted bike deployed indicator lamp will be made available and priced separately.

1.36.3 Rear Bumper

(1) No part of the bus, including the bumper, shall be damaged as a result of a 2-mph impact with a fixed, flat barrier perpendicular to the longitudinal centerline of the bus. The bumper shall return to its pre-impact shape within 10 minutes of the impact. When using a yard tug with a smooth, flat plate bumper 2 ft. wide contacting the horizontal centerline of the rear bumper, the bumper shall provide protection at speeds up to 5 mph, over pavement discontinuities up to 1 inch high, and at accelerations up to 2 mph/sec. The rear bumper shall protect the bus, when impacted anywhere along its width by the common carriage with contoured impact

surface defined in Figure 2 of FMVSS 301 loaded to 4000 lbs., at 4 mph parallel to or up to a 30-degree angle to, the longitudinal centerline of the bus.

(2) The rear bumper shall be shaped to preclude unauthorized riders standing on the bumper. The bumper shall not require service or maintenance or in normal operation during the service life of the bus. The bumper may increase the overall bus length specified by no more than 7 inches.

1.36.4 Bumper Material

Bumper material shall be corrosion-resistant and withstand repeated impacts of the specified loads without sustaining damage. Visible surfaces shall be black. These bumper qualities shall be sustained throughout the service life of the bus.

1.37 Finish and Color

1.37.1 Appearance

(1) All exterior surfaces shall be smooth and free of wrinkles and dents. Exterior surfaces to be painted shall be properly prepared as required by the paint system Supplier 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 bus. Drilled holes and cutouts in exterior surfaces shall be made prior to cleaning, priming and painting, where possible, to prevent corrosion. Body filler materials may be used for surface dressing, but not for repair of damaged or improperly fitted panels.

(2) Paint shall be applied smoothly and evenly with the finished surface free of visible dirt and the following other imperfections:

- i. blisters or bubbles appearing in the topcoat film
- ii. chips, scratches, or gouges of the surface finish
- iii. cracks in the paint film
- iv. craters where paint failed to cover due to surface contamination
- v. overspray
- vi. peeling
- vii. runs or sags from excessive flow and failure to adhere uniformly to the surface
- viii. chemical stains and water spots
- ix. dry patch due to incorrect mixing of paint activators
- x. buffing swirls

(3) All exterior finished surfaces shall be impervious to diesel fuel, gasoline and commercial cleaning agents. Finished surfaces shall resist damage by controlled applications of commonly used graffiti-removing chemicals.

(4) Proper adhesion between the basic surface and successive coats of the original paint shall be measured using an Alcolmeter adhesion tester as outlined in ASTM D4541-85. Adhesion shall be a minimum 300 ft.-lb. The bus manufacturer shall supply test samples of the exterior surface for each step of the painting process that

may be subject to adhesion testing per ASTM G4541-87 and ASTM D4145-85. ASTM D4541-93 may be used for inspection testing during assembly of the vehicle.

(5) Bus exteriors shall be painted and numbered to include numbers on the roof to the general design to be provided with each order. Minor variations to this color scheme may be required in order to accommodate the specific styling of the Contractor's buses.

(6) Within 30 days of execution of contract, the Contractor shall supply to Procuring Parish the detailed drawings of the front, rear, both sides, and roof of the bus that will be supplied. Within 60 days of execution of the contract, the Procuring Parish will return these drawings to the Contractor with details of the color schemes included.

(7) The bus exterior shall be primed as recommended by the manufacturer of the final finish, and shall be finished with the color scheme specified in the order. Bidders should provide listings of available colors. Current color schemes used by the various Procuring Agencies are publicly available.

(8) There shall be no bare or exposed metal surfaces showing on the exterior of the bus, exclusive of ornamentation and accessories. The display of manufacturer's name or insignia on the exterior of the bus will be as specified in the individual order.

1.37.2 Decals, Numbering and Signing

(1) Monograms, numbers and other special signing shall be applied to the inside and outside of the bus as required. Signs shall be durable and fade-, chip- and peel-resistant. They may be painted signs, decals or pressure-sensitive appliqués. All decals shall be installed per the decal Supplier recommendations. Signs shall be provided in compliance with the ADA requirements defined in 49 C.F.R. Part, Subpart B, 38.27.

(2) Buses shall have fleet numbers applied both on the interior and exterior of the bus in sequence with factory serial numbers. Each individual order will include the correct starting number and the location, size and color of numbers.

1.37.3 Passenger Information

(1) ADA priority seating signs as required and defined by 49 C.F.R., Part 38.27 shall be provided to identify the seats designated for passengers with disabilities.

(2) Requirements for a public information system in accordance with 49 C.F.R., Part 38.35 shall be provided.

(3) Interior decals such as but not limited to the following, "No Smoking", "Exit" door, "Emergency Exit", "Watch Your Step", Wheelchair instructions and "Reserved for Wheelchairs," etc. shall be provided. All decals shall be in English and Spanish. Optional Tri-Lingual decals will be made available, with the three languages being

verified at the pre-production meeting. Decals containing identification of windows, hatches, etc., shall also be provided. All decals shall conform to Louisiana state law.

1.37.4 Exterior Lighting

(1) Exterior lighting and reflectors shall comply, as applicable, with Part 393, Subpart B of the FMCSA and FMVSS 108.

(2) All exterior lights shall be designed to prevent entry and accumulation of moisture or dust. Commercially available LED-type lamps shall be utilized at all exterior lamp locations except headlights. Lamps, lenses and fixtures shall be interchangeable to the extent practicable. Two hazard lamps at the rear of the bus shall be visible from behind when the engine service doors are opened. Light lenses shall be designed and located to prevent damage when running the vehicle through an automatic bus washer. Front marker (clearance) lights along with lights located on the roof and sides of the bus shall have protective shields or be of the flush mount type to protect the lens against minor impacts.

(3) Exterior lighting shall comply with all applicable State and Federal regulations. Replacement lamps shall be readily available from commercial sources; they shall not be a bus manufacturer unique item. Those applications which will not accommodate an LED lamp shall have a replaceable bulb with access to the bulb by removing the lens from outside the bus.

(4) LED headlights are required with high and low beams controlled from a sealed, moisture-protected foot switch located on the floor in the operator's station. The sealed beam units shall be of the latest heavy-duty type and be ruggedly mounted to maintain adjustment under transit operating conditions. Headlights shall be wired to operate on reduced voltage in the run position.

(5) All other lights shall be LED as allowed by applicable State Laws. The stop lights and tail light shall be 4" diameter. Rear turn indicator lights shall be separate from the stop-tail lights.

(6) The LED marker lights at the front and rear upper corners of the bus shall be of flush mounted type to preclude breakage by tree limbs, bus washers, etc.

(7) Each doorway shall have an outside light(s) which, when the door is open, provides at least one foot candle of illumination of the street surface for a distance of three feet perpendicular to the bottom step tread outer edge. Light (s) shall be located below window level and shielded to protect the eyes of entering and exiting passengers.

1.37.5 Backup Light/Alarm

Visible and audible warnings shall inform following vehicles or pedestrians of reverse operation. Visible reverse operation warning shall conform to SAE Standard J593. Audible reverse operation warning shall conform to SAE Recommended Practice J994 Type C or D.

1.37.6 Doorway Lighting

Lamps at the front and rear passenger doorways shall comply with ADA requirements and shall activate only when the doors open. These lamps shall illuminate the street surface to a level of no less than 1 foot-candle for a distance of 3 ft. outward from the outboard edge of the door threshold. The lights may be positioned above or below the lower daylight opening of the windows and shall be shielded to protect passengers' eyes from glare.

1.37.7 Service Area Lighting (Interior and Exterior)

LED lamps shall be provided in the engine and all other compartments where service may be required to generally illuminate the area for night emergency repairs or adjustments. These service areas shall include, but not be limited to, the engine compartment, the communication box, junction/apparatus panels and passenger door operator compartments. Lighting shall be adequate to light the space of the service areas to levels needed to complete typical emergency repairs and adjustments. The service area lamps shall be suitable for the environment in which they are mounted.

1.38 Interior Panels and Finishes

1.38.1 General Requirements

(1) Materials shall be selected on the basis of maintenance, durability, appearance, safety, flammability and tactile qualities. Materials shall be strong enough to resist everyday abuse and be vandalism and corrosion resistant. Trim and attachment details shall be kept simple and unobtrusive. Interior trim shall be secured to avoid resonant vibrations under normal operational conditions.

(2) Interior surfaces more than 10 inches 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 bus is parked on a level surface. Any components and other electrical components within close proximity to these surfaces shall also be resistant to this cleaning method.

1.38.2 Interior Panels

Panels shall be easily replaceable and tamper-resistant. They shall be reinforced, as necessary, to resist vandalism and other rigors of transit bus service. Individual trim panels and parts shall be interchangeable to the extent practicable.

1.38.3 Operator Area Barrier

A barrier or bulkhead between the operator and the street-side front passenger seat shall be provided. The barrier shall minimize glare and reflections in the windshield directly in front of the barrier from interior lighting during night operation. Location and shape must permit full seat travel and reclining possibilities that can accommodate the shoulders of a 95th-percentile male. The partition shall have a side return and stanchion to prevent passenger from reaching the operator by standing behind the operator's seat. The lower area between the seat and panel

must be accessible to the operator. The partition must be strong enough in conjunction with entire partition assembly for mounting of such equipment as flare kits, fire extinguishers (1.2 kg), microcomputer, public address amplifier, etc. Dark or black panels are preferred behind the operator's head. The panel should be isolated for noise control and attached with rubber grommets.

1.38.4 Modesty Panels

(1) Sturdy divider panels constructed of durable, unpainted, corrosion-resistant material complementing the interior shall be provided to act as both a physical and visual barrier for seated passengers.

(2) Design and installation of modesty panels located in front of forward-facing seats shall include a handhold or grab handle along its top edge. These dividers shall be mounted on the sidewall and shall project toward the aisle no farther than passenger knee projection in longitudinal seats or the aisle side of the transverse seats. Modesty panels shall extend from at least the window opening of the side windows, and those forward of transverse seats shall extend downward to 1 and 1½ inches above the floor. Panels forward of longitudinal seats shall extend to below the level of the seat cushion. Dividers positioned at the doorways shall provide no less than a 2½ inches clearance between the modesty panel and a fully open, inward opening door, or the path of a deploying flip-out ramp to protect passengers from being pinched. Modesty panels installed at doorways shall be equipped with grab rails if passengers assist is not provided by other means.

(3) The modesty panel and its mounting shall withstand a static force of 250 lbs. applied to a 4 × 4-inch area in the center of the panel without permanent visible deformation.

1.38.5 Front End

The entire front end of the bus shall be sealed to prevent debris accumulation behind the dash and to prevent the operator's feet from kicking or fouling wiring and other equipment. The front end shall be free of protrusions that are hazardous to passengers standing at the front of the standee line area of the bus during rapid decelerations. Paneling across the front of the bus and any trim around the operator's compartment shall be formed metal or composite material. Composite dash panels shall be reinforced as necessary, vandal-resistant and replaceable. All colored, painted and plated parts forward of the operator's barrier shall be finished with a surface that reduces glare. Any mounted equipment must have provision to support the weight of equipment.

1.38.6 Rear Bulkhead

(1) The rear bulkhead and rear interior surfaces shall be material suitable for exterior skin; painted and finished to exterior quality; or paneled with melamine-type material, composite, scratch-resistant plastic or carpeting and trimmed with stainless steel, aluminum or composite.

(2) The rear bulkhead paneling shall be contoured to fit the ceiling, side walls and seat backs so that any litter or trash will tend to fall to the floor or seating surface when the bus is on a level surface. Any air vents in this area shall be louvered to reduce airflow noise and to reduce the probability of trash or liter being thrown or drawn through the grille. If it is necessary to remove the panel to service components located on the rear bulkhead, the panel shall be hinged or shall be able to be easily removed and replaced. Grilles where access to or adjustment of equipment is required shall be heavy-duty and designed to minimize damage and limit unauthorized access.

1.38.7 Headlining

Ceiling panels shall be made of durable, corrosion resistant, easily cleanable material. 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 members. Moldings and trim strips, as required to make the edges tamperproof, shall be stainless steel, aluminum or plastic, colored to complement the ceiling material. Headlining panels covering operational equipment that is mounted above the ceiling shall be on hinges for ease of service but retained to prevent inadvertent opening.

1.38.8 Fastening

Interior panels shall be attached so that there are no exposed unfinished or rough edges or rough surfaces. Fasteners should be corrosion resistant. Panels and fasteners shall not be easily removable by passengers. Exposed interior fasteners should be minimized, and where required shall be tamper-resistant.

1.38.9 Insulation

(1) Any insulation material used between the inner and outer panels shall minimize the entry and/or retention of moisture. Insulation properties shall be unimpaired during the service life of the bus. Any insulation material used inside the engine compartment shall not absorb or retain oils or water and shall be designed to prevent casual damage that may occur during maintenance operations.

(2) The combination of inner and outer panels on the sides, roof, wheel wells and ends of the bus, and any material used between these panels, shall provide a thermal insulation sufficient to meet the interior temperature requirements. The bus body shall be thoroughly sealed so that the operator or passengers cannot feel drafts during normal operations with the passenger doors closed. Insulation shall meet the requirements of FMVSS 302.

1.38.10 Floor Covering

(1) The floor covering shall be Altro rubber floor material. The floor covering, as well as transitions of flooring material to the main floor and to the entrance and exit area, shall be smooth and present no tripping hazards. Seams shall be sealed/welded per manufacturer's specifications. The standee line shall be approximately 2 inch wide

and shall extend across the bus aisle. This line and the edge of the steps shall be Yellow. The color and pattern shall be consistent throughout the floor covering.

(2) Any areas on the floor that are not intended for standees, such as areas "swept" during passenger door operation, shall be clearly and permanently marked. The floor shall be easily cleaned and shall be arranged to minimize debris accumulation.

(3) A one-piece center strip shall extend from the vertical wall of the rear settee between the aisle sides of transverse seats to the standee line. If the floor is of a bi-level construction, then the center strip shall be one piece at each level. The covering between the center strip and the wheel housings may be separate pieces. At the rear door, however, a separate strip as wide as the door shall extend from the center strip to the outboard edge of the rear/exit area.

(4) The floor under the seats shall be covered with smooth surface flooring material. The floor covering shall closely fit the sidewall in a fully sealed butt joint or extend to the top of the cove.

1.39 Interior Lighting

1.39.1 Passenger

(1) The passenger interior lighting system shall be an LED lighting system. The interior lighting system shall provide a minimum 15 foot-candle illumination on a 1 square foot plane at an angle of 45 degree from horizontal, center 33 inches above the floor and 24 inches in front of the seat back at each seat position. Allowable average light level for the rear bench seats shall be 7 foot-candles. Floor surface in the aisles shall be a minimum of 10 foot-candles, vestibule area a minimum of 4 foot-candles with the front doors open and minimum of 2 foot-candles with the front doors closed. The front entrance area and curb lights shall illuminate when the front door is open and master run switch is in the "Lights" positions. Rear exit area and curb lights shall illuminate when rear door is unlocked.

(2) Step lighting for the intermediate platform between lower and upper floor levels shall be provided and shall illuminate in all engine run positions. The step lighting shall be low-profile to minimize tripping and snagging hazard for passengers and shall be shielded as necessary to protect passengers' eyes from glare.

(3) The light source shall be located to minimize windshield glare with distribution of the light focused primarily on the passengers' reading plane while casting sufficient light onto the advertising display. The bus shall be equipped with interior advertising card tracks on each side of the interior passenger compartment, running the length of the bus, to hold 11 inches high ad cards.

(4) Lens material shall be clear polycarbonate. Lens shall be designed to effectively "mask" all individual LEDs to make them invisible and there shall be no "hot spot" or "dark spot". Lens shall be sealed to inhibit incursion of dust and insects yet are easily removable for service. If threaded fasteners are used, they must be held

captive in the lens. Access panels shall be provided to allow servicing of components located behind light panels.

(5) Individual operator module shall be provided for each light fixture. Operator module shall have built-in self-protection of thermal shut-down and restart, PWM (Pulse Width Modulation) output to regulate light level, reverse polarity protects and rebuild able.

(6) When the master switch is in the RUN or NITE/RUN mode, the first light module on each side of the bus shall slowly fades to darkness when the front door is in the closed position and light output shall gradually illuminate to reach maximum light level when the door is opened. Solid state LED lighting shall have unlimited on-off cycles.

(7) The light system may be designed to form part of the entire air distribution duct.

(8) Emergency backup system shall keep the light fixtures over the front and rear doors illuminated at minimum light output under a separated battery power for 10 to 15 minutes allowing passengers visibility and timely evacuation from the vehicle during emergency conditions.

1.39.2 Operator Area

The operator's area shall have a light to provide general illumination, and it shall illuminate the half of the steering wheel nearest the operator to a level of 5 to 10 foot-candles. This light shall be controlled by a toggle switch that is convenient to the operator. Light fixture shall be mounted in the ceiling above the farebox location. The fixture shall be capable of projecting a concentrated beam of light on the farebox. This light will automatically come on whenever the front doors are opened and the run switch is in the "night run" or "night park" position.

1.39.3 Vestibules/Doors

Floor surface in the aisles shall be a minimum of 10 foot-candles, and the vestibule area a minimum of 4 foot-candles with the front doors open and a minimum of 2 foot-candles with the front doors closed. The front entrance area and curb lights shall illuminate when the front door is open and master run switch is in the "lights" positions. Rear exit area and curb lights shall illuminate when the rear door is unlocked.

1.39.4 Step Lighting

Step lighting for the intermediate steps between lower and upper floor levels shall be a minimum of 4 foot-candles and shall illuminate in all engine run positions. The step lighting shall be low-profile to minimize tripping and snagging hazards for passengers and shall be shielded as necessary to protect passengers' eyes from glare.

1.39.5 Ramp Lighting

Exterior and interior ramp lighting shall comply with C.F.R. Part 49, Sections 19.29 and 19.31.

1.39.6 Fare Collection

If selected, a farebox shall be installed in a space as far forward as practicable, and/or structural provisions shall be made for installation of a farebox (if not installed by manufacturer). Location of this fare collection device shall not restrict traffic in the vestibule and shall allow the operator to easily reach the coin levers and view the change platform. The farebox shall not restrict access to the operator's area and shall not restrict operation of operator controls. Farebox location shall permit accessibility to the vault for easy manual removal or attachment of suction devices. Meters and counters on the farebox shall be readable on a daily basis. A 20 amp, 12-volt, DC, protected lead will be made available to power the farebox.

1.39.7 Interior Access Panels and Doors

Access for maintenance and replacement of equipment shall be provided by panels and doors that appear to be an integral part of the interior. Access doors shall be hinged with gas or mechanical props or over-center springs, where practical, to hold the doors out of the mechanic's way. Panels shall prevent entry of mechanism lubricant into the bus interior. All fasteners that retain access panels shall be captive in the cover. Access doors shall be secured with hand screws or latches. All fasteners that retain access panels shall be captive in the cover.

1.39.8 Floor Panels

(1) Access openings in the floor shall be sealed to prevent entry of fumes and water into the bus interior. Flooring material at or around access openings shall be flush with the floor and shall be edge-bound with stainless steel or another material that is acceptable to the Parish to prevent the edges from coming loose. Access openings shall be asymmetrical so that reinstalled flooring shall be properly aligned. Fasteners shall tighten flush with the floor.

(2) The number of special fastener tools required for panel and access door fasteners shall be minimized.

1.40 Passenger Accommodations

1.40.1 Passenger Seating

(1) Arrangements and Seat Style - American Seating Insight (1) A.R.M Restraint (streetside) passenger seats shall be arranged in the bus shall be such that seating capacity is maximized and shall accommodate as many forward-facing seats as possible. Hip-to-knee room shall be a minimum of 26.50". Passenger seating shall be molded shell seats with vandal resistant fabric inserts. Installation shall be with cantilever mount and no closeout where possible.

(2) Bidders shall indicate standard seating layout for each size bus.

(3) Any exposed metal of the frame will be powder coated, color coordinated to match the seat inserts, or brushed aluminum, or brushed stainless steel.

NOTE: Bidders shall provide a proposed seating layout with their bids.

(4) The handholds shall be stainless steel.

(5) The top area of the seat back shell will wrap around the upper portion of the seat back (below the grab rail) in a "bubble" to form a crash pad on the rear of each seat. The crash pad will be of continuous construction with the back.

(6) Rear seat platform shall be hinged to gain access to engine compartment.

(7) Bidders shall submit a certified test report as evidence of compliance with all testing activities, test diagrams, test equipment as well as test data related to loads, deflections and permanent deformation of the seat assembly as defined in the APTA Standard Bus Procurement Guidelines manual.

1.40.2 Hip-to-Knee Room

Hip-to-knee room measured from the center of the seating position, from the front of one seat back horizontally across the highest part of the seat to vertical surface immediately in front, shall be a minimum of 26 inches. At all seating positions in paired transverse seats immediately behind other seating positions, hip-to-knee room shall be no less than 27 inches.

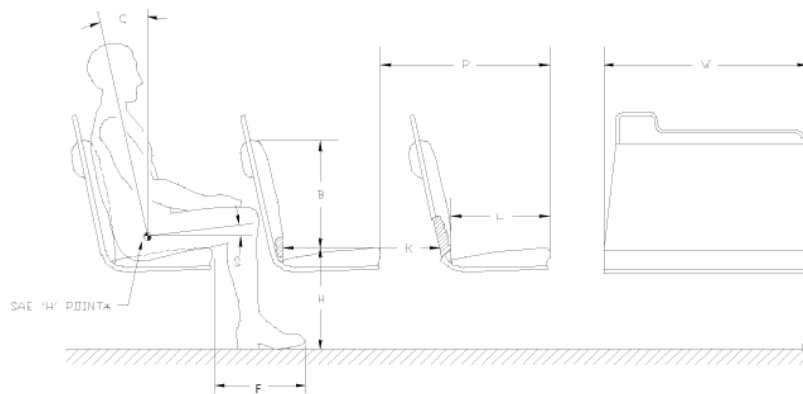
1.40.3 Foot Room

Foot room, measured at the floor forward from a point vertically below the front of the seat cushion, shall be no less than 14 inches. Seats immediately behind the wheel housings and modesty panels may have foot room reduced.

1.40.4 Aisles

The aisle between the seats shall be no less than 20 inches wide at seated passenger hip height. Seat backs shall be shaped to increase this dimension to no less than 24 inches at 32 inches above the floor (standing passenger hip height).

Dimensions
FIGURE 7
 Seating Dimensions and Standard Configuration



1.40.5 Structure and Design

- (1) The passenger seat frame and its supporting structure shall be constructed and mounted so that space under the seat is maximized and is completely free of obstructions to facilitate cleaning.
- (2) Seats, structures and restraints around the securement area should not infringe into the mobility device envelope or maneuverability.
- (3) The transverse seat structure shall be fully cantilevered from the sidewall with sufficient strength for the intended service. The lowest part of the seat assembly that is within 12 inches of the aisle shall be at least 10 inches above the floor.
- (4) In locations at which cantilevered installation is precluded by design and/or structure, other seat mounting may be allowed.
- (5) All transverse objects — including seat backs, modesty panels, and longitudinal seats — in front of forward-facing seats shall not impart a compressive load in excess of 1000 lbs. onto the femur of passengers ranging in size from a 5th-percentile female to a 95th-percentile male during a 10g deceleration of the bus. This deceleration shall peak at 0.05 to 0.015 seconds from initiation. Permanent deformation of the seat resulting from two 95th-percentile males striking the seat back during this 10g deceleration shall not exceed 2 inches, measured at the aisle side of the seat frame at height H. The seat back should not deflect more than 14

inches, measured at the top of the seat back, in a controlled manner to minimize passenger injury. Structural failure of any part of the seat or sidewall shall not introduce a laceration hazard.

(6) The seat assembly shall withstand static vertical forces of 500 lbs. applied to the top of the seat cushion in each seating position with less than 1/4-inch permanent deformation in the seat or its mountings. The seat assembly shall withstand static horizontal forces of 500 lbs. evenly distributed along the top of the seat back with less than 1/4-inch permanent deformation in the seat or its mountings. The seat backs at the aisle position and at the window position shall withstand repeated impacts of two 40-lb sandbags without visible deterioration. One sandbag shall strike the front 40,000 times and the other sandbag shall strike the rear 40,000 times. Each sandbag shall be suspended on a 36-inch pendulum and shall strike the seat back 10,000 times each from distances of 6, 8, 10 and 12 inches. Seats at both seating positions shall withstand 4000 vertical drops of a 40-lb sandbag without visible deterioration. The sandbag shall be dropped 1000 times each from heights of 6, 8, 10 and 12 inches. Seat cushions shall withstand 100,000 randomly positioned 3½ inch drops of a squirming, 150-lb, smooth-surfaced, buttocks-shaped striker with only minimal wear on the seat covering and no failures to seat structure or cushion suspension components.

(7) The back of each transverse seat shall incorporate a handhold no less than 7/8 inch in diameter for standees and seat access/egress. The handhold shall not be a safety hazard during severe decelerations. The handhold shall extend above the seat back near the aisle so that standees shall have a convenient vertical assist, no less than 4 inches long that may be grasped with the full hand. This handhold shall not cause a standee using this assist to interfere with a seated 50th-percentile male passenger. The handhold shall also be usable by a 5th-percentile female, as well as by larger passengers, to assist with seat access/egress for either transverse seating position. The upper rear portion of the seat back and the seat back handhold immediately forward of transverse seats shall be padded and/or constructed of energy absorbing materials. During a 10g deceleration of the bus, the HIC number (as defined by SAE Standard J211a) shall not exceed 400 for passengers ranging in size from a 5th percentile female through a 95th percentile male.

(8) The seat back handhold may be deleted from seats that do not have another transverse seat directly behind and where a vertical assist is provided.

(9) Longitudinal seats shall be the same general design as transverse seats but without seat back handholds. Longitudinal seats may be mounted on the wheelhouses. Armrests shall be included on the ends of each set of longitudinal seats except on the forward end of a seat set that is immediately to the rear of a transverse seat, the operator's barrier, or a modesty panel, when these fixtures perform the function of restraining passengers from sliding forward off the seat. Armrests are not required on longitudinal seats located in the wheelchair parking area that fold up when the armrest on the adjacent fixed longitudinal seat is within

3½ inches of the end of the seat cushion. Armrests shall be located from 7 to 9 inches above the seat cushion surface. The area between the armrest and the seat cushion shall be closed by a barrier or panel. The top and sides of the armrests shall have a minimum width of 1 inch and shall be free from sharp protrusions that form a safety hazard.

(10) Seat back handhold and armrests shall withstand static horizontal and vertical forces of 250 lbs. applied anywhere along their length with less than 1/4-inch permanent deformation. Seat back handhold and armrests shall withstand 25,000 impacts in each direction of a horizontal force of 125 lbs. with less than 1/4-inch permanent deformation and without visible deterioration.

1.40.6 Construction and Materials

(1) Selected materials shall minimize damage from vandalism and shall reduce cleaning time. The seats shall be attached to the frame with tamper-resistant fasteners. Coloring shall be consistent throughout the seat material, with no visually exposed portion painted. Any exposed metal touching the sides or the floor of the bus shall be stainless steel. The seat, pads and cushions shall be contoured for individuality, lateral support and maximum comfort and shall fit the framework to reduce exposed edges.

(2) The minimum radius of any part of the seat back, handhold or modesty panel in the head or chest impact zone shall be a nominal 1/4 inch. The seat back and seat back handhold immediately forward of transverse seats shall be constructed of energy-absorbing materials to provide passenger protection and, in a severe crash, allow the passenger to deform the seating materials in the impact areas. Complete seat assemblies shall be interchangeable to the extent practicable. Parish to select seat fabric.

1.40.7 Passenger Assists

Passenger assists in the form of full grip, vertical stanchions or handholds shall be provided for the safety 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 bus and out the exit door, a vertical assist shall be provided either as the vertical portion of seat back assist or as a separate item so that a 5th-percentile female passenger may easily move from one assist to another using one hand and the other without losing support. All stanchions shall be Stainless steel finish.

1.40.8 Assists

(1) Excluding those mounted on the seats and doors, the assists shall have a cross-sectional diameter between 1¼ and 1½ inches or shall provide an equivalent gripping surface with no corner radii less than 1/4 inch. All passenger assists shall permit a full hand grip with no less than 1½ inches of knuckle clearance around the assist. Passenger assists shall be designed to minimize catching or snagging of

clothes or personal items and shall be capable of passing the NHTSA Drawstring Test.

(2) Any joints in the assist structure shall be underneath supporting brackets and securely clamped to prevent passengers from moving or twisting the assists. Seat handholds may be of the same construction and finish as the seat frame. Door mounted passenger assists shall be of anodized aluminum, stainless steel or powder-coated metal. Connecting tees and angles may be powder-coated metal castings. Assists shall withstand a force of 300 lbs. applied over a 12-inch lineal dimension in any direction normal to the assist without permanent visible deformation. All passenger assist components, including brackets, clamps, screw heads and other fasteners used on the passenger assists shall be designed to eliminate pinching, snagging and cutting hazards and shall be free from burrs or rough edges.

1.40.9 Front Doorway

Front doors, or the entry area, shall be fitted with ADA-compliant assists. Assists shall be as far outward as practicable, but shall be located no farther inboard than 6 inches from the outside edge of the entrance step 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 and the assists on the wheel housing or on the front modesty panel.

1.40.10 Vestibule

(1) The aisle side of the operator's barrier, the wheel housings, and when applicable the modesty panels shall be fitted with vertical passenger assists that are functionally continuous with the overhead assist and that extend to within 36 inches of the floor. These assists shall have sufficient clearance from the barrier to prevent inadvertent wedging of a passenger's arm.

(2) A horizontal passenger assist shall be located across the front of the bus and shall prevent passengers from sustaining injuries on the fare collection device or windshield in the event of a sudden deceleration. Without restricting the vestibule space, the assist shall provide support for a boarding passenger from the front door through the fare collection procedure. The assist shall be no less than 36 inches above the floor. The assists at the front of the bus shall be arranged to permit a 5th-percentile female passenger to easily reach from the door assist, to the front assist, to vertical assists on the operator's barrier, wheel housings or front modesty panel.

1.40.11 Rear Doorway(s)

Vertical assists that are functionally continuous with the overhead assist shall be provided at the aisle side of the transverse seat immediately forward of the rear door and on the aisle side of the rear door modesty panel(s). Passenger assists shall be provided on modesty panels that are functionally continuous with the rear door assists. Rear doors, or the exit area, shall be fitted with assists having a cross-sectional diameter between 1¼ and 1½ inches or providing an equivalent

gripping surface with no corner radii less than 1/4 inch, and shall provide at least 1½ inches of knuckle clearance between the assists and their mounting. The assists shall be designed to permit a 5th-percentile female to easily move from one assist to another during the entire exiting process. The assists shall be located no farther inboard than 6 inches from the outside edge of the rear doorway step.

1.40.12 Overhead

(1) Except forward of the standee line and at the rear door, a continuous, full grip, overhead assist shall be provided. This assist shall be located over the center of the aisle seating position of the transverse seats. The assist shall be no less than 70 inches above the floor.

(2) There shall be fourteen (14) vinyl coated nylon grab straps (35' and 40' bus) and ten (10) on (30' bus) positioned throughout the bus interior mounted to the horizontal stanchions. A deduct will be made available for those agencies not desiring grab straps.

(3) Overhead assists shall simultaneously support 150 lbs. on any 12-inch length. No more than 5 percent of the full grip feature shall be lost due to assist supports.

1.40.13 Longitudinal Seat Assists

Longitudinal seats shall have vertical assists located between every other designated seating position, except for seats that fold/flip up to accommodate wheelchair securement. Assists shall extend from near the leading edge of the seat and shall be functionally continuous with the overhead assist. Assists shall be staggered across the aisle from each other where practicable and shall be no more than 52 inches apart or functionally continuous for a 5th percentile female passenger.

1.40.14 Wheel Housing Barriers/Assists

Unless passenger seating is provided on top of wheel housing, passenger assists shall be mounted around the exposed sides of the wheel housings which shall also be designed to prevent passengers from sitting on wheel housings. Such passenger assists shall also effectively retain items, such as bags and luggage, placed on top of wheel housing.

1.40.15 Passenger Doors

(1) The front door shall be a "slide glide" type inward opening, operator controlled, of corrosion-resistant construction. Minimum clear opening shall be 31.75" inches. The front door shall have a minimum height of 78 inches. The overhead clearance between the top of the door opening and the highest point of the ramp shall be a minimum of 68 inches. The step height shall not exceed 16.5 inches at either doorway without kneeling and shall not exceed 15.5 inches at the step. A maximum of two steps is allowed to accommodate a raised aisle floor in the rear of the bus.

(2) Operation of, and power to, the front door shall be controlled by the operator. Door shall be opened completely in 1 to 3.5 seconds from the time of control actuation, and shall be subject to adjustment requirements of this specification. A control valve in the operator's compartment shall shut off the power to, and/or dump the power from, the front door mechanism to permit manual operation of the front door with the bus shut down.

(3) The rear or exit door shall be a two panel swing out type designed to provide a minimum clear opening of 30 inches panel to panel and a minimum height of 78 inches. Rear doors shall be operator opened and spring closed. The closing of the door shall begin after the control has been moved to the closed position, and after the door has been fully opened. Door opening and closing speeds shall be adjustable. The rear door shall be equipped with a sensitive edge which will open the door automatically if an object is trapped between the doors.

(4) The doors shall have handrails (1.25 inches or equivalent surface area with a 1.50 inches knuckle clearance) mounted on the door panels and/or a modesty panel in the door well/step well. The clear opening dimension shall apply inside these handrails. Handrails whether on the door panel or in the body, shall be part of the systematic set of passenger assists.

(5) To preclude movement of the bus, an accelerator interlock shall lock the accelerator in the closed position and a brake interlock shall engage the rear axle service brake system when the front and rear door control is activated and the vehicle is moving below 3 mph. When vehicle is moving above 3 mph the rear door shall remain locked. The braking effort shall be to the maximum capability of the rear axle brakes.

(6) Locked doors shall require a force of more than 300 lbs. to open manually. When the locked doors are manually forced to open, damage shall be limited to the bending of minor door linkage with no resulting damage to the doors, actuators or complex mechanism.

1.40.16 Rear Door Interlocks

See "Hardware Mounting" for door system interlock requirements.

1.40.17 Emergency Operation

In the event of an emergency, it shall be possible to manually open doors designated as emergency exits from inside the bus using a force of no more than 25 lbs. after actuating an unlocking device. The unlocking device shall be clearly marked as an emergency-only device and shall require two distinct actions to actuate. The respective door emergency unlocking device shall be accessible from the doorway area. The unlocking device shall be easily reset by the operator without special tools or opening the door mechanism enclosure. Doors that are required to be classified as "Emergency Exits" shall meet the requirements of FMVSS 217.

1.40.18 Door Control

The door control shall be located in the operator's area within the hand reach envelope described in SAE Recommended Practice J287, "Operator Hand Control Reach." The operator's door control shall provide tactile feedback to indicate commanded door position and resist inadvertent door actuation.

1.41 Door Controller

1.41.1 Five-Position Operator's Door Controller

(1) The control device shall be protected from moisture. Mounting and location of the door control device handle shall be designed so that it is within comfortable, easy arm's reach of the seated operator. The door control device handle shall be free from interference by other equipment and have adequate clearance so as not to create a pinching hazard.

(2) Position of the door control handle shall result in the following operation of the front and rear doors:

- i. Center position: Front door closed, rear door(s) closed or set to lock.
- ii. First position forward: Front door open, rear door(s) closed or set to lock.
- iii. Second position forward: Front door open, rear door(s) open or set to open.
- iv. First position back: Front door closed, rear door(s) open or set to open.
- v. Second position back: Front door open, rear door(s) open or set to open.

1.41.2 Loading Systems

(1) The bus shall be equipped with a front door Lift –U LU 18 or approved equal ramp mechanism that conforms to all requirements of the Americans with Disabilities Act (ADA). It is to be an all electrically operated system which will assume the normal entrance configuration when stowed. When stowed, the ramp should not exceed any of the normal bus undercarriage clearances. All ramp components and mechanisms shall be constructed of corrosion resistant materials and incorporate a design which affords maximum protection from the elements during normal bus operations. Ease of maintenance and servicing shall be a prime consideration in system design and construction.

(2) The wheelchair ramp shall have a manual release, deploy, and stow mechanism. The components involved with manual operation shall be completely accessible. If ramp provides for a nylon strap, it must be located on the forward side of the ramp to preclude a trip hazard.

(3) The ramp shall be controlled by toggle switches, master on-off, up-down and stow-deploy. The control switches shall be of the spring loaded to a safe position

type so that constant manual pressure is required by the operator during ramp operation. All controls shall be clearly identified by function and present a reasonably foolproof and natural sequence of operation.

(4) Visual and audible warning devices shall be located immediately to the rear of the front door. The audible warning device shall be activated only when the ramp is functioning. Interlocking and fast idle provisions shall be incorporated so the ramp cannot be extended unless the entrance door is in the fully open position, the transmission in neutral, and the parking brake engaged. The entrance door cannot be closed unless the ramp is in the fully stowed position. The bus service brakes shall be automatically applied when the ramp is in any position other than the stowed and locked position. All ramp components mounted under the bus shall be protected from dirt, debris, and road splash through the use of appropriate enclosures, mud flaps, or sealed compartments, subject to approval by each Procuring Parish.

(5) Weatherproof access panels/doors shall be provided to allow for servicing and troubleshooting both ramp and under-floor bus components. Lubing the ramp shall be accomplished without removing the belly pan. The electrical interfacing connections between the bus and the ramp shall be of the quick disconnect type to facilitate ramp removal and installation.

1.41.3 Two Forward-Facing Wheelchair Securement Locations

Two forward-facing locations, as close to the wheelchair loading system as practical, shall provide parking space and securement system compliant with ADA requirements for a passenger in a wheelchair.

1.41.4 Wheelchair Securing System

The wheelchair securement shall be the American Seating Company telescoping ARM with Q'Straint belts in the front and Q'Straint Belts and Retractors in the rear. At a minimum, all restraint systems must meet C.F.R. 49, FMVSS, FTA and ADA standards.

As an option the Quantum GEN II will be priced separately.

As an Option the Q-pod Restraint System will be priced.

1.42 Signage and Communication

1.42.1 Destination Signs

AT win Vision, Amber LED (Front, Curbside)

(1) Operators Control Unit (OCU)

1.42.2 Cables and Accessories

(1) The Front Sign shall be mounted on the front of the Bus, near the top edge of the body, behind windshield protection, and in an enclosed but accessible

compartment. The Side Sign shall be located on the right side (curb side) of the bus near the front door, mounted near the top of an existing window. The Rear Sign (external) shall be mounted on the rear of the vehicle on an appropriately sized cutout.

(2) The entire display area of all signs shall be readable in direct sunlight, at night, and in all lighting conditions between those two lighting extremes, with evenly distributed illumination appearance to the un-aided eye.

(3) The system shall be microprocessor-based; utilizing approved bi-directional serial communications, such as SAE J1708 or IBIS, EIA RS-485, between system components, and shall utilize error detection techniques within the communication protocol.

(4) Independent Controller Boards shall be mounted in the front & side destination Sign. The system shall be capable of communicating with additional information devices, such as interior information Signs, Voice Annunciation devices, fare box, etc. The system shall provide for destination and/or Public Relations (P/R) message entry.

(5) Flash memory integrated circuits shall be capable of storing and displaying up to 10,000 message lines. Message memory shall be changeable by the use of a PCMCIA Card of not less than one (1) megabyte memory capacity but sized according to the message listing noted herein.

(6) The System shall have the ability to sequentially display multi-line destination messages, with the route number portion remaining in a constant "on" mode at all times, if so programmed. It shall also be capable of accepting manual entry of Route Alpha/Numeric information on any/all signs.

(7) The various Signs shall be programmable to display independent messages or the same messages; up to two destination messages and one public relations message shall be pre-selectable. The operator shall be able to quickly change between the pre-selected messages without re-entering a message code. Public relations messages shall be capable of being displayed alternately with the regular text and route messages or displayed separately.

(8) An emergency message shall be activated by a push button or toggle switch. The emergency message shall be displayed on signs facing outside the vehicle while signs inside the vehicle, including the OCU display, remain unchanged. The emergency message shall be canceled by entering a new destination code, or power cycling (after removal of the emergency signal).

(9) The programming software shall provide means of adjusting the length of time messages are displayed in 0.1 second increments up to twenty-five seconds.

(10) Power to the Sign system shall be controlled by the Master Bus Run Switch. 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 the local environment.

1.42.3 Display and Display Illumination

(1) All Sign displays shall consist of pixels utilizing High Intensity Light Emitting Diodes ("LED"), for superior outdoor environmental performance, (of Amber illumination appearance of light wavelength of 590 NM). LED should be made of AlInGaP II, superior UV resistant Epoxy lens and superior resistance to the effects of moisture. Each pixel shall have a dedicated LED for illumination of that pixel in all lighting conditions. The sign system shall have multi-level intensity changes, which adjust automatically as a function of ambient lighting conditions. There shall be no requirement for any fan or any specialized cooling or air circulation.

(2) This LED shall be mounted such as to be visible directly to the observer positioned in the viewing cone, allowing for full readability 65 degrees either side of the destination sign centerline. The LEDs shall be the only means of illumination of the sign system. The LED illumination source shall have an operating life M.T.B.F. of not less than 100,000 hours. Each LED shall not consume more than 0.02 Watts.

(3) The characters formed by the System shall meet the requirements of the Americans with Disabilities Act (ADA) of 1990 Reference 49 C.F.R. Section 38.39.

1.42.4 Sign Enclosures

All Signs shall be enclosed in a manner such as to inhibit entry of dirt, dust, water and other contaminants during normal operation or cleaning. Access shall be provided to clean the inside of the bus window(s) associated with the Sign and to remove or replace the Sign components. Access panels and display boards shall be mounted for ease of maintenance/replacement. Any exterior Rear Sign enclosure used shall be made of Polycarbonate material containing fiberglass reinforcement. The vehicle manufacturer shall comply with the Sign manufacturer's recommended mounting, mounting configuration, and installation procedures to assure optimum visibility and service accessibility of the Sign System and System components.

1.42.5 Electronic System Requirements

All electronic circuit boards used in the Sign System shall be conformal coated to meet the requirements of military specification MIL-I-46058C. All Sign System components shall be certified to have been subjected to a "burn-in" test of a minimum of twelve (12) hours operation in a temperature of 150°F prior to final inspection.

1.42.6 Operator Control Unit (OCU)

(1) The OCU Unit shall be used to view and update display messages. It shall be recess mounted on the Bus vehicle front Sign compartment access cover or door. The OCU shall utilize a multi-key conductive rubber pad keyboard and be designed

for transit operating conditions. Other mounting locations for the OCU shall be made available, with selection made at the pre-production meeting.

(2) Only one switch is required to activate the 3 systems (radio, surveillance and sign).

(3) The OCU Unit shall contain a display of at least two-lines of 20-character capability. The OCU Unit shall contain an audio annunciation that beeps indicating that a key is depressed. The OCU Unit shall continuously display the message associated with the selected destination readings (except the emergency message feature as noted above).

(4) If the IBIS interface is required in the Destination Sign System, an auxiliary RS232 (DB9) port shall be made optionally available on the OCU under frame for inputs from any wireless technology that might be envisioned in the future. This auxiliary RS232 port shall operate at 9600 baud and accept commands from a wireless source (such as Spread Spectrum receivers) and will set destination sign addresses as if manually operated by the OCU operator.

(5) If the J1708 interface is selected for the Destination Sign System, an auxiliary J1708 port shall be made available on the J1708 OCU so that auxiliary J1708 commands may be provided to the Destination Sign system from a wireless source that conforms to the J1708 command structure.

1.42.7 Interconnecting Cabling

(1) Data Communication Single twisted pair (two conductors) cable

(2) Power Cabling - three conductor cable connecting to the switched and unswitched (battery) power and a return (battery)

(3) OCU Unit cable single twisted pair cable between the OCU and front

1.43 Passenger Information and Advertising

1.43.1 Interior Displays

Advertising media 11 inches high and 0.09 inch thick shall be retained near the juncture of the bus ceiling and sidewall. The retainers may be concave and shall support the media without adhesives. The media shall be illuminated by the interior light system.

1.43.2 Exterior Displays

As an option, provisions shall be made to integrate advertising into the exterior design of the bus. Advertising media, frames or supporting structures shall not detract from the readability of destination signs and signal lights, and shall not compromise passenger visibility. Advertising provisions shall not cause pedestrian hazards or foul automatic bus washing equipment, and shall not cover or interfere

with doors, air passages, vehicle fittings, or in any other manner restrict the operation or serviceability of the bus.

1.43.3 Passenger Stop Request/Exit Signal

(1) The ambulatory passenger signal shall be clear pull cords conveniently located so standing and seated passengers can easily reach it, this includes down the mullions. The pull cords shall be accessible from the exit door area. There shall be a lighted display sign which indicates "STOP REQUESTED" when the signal is activated. The signal chime shall operate once, and the sign shall light and remain lit with the chime disabled until the next stop when the front doors or rear doors have been opened, resetting the system.

(2) There shall be a second passenger signal of a different tone that meets the ADA requirements mounted to the bottom of the flip seat for the mobility aid users to alert the operator when a mobility aid user wishes to disembark. One such system that meets these minimum requirements is the Tape Switch Corp. 3.5" x 7" yellow push pad. There shall be two lights on the operator's front dash that indicate when an ambulatory or non-ambulatory passenger wishes to disembark.

1.43.4 Communications - Video Surveillance System (as an option)

An Angel Trax or approved equal video surveillance system shall be required. The system will require minimum of 5 internal and minimum of 1 external camera locations. The DVR shall have GPS, a 2 TB HDD, 64GB SS Memory Card, G Force Sensor and be mounted in a secured electrical cabinet. The GPS antenna shall be roof mounted. An event / status indicator switch shall be located on the left side of the operator's dash.

1.43.5 Mobile Radio System

A separate electrical circuit protected with the circuit breaker shall be provided to the radio transceiver location. The radio circuit shall be connected and placed to minimize electrical noise and transients. The power supply should be proposed with available variations to accommodate various systems in use by the several procuring Agencies.

1.43.6 Electronics/Equipment Compartment

(1) Each bus shall be equipped with a fully sealed compartment located on the left front wheelhouse to provide a mounting location for radio equipment, video recording equipment, APC equipment and other electronic equipment. The compartment shall be lockable, completely water resistant and of steel construction. It shall be accessible from inside the bus, shall have 3 slide trays that automatically lock into place for easy maintenance of the equipment. The compartment shall be water resistant when the service door is secured. The compartment shall be supplied with power and ground circuit requirements.

(2) A location convenient to the operator shall be provided for the radio control head, speaker and handset. The antenna mounting and lead termination shall be accessible from the bus interior. Conduit shall lead to the radio compartment and

shall have a minimum bend radius adequate for easy pulling of coaxial cable. An access plate shall be provided in the ceiling. The compartment door shall have a lock. A sealing provision (gasket) shall be incorporated in the door of this compartment. The radio compartment finish shall be powder coated Black, standard black, or parish designated color.

1.43.7 Radio Mounting

A suitable area shall be provided for the mounting of communication Radio. This mounting could range from a simple plate to a box to contain the radio. A factor governing the mounting of the radio is what space is available. Another provision is that the cable that connects the radio and control head switch must be routed to an area immediately accessible to the operator.

1.43.8 Radio Transmitter

A Radio control head and speaker mounting plate shall be installed in a location to provide easy access for operator operation. The hand set shall be hand held and be equipped with a cradle harness. The radio handset will be a telephone hand set with magnetic hang up cup. All switches and controls shall be permanently and clearly labeled.

1.43.9 Antenna

A single antenna will be mounted on the roof of each bus that will accommodate RF/GPS/Cellular. This antenna shall be located as close to midpoint between the two sides as practical, but not on a seam, and as close to the area of the radio, as to preclude a long run of coaxial cable that connects the radio and the antenna, so as to provide access below, should the antenna ever need to be changed.

1.43.10 ITS (optional pricing)

A fully integrated ITS system, inclusive of CAD/AVL (software, configuration, and implementation), MDT (GPS, cell modem, power filter, hardware and installation), AVA and head sign/ocu integration (IVLU, interior sign, PA Amp, Vehicle Cables, equipment plate, installation, single point of sign on with all LED signage and farebox).

1.43.11 Voice Annunciation (optional pricing)

An automated voice announcement system shall be provided, which allows integration to the all-destination signs and the OCU. An interior LED sign will also be provided to display for the passengers the voice announcements being provided by the AVA. Bidders shall provide optional pricing for AVA systems from Passio, Avail, and other approved equals.

1.44 Maintenance and Inspection

1.44.1 Maintenance and Inspection

(1) Scheduled maintenance tasks shall be related and shall be, in accordance with the manufacturer's recommended preventative maintenance schedule (along with routine daily service performed during the fueling operations).

(2) Test ports shall be provided for commonly checked functions on the bus, such as air intake, exhaust, hydraulic, pneumatic, charge-air and engine cooling systems, engine, transmission, etc.

(3) All Engine and Transmission components will have the fluid sampling valves (or equivalents) installed that are easy to access: device and location selection to be made at pre-production meeting.

(4) The manufacturer shall give prime consideration to the routine problems of maintaining the vehicle. All bus components and systems, both mechanical and electrical, which will require periodic physical work or inspection processes shall be installed so that a minimum of time is consumed in gaining access to the critical repair areas. It shall not be necessary to disassemble portions of the bus structure and/or equipment such as seats and flooring under seats in order to gain access to these areas. Each bus shall be designed to facilitate the disassembly, reassembly, servicing or maintenance, using tools and equipment that are normally available as standard commercial items.

(5) Requirements for the use of unique specialized tools will be minimized. The body and structure of the bus shall be designed for ease of maintenance and repair. Individual panels or other equipment which may be damaged in normal service shall be repairable or replaceable. Ease of repair shall be related to the vulnerability of the item to damage in service.

(6) Contractor shall provide a list of all special tools and pricing required for maintaining this equipment. Said list shall be submitted as a supplement to the Pricing Schedule.

(7) Jefferson Parish will be responsible for vehicle maintenance once vehicles are delivered and accepted.

NOTE: Tools such as compartment door keys, bellows gauges and other tools that are required for daily maintenance and inspections shall not be included in the special tool list and shall be furnished for each bus.

1.45 Interchangeability

1.45.1 Interchangeability

(1) Unless otherwise agreed, all units and components procured under this Contract, whether provided by Suppliers or manufactured by the Contractor, shall be duplicates in design, manufacture and installation to ensure interchangeability among buses in each separate order group in this procurement. This interchangeability shall extend to the individual components as well as to their locations in the buses. These components shall include, but are not limited to, passenger window hardware, interior trim, lamps, lamp lenses and seat assemblies.

Components with non-identical functions shall not be, or appear to be, interchangeable.

(2) Any one component or unit used in the construction of these buses shall be an exact duplicate in design, manufacture and assembly for each bus in each order group in this Contract. Contractor shall identify and secure approval for any changes in components or unit construction provided within a Contract.

(3) In the event that the Contractor is unable to comply with the interchangeability requirement, the Contractor must notify the Parish and obtain the Parish's prior written approval, including any changing in pricing.

(4) Parish shall review proposed product changes on a case-by-case basis and shall have the right to require extended warranties to ensure that product changes perform as least as well as the originally supplied products.

1.46 Training

1.46.1 Training

(1) Along with the purchase of new buses, it is the Parish's requirements to have the manufacturer provide an appropriate program of instruction targeted to the operator, servicing, and maintenance personnel. This will be accomplished through a combination of Parish on-site and Contractor and/or supplier site training.

(2) All training instructors shall be competent to teach the course area they are instructing. Further, all instructors shall speak English and have a complete understanding of the English language. If the instructor or vendor presenter lacks the skill or knowledge to provide instruction, or cannot communicate with the students, the Procuring Parish reserves the right to request that the instructor be replaced and the area of training be repeated.

All Training will be priced as an option and separately from the base bus price.

1.47 Operator Orientation

1.47.1 Operator Orientation

The Contractor shall provide an 8-hour course of instruction for Jefferson Parish for Operations personnel. Class size is not to exceed 10 employees per session. The program shall include, but not be limited to the following:

Operator Compartment, Controls and Switches, Warning Indicators and Gauges, Seat Adjustment, Door Control, Walk Around Inspection, Compartment-by-Compartment Explanation, Mirror Adjustments, Climate Control System, Wheelchair Ramp, Safety Equipment, Emergency Procedures Wheelchairs Securement

1.48 Maintenance Orientation

1.48.1 Maintenance Orientation

The Contractor shall provide an 8-hour course of instruction for Jefferson Parish Maintenance personnel on Vehicle Servicing. Class size is not to exceed 10 employees per session. At minimum, the course shall cover the following areas:

Chassis, Suspension, Steering, Axles, Brakes Air, Body, Doors, Electrical, Engine, Fuel, Transmission, HVAC, Fire Suppression, Towing/Jacking

1.49 Technical Training

1.49.1 Technical Training

(1) The Contractor shall provide a structured program of technical training which will consist of specific and identifiably separate curriculum for each subject area. Each subject area training session shall be between eight (8) and forty (40) classroom/hands-on hours based on subject area, with class size being no more than (10) participants. The training will be delivered at the Procuring Parish's location on a schedule coordinated by the Parish's training department and the Contractor.

(2) The following subject areas will be offered:

Body and Chassis, Suspension and Steering, Electrical and Electronics, Air and Brake System, HVAC/Climate Controls, Engine, Transmission, Wheelchair Ramp System, Destination Signs, Doors, Axles and Tires and Fire Suppression

(3) The technical training shall be delivered on a schedule coordinated between the Parish's training department and the Contractor. The subject area of sessions to be provided will be negotiated between the Procuring Parish's training personnel and the Contractor, with the base requirement being 96 hours.

1.50 OEM

1.50.1 OEM

The Contractor shall provide two (2) class slots at the manufacturer's suppliers training facility for technical instruction course on the operation, diagnostics, troubleshooting, repair, and servicing of the below listed areas:

- (1) Engine
- (2) Transmission

1.51 Warranty

1.51.1 Warranties in this document are in addition to any statutory remedies or warranties imposed on the Supplier.

The Supplier is individually and totally responsible to the Jefferson Parish Department of Transit Administration for all warranty claims. Consistent with this requirement, the Supplier warrants and guarantees to the Jefferson Parish

Department of Transit Administration each complete Bus, including sub-systems and components as follows:

(1) Complete Bus

- i. (1) One (1) year / fifty thousand (50,000) miles warranty coverage on parts and labor, whichever comes first. All warranties stated in this section apply, whichever comes first on coverage expiration.

(2) Sub-Systems and Components

- i. Engine - Two (2) year / unlimited miles warranty coverage on parts and labor.

As an option, the cost for Five (5) year / three hundred thousand (300,000) miles warranty coverage will be made available and priced separately.

- ii. Transmission - two (2) year / unlimited miles warranty coverage on parts and labor.

As an option, the cost for five (5) year / three hundred thousand (300,000) miles warranty coverage will be made available and priced separately.

- iii. Differential - two (2) years / unlimited miles warranty coverage on parts and labor.

- iv. HVAC - three (3) years / unlimited miles warranty on parts and labor.

- v. Basic Body Structure - three (3) years / unlimited miles warranty on parts and labor.

- vi. Structure/Body Integrity - seven (7) years / unlimited miles warranty on parts and Labor.

- vii. Exterior Paint - three (3) years / unlimited miles warranty on parts.

- viii. Sub-Flooring and Rubber Flooring - twelve (12) years / unlimited miles warranty on parts and labor.

- ix. All other components, sub-systems or appurtenances are to carry the manufacturer's basic warranty, but in no event will any warranty be less than one (1) year on parts and labor.

1.51.2 All warranty dates will start from the in-service date of each bus received.

1.51.3 Voiding of Warranty

The warranty shall not apply to any part or component of the bus that has been subject to misuse, negligence, accident, or that has been repaired or altered in any way so as to adversely affect its performance or reliability, except insofar as such repairs were made in accordance with the Supplier's maintenance manuals and the workmanship was in accordance with recognized standards of the industry.

1.51.4 Exceptions to Warranty

The warranty shall not apply to scheduled maintenance items such as filters. Consumable items are only fuel, oil and lubricants. Items with progressive wear characteristics such as belts, wiper blades, etc. are not excluded from warranty and should not be of poor quality that requires frequent change. The warranty shall not apply to tires, nor to any items furnished by the Jefferson Parish Department of Transit Administration such as radios, fare boxes, and other auxiliary equipment, except insofar as such equipment may be damaged by the failure of a part, component, or design for which the Supplier is responsible.

1.51.5 Fleet Defects

A fleet defect is defined as the failure of identical items or sub-systems covered by the warranties of this contract, in proportion to the total number of buses delivered. Deliveries of one (1) to twenty (20) buses, the proportion shall be fifty percent (50%). Deliveries of twenty (20) buses or more, the proportion shall be twenty-five percent (25%).

1.51.6 Scope of Fleet Defect Provisions

- (1). The Supplier shall promptly, upon notification, correct all fleet defects as defined above and undertake a work program designed to prevent the occurrence and reoccurrence of the same defect in all buses purchased under this contract.
- (2) Detailed instructions for any work program must be submitted to the Jefferson Parish Department of Transit Administration, in writing, before any work commences.
- (3) The warranty on repairs to items or sub-systems determined to be fleet defects shall be extended for one (1) year or fifty thousand (50,000) miles to assure the corrections made are not a temporary fix, beginning on the repair/replacement date for the correction on the last bus in the fleet covered by the warranty of this contract. If the fleet defect failure reoccurs during this period the fleet defect status will again be applied until there is no reoccurrence.
- (4) If the Supplier does not start the work program within thirty (30) calendar days after being notified of the fleet defect, the Jefferson Parish Department of Transit Administration reserves the right to start the repairs unless the Supplier has an understanding with the Jefferson Parish Department of Transit Administration's Warranty Department that thirty (30) calendar days is not sufficient and an agreement has been made on the time frame.

(5) Fleet defect work performed by the Jefferson Parish Department of Transit Administration will be charged back to the Supplier at the labor rate of forty-five dollars (\$45.00) per hour.

(6) The Supplier shall be totally responsible for the correction of all fleet defects. The Jefferson Parish Department of Transit Administration will make the bus available to the Supplier or Supplier's representative upon timely notice.

1.51.7 Materials and Accessories Responsibility

The Contractor shall be responsible for all materials and workmanship in the construction of the equipment and all accessories used whether the same are manufactured by the Contractor or obtained from the Contractor or Subcontractor.

1.51.8 Spare Parts

The Contractor shall guarantee the availability of replacement parts for this equipment for at least a twelve (12) year period after the date of acceptance. Spare parts shall be interchangeable with the original equipment and shall be manufactured in accordance with the quality assurance provisions of this contract.

1.51.9 Maintenance and Parts Manuals

The Contractor shall provide one (1) set of manuals for each three (3) buses ordered. This set will include a service manual, parts manual, electrical schematic manual and the same for all subsystems and sub components incorporated in the equipment. Additionally, the Contractor will provide all the aforementioned manuals on compact disc (CD) formatted in a searchable portable document format (PDF). The Contractor shall keep maintenance information available for a period of twelve (12) years after the date of acceptance of the equipment procured under this contract. The Contractor shall also keep all information up-to-date for a period of twelve (12) years.

1.51.10 Material Safety Data Sheets

In compliance with Louisiana Law, the Contractor must submit any required Material Safety Data Sheets on hazardous chemicals or substances supplied to the Jefferson Parish Department of Transit Administration. These sheets shall be provided upon delivery.

ATTACHMENT A – VEHICLE AND CONTRACTOR INFORMATION QUESTIONNAIRE

RETURN WITH YOUR BID

Contractor will attach to this form:

1. A listing of staff that will be assigned to the contract (sales, customer service, technical assistance), along with information demonstrating their experience and capabilities.
2. The address of the manufacturing facilities where the buses will be constructed
3. The technical sheets below for each size / model bus proposed.

Bus Manufacturer: _____

Bus Model Number: _____

Basic Body Construction Type: _____

General Dimensions

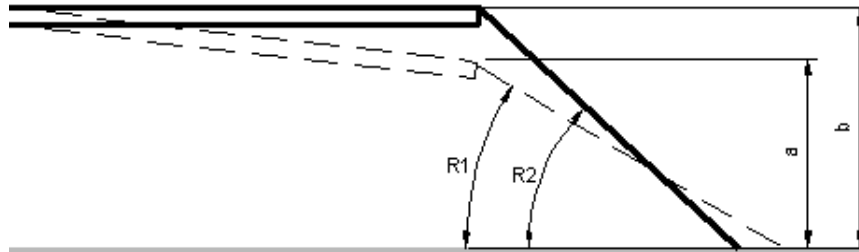
Overall length	Over bumpers	<input type="text"/>	feet	<input type="text"/>	inches
	Over body	<input type="text"/>	feet	<input type="text"/>	inches
Overall width	Over body excluding mirrors and lights	<input type="text"/>	feet	<input type="text"/>	inches
	Over body including mirrors	<input type="text"/>	feet	<input type="text"/>	inches
	Over tires	<input type="text"/>	feet	<input type="text"/>	inches
Overall height (maximum)		<input type="text"/>	feet	<input type="text"/>	inches

Angle of approach	<input type="text"/>	degrees
Angle of departure	<input type="text"/>	degrees
Breakover angle 1	<input type="text"/>	degrees
Breakover angle 2	<input type="text"/>	degrees

Doorway clear opening (at widest point) inches

	Width with grab handles	Width without grab handles	Height
Front door	<input type="text"/> inches	<input type="text"/> inches	<input type="text"/> inches
Center door (1)	<input type="text"/> inches	<input type="text"/> inches	<input type="text"/> inches
Center door (2)	<input type="text"/> inches	<input type="text"/> inches	<input type="text"/> inches
Rear door	<input type="text"/> inches	<input type="text"/> inches	<input type="text"/> inches

Front axle floor height above ground (centerline of bus)	<input type="text"/> inches
Center axle floor height above ground (centerline of bus)	<input type="text"/> inches
Rear axle floor height above ground (centerline of bus)	<input type="text"/> inches
Step height from ground (measured at center of doorway)	<input type="text"/> inches



	Front doorway	Center doorway	Ramp angle	Rear doorway
Kneeled	<input type="text"/> inches (a)	<input type="text"/> inches (a)	<input type="text"/> degrees (R1)	<input type="text"/> inches (a)
Unkneeled	<input type="text"/> inches (b)	<input type="text"/> inches (b)	<input type="text"/> degrees (R2)	<input type="text"/> inches (b)

Interior head room (floor to ceiling at center of aisle)

First axle location	<input type="text"/> inches
Center of articulation	<input type="text"/> inches
Rear axle location	<input type="text"/> inches
Rear settee (in front of seat)	<input type="text"/> inches

Aisle width

Minimum width on floor between first axle wheel housings	<input type="text"/> inches
Minimum width on floor between center axle (1) wheel housings	<input type="text"/> inches
Minimum width on floor between center axle (2) wheel housings	<input type="text"/> inches
Minimum width on floor between rear axle wheel housings	<input type="text"/> inches

Minimum ground clearance

Outside axles zones	<input type="text"/> inches
Inside axles zones	<input type="text"/> inches

Horizontal turning envelope (see diagram below)

Outside body turning radius, TR0 (including bumper) feet inches
 Inside Body Turning Radius innermost point, TR4 (including bumper) feet inches

Wheel base

First axle to center/rear axle inches
 Center axle to rear axle inches

Overhang, centerline of axle over bumper

Front inches
 Rear inches

Floor

Maximum interior floor slope (from horizontal) degrees

Capacity

Total number of passenger sittings
 Passenger seating manufacturer/model number
 Total number of standing passengers (1 per 1.5 sq. ft.)
 Minimum hip to knee space inches
 Maximum hip to knee space inches
 Restraint system type and model number

Bus weight

	Curb weight		Curb weight plus seated load*		GVWR	
First axle	<input type="text"/>	lbs	<input type="text"/>	lbs	<input type="text"/>	lbs
Center axle	<input type="text"/>	lbs	<input type="text"/>	lbs	<input type="text"/>	lbs
Rear axle	<input type="text"/>	lbs	<input type="text"/>	lbs	<input type="text"/>	lbs
Total	<input type="text"/>	lbs	<input type="text"/>	lbs	<input type="text"/>	lbs

* Including operator and passengers at 150 lbs per person

Steering Axles

Manufacturer
 Type and weight rating
 Model number

Drive axle (Center Rear)

Manufacturer	
Type and weight rating	
Model number	

Drive axle ratio

Differential ratio	
Hub reduction ratio (if used)	
Final axle ratio (if hub reduction is used)	

Brake system

Make/type of fundamental system	
First axle brake chamber model	
Center axle brake chamber model	
Rear axle brake chamber model	

First axle slack adjuster

Manufacturer	
Model number	

Center axle slack adjuster

Manufacturer	
Model number	

Rear axle slack adjuster

Manufacturer	
Model number	

First axle brake drum/rotor

Manufacturer	
--------------	--

Center axle brake drum/rotor

Manufacturer	
--------------	--

Rear axle brake drum/rotor

Manufacturer	
--------------	--

Air compressor

Manufacturer		
Type		
Model number		
Rated capacity		cfm

Capacity at idle	<input type="text"/>	cfm
Maximum warranted speed	<input type="text"/>	rpm
Idle speed	<input type="text"/>	rpm
Drive type	<input type="text"/>	
Governor cut-in pressure	<input type="text"/>	psi
Governor cut-out pressure	<input type="text"/>	psi

Air Reservoir Capacity

Manufacturer			
Supply reservoir number and size	<input type="text"/>	/	<input type="text"/> cubic inches total
Primary reservoir number and size	<input type="text"/>	/	<input type="text"/> cubic inches total
Secondary reservoir number and size	<input type="text"/>	/	<input type="text"/> cubic inches total
Parking reservoir number and size	<input type="text"/>	/	<input type="text"/> cubic inches total
Accessory reservoir number and size	<input type="text"/>	/	<input type="text"/> cubic inches total
Other reservoir number and size	<input type="text"/>	/	<input type="text"/> cubic inches total

Cooling System

	Radiator	Charge air cooler
Manufacturer	<input type="text"/>	<input type="text"/>
Type	<input type="text"/>	<input type="text"/>
Model number	<input type="text"/>	<input type="text"/>
Number of tubes	<input type="text"/>	<input type="text"/>
Fins per inch	<input type="text"/>	<input type="text"/>
Fin thickness (inches)	<input type="text"/>	<input type="text"/>
Fin construction	<input type="text"/>	<input type="text"/>

Total cooling system capacity (gallons)	<input type="text"/>	gallons
Radiator fan manufacturer	<input type="text"/>	
Fan speed/control type (mech/elect/hyb)	<input type="text"/> / <input type="text"/>	
Surge tank capacity	<input type="text"/>	gallons
Surge tank material	<input type="text"/>	
Overheat alarm temperature	<input type="text"/>	degrees F
Shutdown temperature settings	<input type="text"/>	degrees F

Electrical

Primary interior lighting system

Manufacturer	
Type	
Model number	

Alternator

Manufacturer	
Type	
Model number	
Output at idle	

Voltage regulator

Manufacturer	
Model number	

Voltage equalizer

Manufacturer	
Model number	

Auxiliary inverter (120/240)

Manufacturer	
Model number	
Inverter technology	
Output voltage(s)	

Starter motor

Manufacturer	
Voltage	
Model number	

Batteries/energy storage – low voltage

Manufacturer	
Type	
Model number	
Cold cranking amps	

Batteries/energy storage – high voltage

Manufacturer	
Type	
Model number	
Energy density	
Specific power	
Operating temperature range	
Cooling/heating system	

Engine

Manufacturer	
Model number/version	
Horsepower/torque rating	

Fire Suppression/Methane Detection System

Manufacturer				
Model number				
Number of detectors	<input type="text"/>	fire	<input type="text"/>	methane
Type of detector	<input type="checkbox"/> Thermal <input type="checkbox"/> Optical			
Battery backup	<input type="checkbox"/> Yes <input type="checkbox"/> No			

Bumpers

Manufacturer	
Type	

Fuel and Exhaust System

Fuel type	
Operating range and route profile	

Fuel tanks (liquid fuels)

Manufacturer					
Capacity (total and usable)	<input type="text"/>	Gallons	/	<input type="text"/>	Gallons
Construction material					
Quantity and location of tanks					

Fuel tanks (gaseous fuels)

Manufacturer					
Capacity (total and usable)	<input type="text"/>	SCF	/	<input type="text"/>	SCF
Construction material					

Quantity and location of tanks

--

Exhaust system

Diesel particulate filter manufacturer

Describe DPF electronic interface

Muffler manufacturer (if applicable)

Air Suspension

Air spring manufacturer

Air spring quantity per axle

Shock absorber manufacturer

Shock absorber quantity per axle

Front	Rear

Steering

Pump manufacturer

Pump model number

Steering gear manufacturer

Steering gear model number

Steering gear type

Steering wheel diameter

Maximum effort at steering wheel*

	inches

* Unloaded stationary coach on dry asphalt pavement

Hybrid

Manufacturer

Type

Model number

Type ventilation / cooling

Transmission

Manufacturer

Type

Model number

Number of forward speeds

Traction motor horsepower rating

Type ventilation/cooling

Propshaft

Manufacturer

--

Wheels

Manufacturer
Type
Size
Mounting type
Bolt circle diameter
Protective coating

Tires

Manufacturer
Type
Size
Load range/air pressure

Door System

Door panels

Manufacturer

Type

Front door
Center door (1)
Center door (2)
Rear door

	Manufacturer	Type
Front door		
Center door (1)		
Center door (2)		
Rear door		

Heating and Ventilating Equipment

Heating system capacity
Air conditioning system capacity
Ventilating capacity
Manufacturer and model
Refrigerant type

	Btu
	Btu
	CFM per passenger

Driving heater

Manufacturer
Type
Model number
Capacity

Auxiliary heater

Manufacturer
Type
Model number
Capacity

Floor heaters

Manufacturer
Type/number
Model number
Capacity

Passenger Loading System

Manufacturer
Type (hydraulic, electric or both)
Model number
Capacity (lbs.)

Dimensions

Width of ramp inches
Length of ramp inches

Cycle times

Normal idle

Fast idle

Stowed to ground seconds
Ground to stow seconds

seconds
 seconds

Electronics

Video system manufacturer
Video system model number
Number of cameras
Multiplex system manufacturer
Multiplex system model number
Automatic passenger counter system manufacturer
Automatic passenger counter system model number
Destination sign manufacturer
Destination sign model number
AVL/AVM system manufacturer
AVL/AVM system model number
Passenger information system manufacturer
Passenger information system model number

Coach Body Fittings

Passenger windows manufacturer

--

Exterior/interior mirrors

Size

--

Manufacturer

--

Model number

--

Manufacturer part numbers

--

Bicycle racks

Manufacturer

--

Model number

--

Paint system

Manufacturer

--

Type

--

**APPENDIX A
RETURN WITH YOUR BID**

Acknowledgement of Required Federal Clauses and Certifications

The Agreement between the Jefferson Parish Department of Transit Administration and the Federal Transportation Administration (FTA) has specific provisions that are passed on to all third-party contractors including, but not limited to, Civil Rights, Nondiscrimination, Affirmative Action/Equal Employment Opportunities, Disadvantaged Business Enterprise, Debarment and Suspension, and all applicable federal regulations. These provisions and all applicable appendices of the Agreement are herein incorporated by reference and made a part of this contract.

Signed:

Authorized Signing Official

Date

APPENDIX A-1

APPLICABILITY OF THIRD-PARTY CONTRACT PROVISIONS

No.	PROVISION	Professional Services/A&E	Operations/Management	Rolling Stock Purchases	Construction	Materials & Supplies
1	No Federal Government Obligations to Third Parties (by Use of a Disclaimer)	All	All	All	All	All
2	Program Fraud and False or Fraudulent Statements and Related Acts	All	All	All	All	All
3	Access to Records and Reports	All	All	All	All	All
4	Changes to Federal Requirements	All	All	All	All	All
5	Civil Rights and Equal Opportunity	All	All	All	All	All
6	Disadvantaged Business Enterprises (DBEs)	All	All	All	All	All
7	Incorporation of FTA Terms	All	All	All	All	All
8	Safe Operation of Motor Vehicles	All	All	All	All	All
9	Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment	All	All	All	All	All
10	Resolution of Disputes, Breaches, or Other Litigation	Exceeds Simplified Acquisition Threshold	Exceeds Simplified Acquisition Threshold	Exceeds Simplified Acquisition Threshold	Exceeds Simplified Acquisition Threshold	Exceeds Simplified Acquisition Threshold
11	Termination	>\$10,000 if 49 CFR Part 18 applies.	>\$10,000 if 49 CFR Part 18 applies.	>\$10,000 if 49 CFR Part 18 applies.	>\$10,000 if 49 CFR Part 18 applies.	>\$10,000 if 49 CFR Part 18 applies.
12	Special EEO Provision for Construction Contracts				>\$10,000 if 49 CFR Part 18 or 19 indicate that DOL EEOC regs at 41 CFR Chap 60 apply.	
13	Government-Wide Debarment and Suspension	>\$25,000	>\$25,000	>\$25,000	>\$25,000	>\$25,000
14	Notice to FTA and U.S. Inspector General of Fraud, Waste, or Abuse, or Other Legal Matters	>\$25,000	>\$25,000	>\$25,000	>\$25,000	>\$25,000

No.	PROVISION	Professional Services/A&E	Operations/ Management	Rolling Stock Purchases	Construction	Materials & Supplies
15	Lobbying	>\$100,000	>\$100,000	>\$100,000	>\$100,000	>\$100,000
16	Buy America			>\$150,000	>\$150,000	>\$150,000
17	Clean Air	>\$150,000	>\$150,000	>\$150,000	>\$150,000	>\$150,000
18	Clean Water	>\$150,000	>\$150,000	>\$150,000	>\$150,000	>\$150,000
19	Cargo Preference			For property transported by ocean vessel.	For property transported by ocean vessel.	For property transported by ocean vessel.
20	Fly America	For foreign air transport or travel.	For foreign air transport or travel.	For foreign air transport or travel.	For foreign air transport or travel.	For foreign air transport or travel.
21	Construction Employee Protections – Davis- Bacon Act				>\$2,000 (including ferries)	
22	Construction Employee Protections – Contract Work Hours & Safety Standards Act		>\$100,000	>\$100,000	>\$100,000 (including ferries)	
23	Construction Employee Protections – Copeland Anti-Kickback Sections 1 and 2				All (Section 1) >\$2,000 (Section 2)	
24	Bonding for Construction Activities				>\$250,000	
25	Seismic Safety	A&E for new buildings & additions			new buildings	
26	Non-Construction Employee Protections – Contract Work Hours & Safety Standards Act	>\$100,000	>\$100,000	>\$100,000		>\$100,000
27	Transit Employee Arrangements		Transit Operations			
28	Charter Service Operations		All			
29	School Bus Operations		All			
30	Drug and Alcohol Testing		Transit Operations			
31	Patent Rights and Rights in Data	Research & Development				

No.	PROVISION	Professional Services/A&E	Operations/ Management	Rolling Stock Purchases	Construction	Materials & Supplies
32	Energy Conservation	All	All	All	All	All
33	Recycled Products		EPA-selected items \$10,000 or more annually		EPA-selected items \$10,000 or more annually	EPA-selected items \$10,000 or more annually
34	Conformance with ITS National Architecture	ITS Projects	ITS Projects	ITS Projects	ITS Projects	ITS Projects
35	Access for Individuals with Disabilities	All	All	All	All	All
36	Assignability Clause	All	All	All	All	All
37	Bus Testing			All		
38	Buy America – Rolling Stock			>\$150,000		
39	Pre-Award and Post-Award Audits of Rolling Stock			>\$150,000		
40	Federal Motor Vehicle Safety Standards (FMVSS)			>\$150,000		

APPENDIX A-2

FEDERAL PROVISIONS, REQUIRED CLAUSES, AND CERTIFICATIONS

The following federal clauses and provisions are incorporated by reference in any contract resulting from this procurement issued by JPTA. Some clauses apply to all contracts, while some only apply to certain activities or dollar thresholds. The application of each clause is included in the following summary of applicable clauses and certifications.

These procurement provisions and required contract clauses are in addition to other General Terms and Conditions, Special Terms and Conditions, Bidding or Proposal Procedures, and Bid or Proposal Forms that may also be incorporated by reference in any contract. Some provisions and clauses require the Bidder or Proposer to execute and submit certain required certifications with the bid or proposal. Failure to execute and submit required certifications with the bid or proposal documents may render a bid or proposal non-responsive.

1. No Federal Government Obligation to Third Parties

(Applies to all contracts)

JPTA and the Contractor acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this contract and shall not be subject to any obligations or liabilities to JPTA, the Contractor, or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying contract.

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

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

31 U.S.C. 3801-3812 et seq., 49 CFR Part 31, 18 U.S.C. 1001, 49 U.S.C. 5307, 49 USC § 5323(I)

(Applies to all contracts)

The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 et seq. and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. Part 31, apply to its actions pertaining to this Project. Upon execution of the underlying contract, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the FTA assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.

The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under 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 Contractor, to the extent the Federal Government deems appropriate.

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

3. Access to Records and Reports

(Applies to all contracts)

The Contractor will retain and will require its subcontractors of all tiers to retain, complete and readily accessible records related in whole or in part to the contract, including, but not limited to: data, documents, reports, statistics, sub-agreements, leases, subcontracts, arrangements, other third-party agreements of any type, and supporting materials related to those records. The Contractor agrees to provide sufficient access to FTA and its contractors to inspect and audit records and information related to the performance of this contract as reasonably may be required. The Contractor also agrees to permit FTA and its contractors' access to the sites of performance under this contract as reasonably may be required.

The Contractor agrees to comply with the record retention requirements in accordance with 2 CFR 200.333. The Contractor shall maintain all books, records, accounts, and reports required under this Contract for a period of not less than three (3) years after the date of termination or expiration of this Contract, except in the event of litigation or settlement of claims arising from the performance of this Contract, in which case records shall be maintained until the disposition of all such litigation, appeals, claims, or exceptions related thereto.

4. Changes to Federal Requirements

(Applies to all contracts)

The Contractor shall at all times comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Master Agreement between JPTA and FTA, as they may be amended or promulgated from time to time during the term of this contract. The contractor's failure to so comply shall constitute a material breach of this contract.

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

5. Civil Rights and Equal Opportunity

(Applies to all contracts)

JPTA is an Equal Opportunity Employer (EEO). As such, it agrees to comply with all applicable Federal civil rights laws and implementing regulations. Apart from inconsistent requirements imposed by Federal laws or regulations, JPTA agrees to comply with the requirements of 49 U.S.C. § 5323(h) (3) by not using any Federal assistance awarded by FTA to support procurements using exclusionary or discriminatory specifications.

Upon entering into a contract with JPTA, the Contractor shall at all times comply with the following requirements and shall include these requirements in each subcontract entered into as part thereof:

- a. **Nondiscrimination.** In accordance with Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, sex, disability, or age. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.
- b. **Race, Color, Religion, National Origin, Sex.** In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e *et seq.*, and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. chapter 60, and Executive Order No. 11246, "Equal Employment Opportunity in Federal Employment," September 24, 1965, 42 U.S.C. § 2000e note, as amended by any later Executive Order that amends or supersedes it, referenced in 42 U.S.C. § 2000e note. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, national origin, or sex (including sexual orientation and gender identity). Such action shall include, but not be limited to, the following: employment, promotion, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply.

with any implementing requirements FTA may issue.

- c. **Age.** In accordance with the Age Discrimination in Employment Act, 29 U.S.C. §§ 621-634, U.S. Equal Employment Opportunity Commission (U.S. EEOC) regulations, “Age Discrimination in Employment Act,” 29 C.F.R. part 1625, the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6101 *et seq.*, U.S. Health and Human Services regulations, “Nondiscrimination on the Basis of Age in Programs or Activities Receiving Federal Financial Assistance,” 45 C.F.R. part 90, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.
- d. **Disabilities.** In accordance with section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794, the Americans with Disabilities Act of 1990, as amended, 42 U.S.C. § 12101 *et seq.*, the Architectural Barriers Act of 1968, as amended, 42 U.S.C. § 4151 *et seq.*, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against individuals on the basis of disability. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

6. Disadvantaged Business Enterprise (DBE)

49 CFR Part 26

(Applies to all contracts)

- a. This contract is subject to the requirements of Title 49, Code of Federal Regulations, Part 26, *Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs*. It is the policy of JPTA to practice nondiscrimination based on race, color, sex, or national origin in the award and administration of all DOT-assisted contracts. JPTA’s DBE Program, as required by 49 CFR Part 26 and as approved by DOT, is incorporated by reference in this agreement.
- b. The Contractor, sub-recipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as JPTA deems appropriate, which may include, but not be limited to:
 - 1. Withholding monthly progress payments;
 - 2. Assessing sanctions;
 - 3. Liquidated damages; and/or
 - 4. Disqualifying the contractor from future bidding as non-responsible under 49 CFR 26.13(b).
- c. The Contractor is required to pay its subcontractors performing work related to this contract for satisfactory performance of that work within ten (10) days after the Contractor’s receipt of payment for that work from JPTA. In addition, the Contractor is required to return any retainage payments to those subcontractors within 30 days after the subcontractor’s work related to this contract is satisfactorily completed and accepted. Any delay or postponement of payment from the above-referenced time frame may occur only for good cause following written approval by JPTA. This clause applies to both DBE and non-DBE subcontracts.
- d. The Contractor must promptly notify JPTA’s DBE Liaison Officer whenever a DBE subcontractor performing work related to this contract is terminated or fails to complete its work and must make good faith efforts to engage another DBE subcontractor to perform at least the same amount of work. The Contractor may not terminate any DBE subcontractor and perform that work through its own forces or those of an affiliate without prior written consent of JPTA.

7. Incorporation of Federal Transit Administration (FTA) Terms

FTA Circular 4220.1F

(Applies to all contracts)

All contractual provisions required by DOT, as set forth in FTA Circular 4220.1F, as amended, are hereby incorporated by reference. The provisions in the Circular include, in part, certain Standard Terms and Conditions required by DOT, whether or not expressly set forth in the contract provisions. Anything to the contrary herein notwithstanding, all FTA-mandated terms shall be deemed to control in the event of a conflict with other provisions.

The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any JPTA requests, which would cause JPTA to be in violation of the FTA terms and conditions.

8. Safe Operation of Motor Vehicles

23 U.S.C. Part 402, Executive Order 13043, Executive Order 13513, U.S. DOT Order 3902.10

(Applies to all contracts)

The Safe Operation of Motor Vehicles provisions apply to all federally funded third party contracts. In compliance with Federal Executive Order No. 13043, "Increasing Seat Belt Use in the United States," April 16, 1997, 23 U.S.C. Section 402 note, FTA encourages each third-party contractor to adopt and promote on-the-job seat belt use policies and programs for its employees and other personnel that operate company owned, rented, or personally operated vehicles, and to include this provision in each third-party subcontract involving the project. Additionally, recipients are required by FTA to include a Distracted Driving clause that addresses distracted driving, including text messaging in each of its third-party agreements supported with Federal assistance.

Seat Belt Use - The Contractor is encouraged to adopt and promote on-the-job seat belt use policies and programs for its employees and other personnel that operate company-owned vehicles, company- A-60 rented vehicles, or personally operated vehicles. The terms "company-owned" and "company-leased" refer to vehicles owned or leased either by the Contractor or JPTA.

Distracted Driving - The Contractor agrees to adopt and enforce workplace safety policies to decrease crashes caused by distracted drivers, including policies to ban text messaging while using an electronic device supplied by an employer, and driving a vehicle the driver owns or rents, a vehicle Contractor owns, leases, or rents, or a privately-owned vehicle when on official business in connection with the work performed under this agreement.

9. Prohibition on Certain Telecommunications and Video Surveillance Services and Equipment

2 CFR Part 200.216

(Applies to all contracts)

- a. The prohibition on certain telecommunications and video surveillance services or equipment applies to all federally funded third-party contracts. JPTA is prohibited from using federal funds to:
 1. Procure or obtain;
 2. Extend or renew a contract to procure or obtain; or
 3. Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system.
- b. As described in Public Law 115-232, section 889, "Covered telecommunications equipment or services" is:
 - a. Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities)
 - b. For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
 - c. Telecommunications or video surveillance services provided by such entities or using such equipment.

- d. Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.
- c. The Contractor or subcontractor shall not provide covered telecommunications equipment or services in the performance of this contract.

10. Resolution of Disputes, Breaches or Other Litigation

49 CFR Part 18, FTA Circular 4220.1F

(Applies to all contracts over the Simplified Acquisition Threshold, currently \$250,000)

BREACH OF CONTRACT: The successful bidder shall be deemed in breach of contract if the successful bidder: fails to comply with any terms of the contract; fails to cure such noncompliance within five (5) calendar days from the date of written notice from JPTA or such other timeframe, greater than five (5) calendar days, specified in the notice; fails to submit a written response to the notification from JPTA within five (5) calendar days after the date of the notice. All notices under the contract shall be submitted by email and followed up with a hard copy by certified mail, return receipt request, to the person specified in the notice.

The successful bidder shall not be in breach of the contract as long as its default was due to causes beyond the reasonable control of and occurred without any fault or negligence on the part of both the successful bidder and its subcontractors. Such causes may include, but not be limited to: acts of God or of the public enemy, acts of JPTA in its sovereign capacity, fires, floods, epidemics, strikes, freight embargoes, and unusually severe catastrophic weather (e.g., hurricane).

DISPUTES.

Claims. Written notice of the Contractor to file a claim must be given at the time of the occurrence or beginning of the work upon which the claim is based. Such claims, whether for money or other relief, shall be submitted in writing to the Executive Director or designee no later than sixty (60) days after final payment. The Executive Director or designee shall give written notification of the final decision on such claim to the Contractor within thirty (30) days of the date the claim was received. The Contractor may not institute legal action before receiving the final written decision unless the Executive Director or designee fails to render such decision within the specified time. Pendency of claims shall not delay payment of amounts agreed due in the final payment. (Code of Virginia, § 2.2-4363).

Claims Relief. Under certain circumstances beyond the control of the Contractor, such as acts of God, sabotage, and fire or explosion not caused by negligence of the Contractor or its agent, JPTA's Executive Director or designee may extend the time limit for performance required by the Contract. Any such extension must be issued in writing and signed by the Executive Director.

11. Termination

2 CFR §200.339, 2 CFR part 200 Appendix II (B)

(Applies to all contracts over \$10,000 total value if 49 CFR Part 18 applies)

Subject to the provisions below, the Authority upon thirty (30) days advance written notice to the other party, may terminate the contract. Upon receipt of a notice of termination, the Contractor shall cease all work underway on behalf of the Authority unless advised by the Authority to do otherwise. In the event of termination, Contractor shall be compensated only for the services as set forth in the contract provided to the satisfaction of the Authority and expenses incurred as of the date of termination. Any contract cancellation notice shall not relieve the Contractor of the obligation to deliver and/or perform on all outstanding orders issued prior to the effective date of cancellation.

- a. Termination for Convenience: In the event that the contract is terminated upon request and for the convenience of the Authority, without the required thirty (30) days advance notice, then the Authority shall be responsible for payment of services up to the termination date.

- b. Termination for Cause: Termination by the Authority for cause, default, or negligence on the part of the Contractor shall be excluded from the foregoing provision and termination costs, if any shall not apply. However, pursuant to the Default paragraph of these General Conditions, the Authority may hold the Contractor responsible for any resulting additional purchase and administrative costs. Any payment due to the Contractor at the time of termination may be adjusted to the extent of any additional costs occasioned to the Authority by reason of the Contractor's default. The thirty (30) days advance notice requirement is waived in the event of Termination for Cause.
- c. Termination Due to Unavailability of Funds in Succeeding Fiscal Years: When funds are not appropriated or otherwise made available to support continuation of performance in a subsequent fiscal year, the contract shall be canceled.

12. Special EEO Provisions for Construction Contracts

(Applies to all contracts over \$10,000 total value if 49 CFR Part 18 or 19 indicate that DOL EEOC regulations at 41 CFR Chapter 60 apply)

For activities determined by the U.S. Department of Labor (U.S. DOL) to qualify as "construction," the Contractor agrees to comply and assures the compliance of each subcontractor at any tier of the Project, with all applicable equal employment opportunity requirements of U.S. DOL regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 CFR Parts 60 *et seq.*, which implement Executive Order No. 11246 "Equal Employment Opportunity," as amended by Executive Order No. 11375, "Amending Executive Order No. 11246", relating to Equal Employment Opportunity," 42 U.S.C. § 2000(e) note, and also with any Federal laws, regulations, and directives affecting construction undertaken as part of the Project.

13. Government-Wide Debarment and Suspension

2 CFR Part 180 and 1200; 2 CFR § 200.213; 2 CFR part 200 Appendix II(I); Executive Order 12549; Executive Order 12689

(Applies to all contracts and subcontracts at any tier expected to equal or exceed \$25,000, or any contract or subcontract at any tier for federally-required audit)

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 Government-Wide Debarment and Suspension (Nonprocurement)," 2 CFR Part 180. As such, the Contractor shall verify that its principals, affiliates, and subcontractors are not excluded or disqualified as defined at 2 CFR 180.940, 180.935 and 180.945. The Contractor is required to comply with 2 CFR part 180, Subpart C, supplemented by 2 CFR part 1200, and must include the requirement to comply with 2 CFR 180, Subpart C in any lower tier covered transaction.

By signing and submitting its bid or proposal, the bidder or proposer certifies as follows:

The certification in this clause is a material representation of fact relied upon by JPTA. If it is later determined that the bidder or proposer knowingly rendered an erroneous certification, in addition to remedies available to JPTA, 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 part 180, Subpart C, as supplemented by 2 CFR part 1200, while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

JPTA will use the System for Award Management (SAM) before entering into any contracts and review the Excluded Parties List System in SAM to verify if any third-party contractor is on the excluded list.

14. Notice to ETA and U.S. Inspector General of Fraud, Waste, or Abuse, or Other Legal Matters

(Applies to all contracts and subcontracts at any tier expected to equal or exceed \$25,000, or, any contract or subcontract at any tier for federally-required audit

If a current or prospective legal matter that may affect the Federal Government emerges, the Contractor must promptly notify JPTA, which will promptly notify the FTA Chief Counsel and FTA Regional Counsel for the Region in which JPTA is located. The Contractor must include an equivalent provision in its subagreements at every tier, for any agreement that is a “covered transaction” according to 2 C.F.R. §§ 180.220 and 1200.220.

The types of legal matters that require notification include, but are not limited to, a major dispute, breach, default, litigation, or naming the Federal Government as a party to litigation or a legal disagreement in any forum for any reason.

Matters that may affect the Federal Government include, but are not limited to, the Federal Government’s interests in the Award, the accompanying Underlying Agreement between the FTA and JPTA, and any Amendments thereto, or the Federal Government’s administration or enforcement of federal laws, regulations, and requirements.

Additional Notice to U.S. DOT Inspector General. The Contractor must promptly notify JPTA, which will promptly notify the U.S. DOT Inspector General in addition to the FTA Chief Counsel or Regional Counsel for the Region in which JPTA is located, if the Contractor has knowledge of potential fraud, waste, or abuse occurring on a Project receiving assistance from FTA. The notification provision applies if a person has or may have submitted a false claim under the False Claims Act, 31 U.S.C. § 3729, et seq., or has or may have committed a criminal or civil violation of law pertaining to such matters as fraud, conflict of interest, bid rigging, misappropriation or embezzlement, bribery, gratuity, or similar misconduct involving federal assistance. This responsibility occurs whether the Project is subject to this Agreement or another agreement with JPTA involving a principal, officer, employee, agent, or Third Party Participant of the Contractor. It also applies to subcontractors at any tier. Knowledge, as used in this paragraph, includes, but is not limited to, knowledge of a criminal or civil investigation by a Federal, state, or local law enforcement or other investigative agency, a criminal indictment or civil complaint, or probable cause that could support a criminal indictment, or any other credible information in the possession of the Contractor. In this paragraph, “promptly” means to refer information without delay and without change. This notification provision applies to all divisions of the Contractor, including divisions tasked with law enforcement or investigatory functions.

15. Lobbying

31 U.S.C. § 1352, 2 CFR § 200.450, 2 CFR part 200 Appendix II (J), 49 CFR Part 20

(Applies to any contract or subcontract in excess of \$100,000)

All contractors will be required to submit a certification with the following language, as found in 49 CFR part 20, Appendices A and B:

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.

If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with 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.

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 subrecipients 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 section 1352, title 31, U.S. Code. 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.

16. Buy America

49 U.S.C. § 5323(j), 49 CFR Part 661; 49 U.S.C. 5323(j)(2)(C), 49 CFR 661.11

(Applies to all purchases of steel, iron, or manufactured products over \$ 150,000. There are additional Buy America provisions for rolling stock)

The Bidder/Contractor agrees to comply with 49 U.S.C. 5323(j) and 49 C.F.R. part 661, which provide that Federal funds may not be obligated unless all steel, iron, and manufactured products used in FTA funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a general waiver. General waivers are listed in 49 C.F.R. § 661.7. Separate requirements for rolling stock are set out at 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. § 661.11. A-17. The Bidder/Contractor must submit to JPTA the appropriate Buy America certification below with its bid. Bids or offers that are not accompanied by a completed Buy America certification will be rejected as nonresponsive.

Requirements for rolling stock are set out in 5323(j)(2)(C) and 49 CFR 661.11, which provide that Federal funds may not be obligated unless rolling stock is manufactured in the United States and have a seventy percent (70%) domestic content.

These regulations require, as a matter of responsiveness, that the Bidder or Contractor submit to JPTA the appropriate Buy America certification with all bids where FTA funds are provided, except those subject to a general waiver or less than \$150,000. Bids or offers that are not accompanied by a completed Buy America certification will be deemed nonresponsive.

17. Clean Air

42 U.S.C. § 7401 – 7671q, 33 U.S.C § 1251-1387, 2 C.F.R. part 200; Appendix II (G)

(Applies to any contract or subcontract in excess of \$150,000)

The Contractor agrees to comply with all applicable standards, orders, or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. §§ 7401 through 7671q. The Contractor agrees to not use any violating facilities and to report the use of prohibited facilities or facilities that are on or likely to be placed on the U.S. EPA “List of Violating Facilities.” The Contractor will report violations of use of prohibited facilities to FTA and it will comply with the inspection and other requirements of the Clean Air Act, as amended (42 U.S.C. § 7401-7671q) and the Federal Water Pollution Control Act as amended, (33 U.S.C. § 1251-1387).

18. Clean Water

33 U.S.C. 1251-1387

(Applies to any contract or subcontract in excess of \$150,000)

The Contractor agrees to comply with all applicable standards, orders, or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. §§ 1251 through 1387. The Contractor agrees to not use any violating facilities and to report the use of prohibited facilities or facilities that are on or likely to be placed on the U.S. EPA “List of Violating Facilities.” The Contractor shall report any violations to the FTA and the appropriate EPA Regional Office.

19. Cargo Preference Requirements

46 U.S.C. § 55305, 46 CFR, Part 381

(Applies to any contract in which equipment, materials or commodities are transported by ocean vessel)

The contractor agrees:

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;

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 loading for shipments originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill-of-lading in English for each shipment of cargo described in the preceding paragraph to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590 and to the FTA recipient (through the contractor in the case of a subcontractor's bill-of-lading.); and

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

20. "Fly America" Requirements

49 U.S.C. § 40118, 41 CFR Part 301-10; 48 CFR 47.4

(Applies to any contract which involves transportation of persons or property by air between the U.S. and a place outside of the U.S.)

The Contractor agrees to comply with 49 U.S.C. 40118 (the "Fly America" Act) in accordance with the General Services Administration's regulations at 41 CFR Part 301-10, which provide that recipients and sub-recipients of Federal funds and their contractors are required to use U.S. Flag air carriers for U.S Government-financed international air travel and transportation of personnel (and their personal effects) or property, to the extent such service is available. In the event that a contractor selects a carrier other than a U.S.-flag carrier for international air transportation, the Contractor shall submit an appropriate statement or memorandum explaining why service by a U.S. Flag air carrier was not available or why it was necessary to use a foreign air carrier and shall, in any event, provide a certificate of compliance with the Fly America requirements.

The Contractor agrees to include the requirements of this section in all subcontracts that may involve international air transportation.

21. Davis-Bacon Act

49 U.S.C. § 5333(a)

(Applies to all prime construction, alteration, or repair contracts over \$2,000)

JPTA shall place a copy of the current prevailing wage determination in the solicitation. The decision to award a contract will be conditioned upon the acceptance of the wage determination.

Under 49 U.S.C. § 5333(a), prevailing wage protections apply to laborers and mechanics employed on FTA assisted construction, alteration, or repair projects. The Contractor will comply with the Davis-Bacon Act, 40 U.S.C. §§ 3141-3144, and 3146-3148 as supplemented by DOL regulations at 29 C.F.R. part 5, "Labor Standards Provisions Applicable to Contracts Governing Federally Financed and Assisted Construction." In accordance with the statute, the Contractor shall pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, the Contractor agrees to pay wages not less than once a week. The Contractor is prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled.

22. Contract Work Hours and Safety Standards Act (Construction)

40 U.S.C. §§ 3701 – 3708; 29 CFR Part 5

(Applies to all contracts in excess of \$100,000 that involve the employment of mechanics or laborers)

The Contractor shall comply with the Contract Work Hours and Safety Standards Act, as amended, 40 U.S.C. §§ 3701 - 3708., as supplemented by DOL regulations at 29 C.F.R. Part 5.

Overtime Requirements – The Contractor shall compute the wages of every mechanic and laborer, including watchmen and guards, on the basis of a standard workweek of 40 hours. Work in excess of the standard workweek is permissible provided that the worker is compensated at a rate of not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek. The requirements of 40 U.S.C. § 3704 are applicable to construction work and provide that no laborer or mechanic be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous.

Violation; liability for unpaid wages; liquidated damages - In the event of any violation of the clause set forth herein, the Contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, 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 40 hours without payment of the overtime wages required.

Withholding for unpaid wages and liquidated damages - JPTA 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 herein.

Subcontracts - The contractor or subcontractor shall insert in any subcontracts the clauses set forth in this section and also a clause requiring the 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 the clauses set forth in this section.

23. Copeland Anti-Kickback Act (Sections 1 and 2)

18 US Code 874; 40 USC 3145; 29 CFR 3 and 5

(Applies to all construction contracts, Section 1, and all prime construction, alteration, or repair contracts over \$2,000, Section 2)

Section 1. The Contractor shall induce by force, intimidation, threat of dismissal from employment, or by any other manner, any person employed in the construction or repair of public buildings or public works that are financed in whole or in part by the United States, to give up any part of the compensation to which he or she is otherwise entitled. **Section 2.** The Contractor shall submit a weekly statement of compliance to JPTA with respect to the wages paid each employee performing covered work during the preceding week.

24. Bonding Requirements (Construction)

(Applies to all construction or facility improvement contracts or subcontracts exceeding Simplified Acquisition Threshold, currently \$250,000)

The FTA may accept the bonding policy and requirements of JPTA if it is determined that the Federal interest is adequately protected. If JPTA has not proposed alternate bonding requirements and a such a determination has not been made, the following minimum requirement apply:

Bid Bond Requirements

Bidders shall furnish a bid guaranty in the form of a bid bond, or certified treasurer's or cashier's check issued by a responsible financial institution, be issued by a fully qualified surety company acceptable to JPTA and made payable to JPTA. The amount of such guaranty shall be equal to five percent (5%) of the bid price. The bid guarantee is an assurance that the bidder will, upon acceptance of the bid, execute such contractual documents as may be required within the time specified.

In submitting this bid, it is understood and agreed by bidder that JPTA reserves the right is to reject any and all bids, or part of any bid, and it is agreed that the bid may not be withdrawn for a period of ninety (90) days subsequent to the opening of bids, without the written consent of Recipient.

It is also understood and agreed that if the undersigned bidder should withdraw any part or all of its bid within ninety (90) days after the bid opening without the written consent of JPTA or refuse or be unable to enter into this contract, he shall forfeit his bid guaranty to the extent of JPTA's damages occasioned by such withdrawal, or refusal, or inability to enter into an agreement, or provide adequate security thereof.

It is further understood and agreed that to the extent the defaulting bidder's bid guaranty shall prove inadequate to fully recompense JPTA for the damages occasioned by default, then the undersigned bidder agrees to indemnify JPTA and pay over to JPTA the difference between the bid guaranty and JPTA's total damages, so as to make JPTA whole.

Performance Bond Requirements

A Performance Bond in the amount of one hundred percent (100%) of the contract value is required by JPTA to secure fulfillment of all the contractor's obligations under the contract. Either a performance bond or an irrevocable Stand-by letter of credit, issued by a fully qualified surety company acceptable to JPTA and made payable to JPTA, shall be provided by the Contractor and shall remain in full force for the term of the contract.

JPTA may require additional performance bond protection when a contract price is increased. The increase in protection shall generally equal 100 percent of the increase in contract price. JPTA may secure additional protection by directing the Contractor to increase the penal amount of the existing bond or to obtain an additional bond.

Payment Bond Requirements

A Payment Bond in the amount of one hundred percent (100%) of the contract value is required by JPTA to assure payment as required by law of all persons supplying labor and materials in execution of the work under the contract. The bond may be issued by a fully qualified surety company acceptable to JPTA and made payable to JPTA.

25. Seismic Safety Requirements

42 U.S.C. 7701 *et seq.*, 49 CFR Part 41, Executive Order 12699

(Applies to any contract for construction of or addition to a building)

The Contractor agrees that any new building or addition to an existing building will be designed and constructed in accordance with the standards for Seismic Safety required in Department of Transportation Seismic Safety Regulations 49 CFR Part 41 and will certify to compliance to the extent required by the regulation. The Contractor also agrees to ensure that all work performed under this contract including work performed by a subcontractor is in compliance with the standards required by the Seismic Safety Regulations and the certification of compliance issued on the project.

26. Contract Work Hours and Safety Standards Act – Not Involving Construction

(Applies to any non-construction contract exceeding \$100,000)

The Contractor shall comply with all federal laws, regulations, and requirements providing wage and hour protections for non-construction employees, in accordance with 40 U.S.C. § 3702, Contract Work Hours and Safety Standards Act, and other relevant parts of that Act, 40 U.S.C. § 3701 *et seq.*, and U.S. DOL regulations, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction (also Labor Standards Provisions

Applicable to Non-construction Contracts Subject to the Contract Work Hours and Safety Standards Act),” 29 C.F.R. part 5.

Any records maintained under this section shall be made available by the Contractor for inspection, copying, or transcription by authorized representatives of the FTA and the Department of Labor, and the Contractor will permit such representatives to interview employees during working hours on the job. The contractor shall require the inclusion of the language of this clause within subcontracts of all tiers.

27. Public Transit Employee Protective Arrangements

(Applies to all contracts for transit operations)

The Contractor agrees to comply with the following employee protective arrangements of 49 U.S.C. § 5333(b) (“13(c)”):

U.S. DOL Certification. Under this Contract or any Amendments thereto that involve public transportation operations that are supported with federal assistance, a certification issued by U.S. DOL is a condition of the Contract.

Special Warranty. When the Contract involves public transportation operations and is supported with federal assistance appropriated or made available for 49 U.S.C. § 5311, U.S. DOL will provide a Special Warranty for its Award, including its Award of federal assistance under the Tribal Transit Program. The U.S. DOL Special Warranty is a condition of the Contract.

Special Arrangements. The conditions of 49 U.S.C. § 5333(b) do not apply to Contractors providing public transportation operations pursuant to 49 U.S.C. § 5310. FTA reserves the right to make case-by-case determinations of the applicability of 49 U.S.C. § 5333(b) for all transfers of funding authorized under title 23, United States Code (flex funds), and make other exceptions as it deems appropriate, and, in those instances, any special arrangements required by FTA will be incorporated herein as required.

28. Charter Bus Operations

(Applies to all contracts for operations and management)

The contractor agrees to comply with 49 U.S.C. 5323(d), 5323(r), and 49 C.F.R. part 604, which provides that recipients and subrecipients of FTA assistance are prohibited from providing charter service using federally funded equipment or facilities if there is at least one private charter operator willing and able to provide the service, except as permitted under:

1. Federal transit laws, specifically 49 U.S.C. § 5323(d);
2. FTA regulations, “Charter Service,” 49 C.F.R. part 604;
3. Any other federal Charter Service regulations; or
4. Federal guidance, except as FTA determines otherwise in writing.

The contractor agrees that if it engages in a pattern of violations of FTA’s Charter Service regulations, FTA may require corrective measures or impose remedies on it. These corrective measures and remedies may include:

1. Barring it or any subcontractor operating public transportation under its Award that has provided prohibited charter service from receiving federal assistance from FTA;
2. Withholding an amount of federal assistance as provided by Appendix D to part 604 of FTA’s Charter Service regulations; or
3. Any other appropriate remedy that may apply.

The contractor should also include the substance of this clause in each subcontract that may involve operating public transit services.

29. School Bus Operations

(Applies to all contracts for operations and management)

The contractor agrees to comply with 49 U.S.C. 5323(f), and 49 C.F.R. part 605, and not engage in school bus operations using federally funded equipment or facilities in competition with private operators of school buses, except as permitted under:

1. Federal transit laws, specifically 49 U.S.C. § 5323(f);
2. FTA regulations, "School Bus Operations," 49 C.F.R. part 605;
3. Any other Federal School Bus regulations; or
4. Federal guidance, except as FTA determines otherwise in writing.

If Contractor violates this School Bus Agreement, FTA may:

1. Bar the Contractor from receiving Federal assistance for public transportation; or
2. Require the contractor to take such remedial measures as FTA considers appropriate.

When operating exclusive school bus service under an allowable exemption, the contractor may not use federally funded equipment, vehicles, or facilities.

The Contractor should include the substance of this clause in each subcontract or purchase under this contract that may operate public transportation services.

30. Drug and Alcohol Testing

49 U.S.C. § 5331, 49 CFR Part 655 and Part 40

(Applies to Contractors Performing Safety-Sensitive Functions in Transit Operations)

FTA provides three options for JPTA to work with the Contractor to implement an effective drug and alcohol testing program. JPTA may modify the options below in determining the best approach for an effective testing program.

Option 1

The Contractor agrees to participate in JPTA's drug and alcohol program established in compliance with 49 CFR Part 655.

Option 2

The Contractor agrees to establish and implement a drug and alcohol testing program that complies with 49 CFR Parts 655, produce any documentation necessary to establish its compliance with Parts 655, and permit any authorized representative of the United States Department of Transportation or its operating administrations, the Virginia Department of Rail and Public Transportation, or JPTA, to inspect the facilities and records associated with the implementation of the drug and alcohol testing program as required under 49 CFR Parts 655 and review the testing process. The Contractor agrees further to certify annually its compliance with Parts 655 before (insert date). To certify compliance the Contractor shall use the "Substance Abuse Certifications" in the "Annual List of Certifications and Assurances for Federal Transit Administration Grants and Cooperative Agreements," which is published annually in the Federal Register.

Option 3

The Contractor agrees to establish and implement a drug and alcohol testing program that complies with 49 CFR Parts 655, produce any documentation necessary to establish its compliance with Parts 655, and permit any authorized representative of the United States Department of Transportation or its operating administrations, the Virginia Department of Rail and Public Transportation, or JPTA, to inspect the facilities and records associated with the implementation of the drug and alcohol testing program as required under 49 CFR Parts 655 and review the testing process. The Contractor agrees further to certify annually its compliance with Parts 655 before (insert date). To certify

compliance the Contractor shall use the "Substance Abuse Certifications" in the "Annual List of Certifications and Assurances for Federal Transit Administration Grants and Cooperative Agreements," which is published annually in the Federal Register.

The Contractor agrees further to [Select a, b, or c] (a) submit before (insert date or upon request) a copy of the Policy Statement developed to implement its drug and alcohol testing program; OR (b) adopt (insert title of the Policy Statement the recipient wishes the contractor to use) as its policy statement as required under 49 CFR 653 and 654; OR (c) submit for review and approval before (insert date or upon request) a copy of its Policy Statement developed to implement its drug and alcohol testing program. In addition, the contractor agrees to: (to be determined by the recipient but may address areas such as: the selection of the certified laboratory, substance abuse professional, or Medical Review Officer, or the use of a consortium).

31. Patent Rights and Rights in Data

37 CFR Part 401, 49 CFR Parts 18 and 19, 2 CFR part 200 Appendix II (F)

(Applies ONLY to research projects in which FTA finances experimental, developmental, or research work)

This Project is funded through a Federal award with FTA for experimental, developmental, or research work purposes. As such, certain Patent Rights and Data Rights apply to all subject data first produced in the performance of this Contract. The Contractor shall grant JPTA intellectual property access and licenses deemed necessary for the work performed under this contract and in accordance with the requirements of 37 C.F.R. part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by FTA or U.S. DOT. The terms of an intellectual property agreement and software license rights will be finalized prior to execution of this Agreement and shall, at a minimum, include the following restrictions: Except for its own internal use, the Contractor may not publish or reproduce subject data in whole or in part, or in any manner or form, nor may the Contractor authorize others to do so, without the written consent of FTA, until such time as FTA may have either released or approved the release of such data to the public. This restriction on publication, however, does not apply to any contract with an academic institution.

The Federal Government reserves a royalty-free, non-exclusive and irrevocable license to reproduce, publish, or otherwise use, and to authorize others to use for "Federal Government Purposes," any subject data or copyright described below. For "Federal Government Purposes," means use only for the direct purposes of the Federal Government. Without the copyright owner's consent, the Federal Government may not extend its Federal license to any other party.

Unless FTA determines otherwise, the Contractor performing experimental, developmental, or research work required as part of this Contract agrees to permit FTA to make available to the public, either FTA's license in the copyright to any subject data developed in the course of the Contract, or a copy of the subject data first produced under the Contract for which a copyright has not been obtained. If the experimental, developmental, or research work, which is the subject of this Contract, is not completed for any reason whatsoever, all data developed under the Contract shall become subject data as defined herein and shall be delivered as the Federal Government may direct.

Unless prohibited by state law, upon request by the Federal Government, the Contractor agrees to indemnify, save, and hold harmless the Federal Government, its officers, agents, and employees acting within the scope of their official duties against any liability, including costs and expenses, resulting from any willful or intentional violation by the Contractor of proprietary rights, copyrights, or right of privacy, arising out of the publication, translation, reproduction, delivery, use, or disposition of any data furnished under that contract. The Contractor shall be required to indemnify the Federal Government for any such liability arising out of the wrongful act of any employee, official, or agents of the Federal Government.

Nothing contained in this clause on rights in data shall imply a license to the Federal Government under any patent or be construed as affecting the scope of any license or other right otherwise granted to the Federal Government under any patent.

Data developed by the Contractor and financed entirely without using Federal assistance provided by the Federal Government that has been incorporated into work required by the underlying Contract is exempt from the requirements herein, provided that the Contractor identifies those data in writing at the time of delivery of the Contract work.

The Contractor agrees to include these requirements in each subcontract for experimental, developmental, or research work financed in whole or in part with Federal assistance.

32. Energy Conservation

42 U.S.C. § 6321 et seq., 49 CFR Part 622, subpart C

(Applies to all contracts)

The Contractor agrees to comply with mandatory standards and policies relating to energy efficiency that are contained in the state energy conservation plan for the Commonwealth of Virginia, which is issued in compliance with the Energy Policy and Conservation Act.

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

33. Recycled Products

42 U.S.C. § 6962, 40 CFR Part 247, 2 CFR part 200.322

(Applies to all contracts and subcontracts for items designated by the EPA, where the purchase price exceeds \$10,000 or the value of the quantity acquired during the previous fiscal year exceeded \$10,000.)

The Contractor agrees to provide a preference, consistent with maintaining a satisfactory level of competition, for those products and services that conserve natural resources, protect the environment, and are energy efficient by complying with and facilitating compliance with Section 6002 of the Resource Conservation and Recovery Act (RCRA), as amended (42 U.S.C. 6962), and U.S. EPA's "Comprehensive Procurement Guideline for Products Containing Recovered Materials," 40 CFR Part 247.

34. Conformance with National Intelligent Transportation Systems (ITS) Architecture

(Applies to contracts funded in whole or in part by the Highway Trust Fund)

All ITS projects shall be based on a system engineering analysis. The systems engineering analysis shall include, at a minimum:

1. Identification of portions of the regional ITS architecture being implemented;
2. Identification of participating agencies' roles and responsibilities;
3. Requirements definitions;
4. Analysis of alternative system configurations and technology options to meet requirements;
5. Analysis of financing and procurement options;
6. Identification of applicable ITS standards and testing procedures; and
7. Procedures and resources necessary for operations and management of the system.

The final design of all ITS projects shall accommodate the interface requirements and information exchanges as specified in the regional ITS architecture.

All ITS projects shall use applicable ITS standards and interoperability tests that have been officially adopted through rulemaking by US DOT.

35. Access Requirements for Individuals with Disabilities

49 U.S.C. § 5301(d); 49 CFR part 27; 28 CFR Part 36

(Applies to all contracts)

The Contractor agrees to comply with the requirements of 49 U.S.C. § 5301(d) which states the Federal policy that the elderly and persons with disabilities have the same right as other persons to use public transportation services and facilities, and that special efforts shall be made in planning and designing those services and facilities to implement transportation accessibility rights for elderly individuals and individuals with disabilities. The Contractors also agrees to comply with all applicable provisions of Section 504 of the Rehabilitation Act of 1973, as amended, with 29 U.S.C.

§ 794, which prohibits discrimination on the basis of disability; with the Americans with Disabilities Act of 1990 (ADA), as amended, 42 U.S.C. §§ 12101 *et seq.*, which requires that accessible facilities and services be made available to persons with disabilities; and with the Architectural Barriers Act of 1968, as amended, 42 U.S.C.

§§ 4151, *et seq.*, which requires that buildings and public accommodations be accessible to individuals with disabilities. In addition, the Contractor agrees to comply with all applicable Federal regulations and directives and any subsequent amendments thereto, except to the extent the Federal Government determines otherwise in writing, as follows:

- (1) U.S. DOT regulations, "Transportation Services for Individuals with Disabilities (ADA)," 49 CFR Part 37;
- (2) U.S. DOT regulations, "Nondiscrimination on the Basis of Handicap in Programs and Activities Receiving or Benefiting from Federal Financial Assistance," 49 CFR Part 27;
- (3) Joint U.S. Architectural and Transportation Barriers Compliance Board (U.S. ATBCB) U.S. DOT regulations, "Americans With Disabilities (ADA) Accessibility Specifications for Transportation Vehicles," 36 CFR Part 1192 and 49 CFR Part 38;
- (4) U.S. DOJ regulations, "Nondiscrimination on the Basis of Disability in State and Local Government Services," 28 CFR Part 35;
- (5) U.S. DOJ regulations, "Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities," 28 CFR Part 36.
- (6) U.S. General Services Administration (U.S. GSA) regulations, "Accommodations for the Physically Handicapped," 41 CFR Subpart 101-19;
- (7) U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 CFR Part 1630;
- (8) U.S. Federal Communications Commission regulations, "Telecommunications Relay Services and Related Customer Premises Equipment for the Hearing and Speech Disabled," 47 CFR Part 64, Subpart F;
- (9) U.S. Architectural and Transportation Barriers Compliance Board regulations, "Electronic and Information Technology Accessibility Standards." 36 CFR Part 1194;
- (10) FTA regulations, "Transportation of Elderly and Handicapped Persons," 49 CFR Part 609; and
- (11) Federal civil rights and nondiscrimination directives implementing the foregoing Federal laws and regulations, except to the extent the Federal Government determines otherwise in writing.

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

36. Assignability Clause

(Applies to all contracts)

Any public agency (i.e., city, district, public authority, public agency, municipality, and other political subdivision or any FTA-funded entity) shall have the option of participating in any award made as a result of this proposal at the same prices, terms, and conditions. JPTA reserves the right to assign all or any portion of the products or services awarded under this Contract including option quantities. This assignment, should it occur, shall be agreed to by JPTA and the contractor. Once assigned, each agency will enter into its own contract and be solely responsible to the contractor. JPTA's right of assignment will remain in force until completion of the contract to include options, whichever occurs first. JPTA shall incur no financial responsibility in connection with contracts issued by another public agency. The public agency shall accept sole responsibility for placing orders or payments to the Contractor.

37. Bus Testing

49 U.S.C. 5318(e), 49 CFR Part 665

(Applies to any contract for the acquisition or lease of any new bus model, or any bus model with a major change in configuration or components)

The Contractor agrees to comply with the Bus Testing requirements under 49 U.S.C. 5318(e) and FTA's implementing regulation at 49 C.F.R. Part 665 to ensure that the requisite testing is performed for all new bus models or any bus model with a major change in configuration or components, and that the bus model has achieved a passing score. Upon completion of the testing, the contractor shall obtain a copy of the bus testing reports from the operator of the testing facility and make that report(s) publicly available prior to final acceptance of the first vehicle by the recipient.

38. Buy America - Rolling Stock

(Applies to any contract for the acquisition of rolling stock)

Requirements for rolling stock are set out at 5323(j)(2)(C) and 49 CFR 661.11 and provide that federal funds may not be obligated unless rolling stock is manufactured in the United States and have a seventy percent (70%) domestic content. These regulations require, as a matter of responsiveness, that the Bidder or Contractor submit to JPTA the appropriate Buy America certification with all bids where FTA funds are provided, except those subject to a general waiver or less than \$150,000. Bids or offers that are not accompanied by a completed Buy America certification will be deemed nonresponsive.

39. Pre-Award and Post-Delivery Audits of Rolling Stock Purchases

49 U.S.C. § 5323, 49 CFR Part 663

(Applies to any contract for the acquisition of rolling stock)

The Contractor agrees to comply with 49 U.S.C. § 5323(m) and FTA's implementing regulation at 49 C.F.R. part 663. The Contractor shall comply with the Buy America certification(s) submitted with its proposal/bid. The Contractor agrees to participate and cooperate in any pre-award and post-delivery audits performed pursuant to 49 C.F.R. part 663 and related FTA guidance.

40. Federal Motor Vehicle Safety Standards (FMVSS)

49 CFR Part 500

(Applies to any contract for the purchase of vehicles)

The Contractor (whether manufacturer or dealer) certifies that the vehicles to be supplied under the contract shall conform to all applicable Federal Motor Vehicle Safety Standards of the U.S. Department of Transportation, National Highway Traffic Safety Administration.

APPENDIX B
CERTIFICATION REGARDING DEBARMENT
RETURN WITH YOUR BID

The prospective Contractor certifies, by submission of this bid or proposal, that neither it nor its "principals" as defined at 49 C.F.R. 29.995, or affiliates, as defined at 49 C.F.R. 29.905, are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any governmental department or agency.

Signature of Contractor's Authorized Official

Name and Title of Contractor's Authorized Official

Date

APPENDIX C

LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements

RETURN WITH YOUR BID

The undersigned [Contractor] certifies, to the best of his or her knowledge and belief, that:

- (1) 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.
- (2) 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 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. § 1601, *et seq.*)]
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients 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.

[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.]

The Contractor certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. § 3801, *et seq.*, apply to this certification and disclosure, if any.

Signature of Contractor's Authorized Official: _____

Name and Title of Contractor's Authorized Official: _____

Date: _____

APPENDIX D

**BUY AMERICA CERTIFICATE OF COMPLIANCE WITH FTA REQUIREMENTS
FOR BUSES, OTHER ROLLING STOCK, OR ASSOCIATED EQUIPMENT
RETURN WITH YOUR BID**

Certificate of Compliance with 49 U.S.C. § 5323(j) (2) (C).

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. § 5323(j)(2)(C) and the regulations at 49 C.F.R. Part 661.

Date _____

Signature _____

Company Name _____

Title _____

Certificate of Non-Compliance with 49 U.S.C. § 5323(j)(2)(C)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. § 5323(j)(2)(C), but may qualify for an exception pursuant to 49 U.S.C. § 5323(j)(2)(B) or (j)(2)(D) and the regulations in 49 C.F.R. 661.7.

Date _____

Signature _____

Company Name _____

Title _____

APPENDIX E

**CERTIFICATION OF COMPLIANCE WITH FTA'S
BUS TESTING REQUIREMENTS
RETURN WITH YOUR BID**

The undersigned [Contractor/Manufacturer] certifies that the vehicle offered in this procurement complies with 49 U.S.C. § 5323(c) and FTA's implementing regulation at 49 C.F.R. Part 665.

The undersigned understands that misrepresenting the testing status of a vehicle acquired with Federal financial assistance may subject the undersigned to civil penalties as outlined in the Department of Transportation's regulation on Program Fraud Civil Remedies, 49 C.F.R. Part 31. In addition, the undersigned understands that FTA may suspend or debar a manufacturer under the procedures in 49 C.F.R. Part 29.

Date: _____

Signature: _____

Company Name: _____

Title: _____

**APPENDIX F
BUS TESTING PROGRAM
BUS TESTING PROGRAM CERTIFICATION
RETURN WITH YOUR BID**

Here by certifies that the model of bus being offered in this bid has met the requirements imposed by 49 C.F.R. Part 665, Bus Testing, including the following two (2) conditions:

- 1) A model of the bus has been tested at the bus testing facility in Altoona, Pennsylvania; and
- 2) The bid includes a copy of the Test Report prepared on the bus modeling offered.

Authorized Signee: _____

Title: _____

Company: _____

APPENDIX G
TRANSIT VEHICLE MANUFACTURER CERTIFICATION
(Bus or Rail Car Purchases Only)
RETURN WITH YOUR BID

CERTIFICATION OF DISADVANTAGED BUSINESS ENTERPRISES (DBE)
COMPLIANCE

The responder, a Primary Transit Vehicle Manufacturer, hereby certifies that it has complied with the requirements of 49 C.F.R. Section 26.49, as amended, by submitting an annual DBE goal, as amended, to the Federal Transit Administration (FTA). The goal has either been approved or not disapproved by the FTA.

SIGNATURE: _____

PRINT NAME: _____

TITLE: _____

COMPANY: _____

DATE: _____

**APPENDIX H
NON-COLLUSION FORM
RETURN WITH YOUR BID**

By submission of this proposal, the Offeror _____, certifies
Name of Offeror

that (s)he is _____ of _____
Title Name of Firm

under penalty of perjury, affirms:

1. The prices in this proposal have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other Offeror or with any competitor;
2. Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the Offeror and will not knowingly be disclosed by the Offeror prior to opening, directly or indirectly, to any other Offeror or to any competitor; and
3. No attempt has been made or will be made by the Offeror to induce any other person, partnership or corporation to submit or not submit a proposal for the purpose of restricting competition.
4. The proposal was not made in the interest of or on behalf of any undisclosed person, partnership, company, organization or corporation.
5. Each person signing the proposal certifies that:
 - a. He is the person in the Consultant's organization responsible within that organization for the decision as to prices being offered in the proposal and that he has not participated and will not participate in any action contrary to (1-4] above; or
 - b. He is not the person in the Consultant's organization responsible within that organization for the decision as to prices being offered in the proposal but that he has been authorized in writing to act as agent for the persons responsible for such decisions in certifying that such

persons have not participated, and will not participate, in any action contrary to (1-4) above, and that as their agent, does hereby so certify; and that he has not participated, and will not participate in any action contrary to (1- 4) above.

APPENDIX I

**CONTRACTOR GENERAL CERTIFICATIONS
RETURN WITH YOUR BID**

The undersigned [Contractor] certifies, to the best of his or her knowledge and belief, that:

- (1) The Bidder and its Subcontractors are not in arrears to the Jefferson Parish Department of Transit Administration and or any of the named Procuring Agencies upon debt or contract and are not a defaulter, as surety or otherwise, upon any obligation to the Jefferson Parish Department of Transit Administration and or any of the named Procuring Agencies.
- (2) No officer or employee or person whose salary or compensation for services is or has been payable in the past two (2) years in whole or in part from the Jefferson Parish Department of Transit Administration is or shall be or become interested directly or indirectly in this proposal or in the award or performance of the contract for the supplying of the aforesaid, and other related items, or in any portion of the profits or price therefore.
- (3) The Bidder complies with mandatory standards and polices relating to energy efficiency in compliance with the Federal Energy Policy and Conservation Act (42 U.S.C. § 6321 *et seq.*).

The Contractor, _____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any.

Signature of Contractor's Authorized Official: _

Name and Title of Contractor's Authorized Official: _

Date: _____

APPENDIX J

**REQUEST FOR EQUALS
RETURN WITH YOUR BID**

Company Name: _____

Specification Section _____

Number: _____

Component Item Listed: _____

Proposed Item: _____

Note: A separate form must be submitted for each request for an approved equal. Bidders are required to submit technical information for each item. Any request received without the necessary technical information will be returned.