



REQUEST FOR PROPOSAL
Number RFP #17-20

Issued: October 3, 2017

BUS PROCUREMENT

Deadline for Questions: **October 12th, 2017 10:00 a.m. CST**

Responses to Questions posted www.maxtransit.org **October 16th, 2017 5:00 p.m. CST**

Sealed Qualifications Due: **October 24th, 2017 10:00 a.m. CST**

Pre-Bid Conference: Not Applicable

BJCTA Procurement Contact

Procurement Officer: Darryl Grayson, dgrayson@bjcta.org **All questions must be submitted via email**
Response to questions will be posted on www.maxtransit.org

Parcel Delivery & Hand-Delivery - Physical Address	Mailing Address
ATTN: PROCUREMENT DEPT. Birmingham Jefferson County Transit Authority 2121 Abraham Woods Jr., Blvd, Suite 500 Birmingham, AL 35203 The lower left corner of the address label should include: RFP # 17-20 BUS PROCUREMENT	ATTN: PROCUREMENT DEPT. Birmingham Jefferson County Transit Authority 2121 Abraham Woods Jr., Blvd, Suite 500 Birmingham, AL 35203 The lower left corner of the address label should include: RFP # 17-20 BUS PROCUREMENT

It is important to use the correct address for the delivery of sealed responses to BJCTA solicitations. **Proposals delivered to the BJCTA Post Office Box, faxed, emailed, or received after 10:00 a.m. CST, will be considered non-responsive and will be rejected.**

Unless written authorization is provided by the BJCTA Procurement Manager, no other official or employee may speak for the BJCTA regarding this solicitation until the award decisions are complete. Any Proposer seeking information, clarification, or interpretations from any other official or employee uses such information at their own risk, and BJCTA is not bound by such information. Following the submittal deadline, and until a contract is fully executed, Proposers shall continue to direct communications to only the BJCTA Procurement Director identified above.

COMPANY NAME: _____ PHONE #: _____

ADDRESS: _____ FAX #: _____

CITY/STATE/ZIP CODE: _____ DUNS NUMBER _____

GENERAL GUIDELINES

This document is intended to assist prospective proposers in successfully making a proposal for the work contemplated herein. Proposers are strongly encouraged to read the entire document very carefully.

- All attachments must be filled out completely. Federal and state regulations mandate that all attachments be submitted.
- If an attachment does not apply to your business or proposal, mark the form “Not Applicable,” or use some other similar wording. Sign and date such attachments.
- The Birmingham-Jefferson County Transit Authority (the “BJCTA”) ensures that Disadvantaged Business Enterprises (“DBEs”), as outlined in 49 CFR Part 26, as amended, have the maximum opportunity to participate in the performance of contracts. Therefore, it is imperative that you read the DBE Section and complete the necessary paperwork.
- When in doubt, contact Darryl Grayson, BJCTA Procurement Manager, 2121 Reverend Abraham Woods Jr Blvd, Birmingham, Alabama 35203, (205) 521-0144 or dgrayson@bjcta.org.

NOTICE TO PROPOSERS

Notice is hereby given that the BJCTA is soliciting proposals from experienced and qualified proposers to provide the goods or services specified in this document. This Request for Proposals ("RFP") outlines the services sought and the required documents for submission of a proposal.

Questions or requests for clarifications or approved equals concerning the RFP must be received by the BJCTA, using Attachment B, no later than 4:00 P.M. Central on the date specified on the cover page of this document. Responses will be made available at www.maxtransit.org no later than 4:00 P.M. Central on the date specified on the cover page of this document. All communications with BJCTA personnel about the substance of this RFP should be made through Attachment B.

Any change in this RFP will be valid only if included in an addendum, in writing, posted or delivered in the same manner as the RFP itself. Addenda will also be made available at www.maxtransit.org. All such addenda shall become a part of this RFP and any Contract. Proposers shall acknowledge receipt of all addenda in writing by completing Attachment C. Failure to acknowledge receipt of all addenda may cause the proposal to be considered non-responsive, and therefore, rejected.

In order to receive future RFPs and addenda thereto, a proposer should submit Attachment K.

Proposers may make appointments to discuss the RFP. This, however, does not relieve proposers from the written requirements of this RFP.

Proposals should be addressed as follows:

Birmingham-Jefferson County Transit Authority
2121 Reverend Abraham Woods Jr Blvd
Birmingham, Alabama 35203

The lower left corner of the address label should state the RFP number and title and should state, "PROPOSAL DOCUMENTS ENCLOSED". The cover page of the proposal should include the RFP number and title.

One original and three copies of a proposal should be sent to the BJCTA. The failure to do so will result in a proposal being ruled non-responsive. Non-responsive proposals will not be awarded the Contract.

All requested information must be submitted in the required format.

Proposals may be hand delivered or sent by U.S. Mail or some other shipping service. It is suggested that proposers use a shipping method that will ensure delivery before the deadline. The deadline for submissions is 4:00 P.M. Central on the date specified on the cover page of this document. Any proposal received after the deadline may not be considered, even if the proposal was timely mailed.

Proposals will be opened during work hours on the date specified on the cover page of this document. The opening of proposals may be delayed at the discretion of the BJCTA. Proposals received prior to the date of opening will be kept securely sealed.

The BJCTA reserves the right to reject any or all proposals and to waive any irregularities or informalities in any proposal or in the proposal procedure. Conditional proposals and any proposal taking exception to any provision in this RFP will be considered non-responsive and may be subject to rejection.

Proposals may be withdrawn by written request to the BJCTA prior to the time fixed for the proposal opening. No proposer may withdraw a proposal for a period of 120 days after the scheduled time for the proposal opening.

This RFP does not commit the BJCTA to award a Contract, nor to pay any cost incurred in preparation of a proposal. The BJCTA reserves the right to cancel the RFP or to issue a subsequent RFP.

The BJCTA reserves the right to perform a pre-award inspection of any proposer. Such evaluations are conducted to ensure that the following items, if applicable to the stated services, exist:

1. The necessary facilities and financial resources, or the capability to obtain such facilities and resources, to complete the Contract in a satisfactory manner within the required time;
2. Adequate quality control to assure that workmanship will comply with the Scope of Services; and
3. Service personnel to satisfy any service problems that may arise during any applicable warranty period.

The BJCTA will initially review the proposals for responsiveness and responsibility-related criteria as set forth in the RFP. Those proposals that meet the responsiveness and experience requirement will then be scored according to the following criteria:

1. Quality and responsiveness;
2. Cost proposal amount;
3. Experience and qualifications; and
4. Past performance and references.

The BJCTA will enter into negotiations to contract with the highest-ranked proposer. Should the terms offered not be desirable to the BJCTA, negotiations with successive highly-ranked proposers will follow until a Contract is finalized.

The BJCTA reserves the right to negotiate with one or all proposers. The BJCTA reserves the right to issue separate Contracts if deemed in the best interest of the BJCTA.

In the event a single proposal is received from a responsible proposer, the BJCTA may conduct a price analysis, a cost analysis, or both. A cost analysis is an analysis of the separate cost elements and the proposed profits of the proposer. A price analysis involves examining and evaluating a proposed price without evaluating its separate cost and profit elements. If only one proposal is received, the proposer agrees to cooperate with the BJCTA in such an analysis.

The award of a Contract to a proposer may be contingent upon a financial assistance contract between the BJCTA and the United States Department of Transportation ("Financial Assistance Contract"). All proposers agree to comply with any and all provisions and regulations relative to the Financial Assistance Contract. Proposers are required to certify that they have not been suspended or debarred from participation in federally-funded contracts. Proposers must also disclose lobbying activities. Full compliance with all applicable Occupational Safety and Health Standards, DBE requirements, Equal Employment Opportunity, and Americans with Disabilities Act laws and regulations is required. The BJCTA reserves the right to reject any or all proposals received or to negotiate separately with any source whatsoever in any manner necessary to serve the best interests of the BJCTA.

If available, more detailed information about this RFP will be found at www.maxtransit.org.

Protests

FOR COMPLETE PROTEST PROCEDURES:

<https://maxtransit.org/protest-of-procurement/>

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TABLE OF CONTENTS

Article I. SCOPE OF SERVICES	7
1.1 Purpose	7
1.2 Scope of Services	7
1.3 Competition	121
1.4 Third Party Contracting Guidance	121
1.5 Best Practices Procurement Manual	121
Article II. PROPOSAL	121
2.1 Definition of Terms	121
2.2 Information Required from the Proposer	122
2.3 Eligibility	123
2.4 Equipment	123
2.5 Personnel	123
2.6 Tax Exempt	124
2.7 Proposal Familiarity	124
Article III. CONTRACT TERMS	124
3.1 Best Practices Procurement Manual	124
3.2 Inspection	132
3.3 Work Hours	132
3.4 Maintenance of Records	132
3.5 Contract Changes	132
3.6 Dispute Resolution Process	132
3.7 Termination	133
3.8 Notice	134
3.9 Assignments	134
3.10 News Release	134
3.11 Confidentiality	135
3.12 Indemnification	135
3.13 Insurance	135
3.14 Documentation of Project Costs	136
3.15 Audit and Inspection	136
3.16 Immigration	136

Article I. SCOPE OF SERVICES

1.1 Purpose

The BJCTA is soliciting qualified manufacturers to provide up to thirty (30) 35 or 40-foot buses within a five (5) year period. These buses shall be manufactured with Compressed Natural Gas. This contract shall be for a five (5) year period.

1.2 Scope of Services

SECTION I. GENERAL TECHNICAL REQUIREMENTS

Technical Scope

These technical specifications contain the Birmingham-Jefferson County Transit Authority's (MAX) requirements for wheelchair accessible low floor transit buses that accommodate the widest spectrum of passengers including children, adults, the elderly, and the physically disabled. These buses shall conform to all applicable ADA regulations. These buses shall provide maximum passenger appeal in appearance, comfort, and safety; combined with excellence in operating characteristics, standardization with existing MAX fleet, economy of operation, optimum seating, and conformity with state and federal bus regulations and emission standards. These buses shall incorporate a high level of subsystem integration coordinated with central diagnostic functions and single point Operator interface. The vehicle exterior shall appear progressive and modern taking on the attributes of aerodynamic, high speed rail vehicle styling.

The contractor will supply up to thirty (30) 35 or 40-foot buses within a five (5) year period. These buses shall be manufactured with Compressed Natural Gas systems. The vehicle's power plant, accessories and fuel storage system, shall be sized and grouped to ensure a minimum fuel range of 400 miles.

These technical specifications have been prepared with emphasis on in-service reliability. The basic structure shall be a low floor, composite body configuration. The bus shall utilize a single piece resin laminate glass-fiber reinforced structure (composite) or approved equal containing the vehicle's body and chassis elements. The composite bus structure, including major suspension components, shall be designed to last the life of the bus without major overhaul or replacement.

Conformance

All Contractors shall conform to these technical specifications. Contractor shall not omit any unit, part or detail that makes the bus complete and ready for service, even though such part or detail is not mentioned in these specifications. All units or details not specified shall be the manufacturer's standard units. In any case, the successful Proposer shall adhere to the units listed in its Technical Submittal. No substitution or change is permitted without the prior written consent of MAX.

When specific technical regulations are referenced, Contractor must conform to the most current regulation.

GENERAL PERFORMANCE REQUIREMENTS – OVERVIEW

SPEED (MPH)	ELAPSED TIME CNG (SEC)
Acceleration Requirements	
0-10	5.6
0-20	11.0
0-30	20.0
0-40	31.0
0-50	60.0
Top Speed	65 MPH
Gradeability at 2.5% Grade	40 MPH
Gradeability at 16% Grade	7 MPH
Fuel Range (min)	400 Miles
Sound Requirements	
Maximum Sound Attenuation	75 dBA
Max. Generated Ext. Sound Level	78 dBA
Max. Generated Int. Sound Level (Passengers)	78 dBA
Max. Generated Int. Sound Level (Operator)	75 dBA

Responsibility, Materials, Accessories, Sub-suppliers

The manufacturer is responsible for all bus materials and accessories, including all Units purchased from any subcontractor or supplier.

Definitions

Aspect Ratio: The ratio of height to width of a character.

Audible Discrete Frequency: An audible discrete frequency is determined to exist if the sound power level in any 1/3-octave band exceeds the average of the sound power levels of the two adjacent 1/3-octave bands by 4 decibels or more.

Curb Weight: Weight of bus including maximum fuel, oil, coolant, as well as all equipment required for operation and required by this specification, but excluding passengers and operator.

Decibels (dB): Reference to 0.0002 microbar as measured on the "A" scale.

Fireproof: Materials that will not burn or melt at temperatures less than 2,000°F.

Fire-Resistant: Materials that have a flame spread index less than 150 as measured in a radiant panel flame test per ASTM E 162-75.

Free Floor Space: Floor area available to standees, excluding ingress/egress areas, area under seats, area occupied by feet of seated passengers, and the vestibule area.

Gross Load: One hundred fifty pounds for every seated passenger position and standing passenger (at 1/2 the seated positions), and for the operator.

Gross Vehicle Weight (GVW): Curb weight plus gross load

Gross Vehicle Weight Rating (GVWR): The maximum total weight, as determined by the manufacturer, at which the vehicle can be safely and reliably operated for its intended use.

Head Injury Criteria (HIC): The following equation presents the definition of head injury criteria:

$$\left[\frac{1}{t_1 - t_2} \int_{t_1}^{t_2} (a) dt \right]^{2.5} (t_2 - t_1)$$

Where a = the resultant acceleration at the center of gravity of the head form expressed as a multiple of g, the acceleration of gravity. t_1 and t_2 = any two points in time during the impact.

Human Dimensions: The human dimensions are defined in SAE Recommended Practice J833.

Jerk: The rate of change of acceleration.

Seated Load: One hundred fifty pounds for every designed passenger seating position and for the operator.

Seated Load Weight (SLW): Curb weight plus seated load.

Service Life: The bus shall be designed to operate in transit service at least 50,000 miles per year for 12 years or 500,000 miles.

Standee Line: A line marked across the bus aisle in line with the operator's barrier to designate the forward area in which passengers may not occupy when the bus is moving.

Standards: All standards referenced herein shall mean the latest revisions.

Tamper Resistant: Fasteners or components that cannot be easily removed or modified using pocket knives, coins, or other similar items commonly carried by passengers.

Wheelchair Ramp: A device for allowing ingress and egress of persons or wheelchairs between ground or curb level and the floor level of the bus. The terms "wheelchair ramp" and "ramp" are used interchangeably in this specification.

Abbreviations

ADA:	Americans with Disabilities Act
ANSI	American National Standards Institute
APA:	American Plywood Association
ASHRAE:	American Society of Heating, Refrigerating, and AC Engineers.
ASTM:	American Society for Testing and Materials.
AWS:	American Welding Society
BMCS:	Bureau of Motor Carrier Safety
CSA:	Canadian Standards Association
DOT:	Department of Transportation
FMVSS:	Federal Motor Vehicle Safety Standards
IEEE	Institute of Electrical and Electronics Engineers
NFPA	National Fire Protection Agency
SAE:	Society of Automotive Engineers
SPI:	Society of the Plastics Industry
UL:	Underwriter's Laboratory

USDHEW: United State Department of Health, Education, and Welfare

Legal Requirements

The bus shall meet all applicable FMVSS regulations in effect at the date of manufacture. The Contractor shall comply with all applicable federal, state, and local regulations. In the event of any conflict between the requirements of this specification and any applicable legal requirement, the legal requirement shall prevail.

Maintenance and Inspection

Scheduled maintenance tasks shall be related and shall be grouped in maximum mileage intervals. Scheduled maintenance actions such as filter or belt replacements and other adjustments shall not be required at intervals of less than 6,000 miles except for routine daily service performed during fueling operations. Higher levels of scheduled maintenance tasks shall occur at even multiples of not less than 6,000 miles. The bus shall be designed to operate in MAX's revenue service for a minimum of 50,000 miles per year for 12 years, or 500,000 life miles.

Maintainability Requirements

All serviceable systems or components shall be readily accessible for service and inspection. To the extent practical, disconnection or removal of components unrelated to a specific maintenance and/or repair task shall be unnecessary.

Maintenance requirements stated in mean time to fix (MTTF) are established below. Unless otherwise indicated, these figures represent the total elapsed labor time (hours/minutes) required to complete the maintenance task by one mechanic. The figures do not include time required to prepare the bus such as bringing the bus to the hoist, raising it, etc.

The Contractor shall be required to demonstrate these maintenance tasks using the information as contained in the service manual. The demonstrations shall be conducted on the first bus and may occur at MAX's facilities. Should a demonstration fail, the Manufacturer must modify its bus design or service manual information as necessary and re-demonstrate the procedure on the First Bus. The purpose of these demonstrations is to validate the maintenance manual, special tool requirements, and MTTF.

Service Task	MTTF (hrs./min.)
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INSPECTION:

6,600 Mile Inspection	7.5 hr.
Daily Inspections	13 min.
Brake Inspection	15 min.

REMOVE AND REPLACE:

A/C Blower Motor	1 hr.
A/C Condenser Motor	1 hr.
Alternator	2 hr.
Access for Door Motor Adjustment	< 2 min.
Batteries Set	45 min.
Brake Application Valve	1 hr.
Engine/Transmission PPA (2 mechanics)	6 hr.
Exterior Mirrors	< 5 min.
Headlining Panels, Interior individual (less handrails)	< 30 min.
Power Steering Gear Box Assembly	2 hr.
PPA mounts, complete set	2 hr.
Radiator (2 mechanics)	3 hr.
Seat Insert	< 1 min.
Shocks, Each	45 min.
Starter	1.5 hr
Transmission unit (2 mechanics)	8 hr.
Wheel Change, Front	45 min.
Wheel Change, Rear Dual	60 min.
Window glazing, Passenger	< 3 min.
Window guard, Passenger and Door	< 1 min.
Wiper Motor	20 min.
Operators Seat	30 min.
Electric Motor, A/C System	30 min.
Wheel chair access device	30 min.
Electronic Unit (Regulator, MULTIPLEX Module, Relay, Fuse, etc.)	15 min.

Service Task	MTTF (hrs./min.)
Lamps, Passenger Lights	15 min
Lamps, Other than Passenger Lights	20 min.

Operating Environment

The bus shall operate normally under all environmental conditions usually occurring in MAX's service area. Specific conditions include ambient temperatures which range from 0°F to 120°F, relative humidity between 5 percent and 100 percent, and altitudes up to 5,000 feet above sea level. Speed, gradeability, and acceleration performance requirements shall be met at, or corrected to, 85°F, 29.00 inches Hg dry air with all accessories on including A/C. Performance degradation at conditions other than the test standard shall not exceed 1 percent for each 3°F and 4 percent for each 1,000 feet of altitude above the standard.

Duty Cycle

The Vehicle shall meet the performance standards set forth under Conformance while operating on a service cycle that utilizes only the CBD portion of the FTA ADB heavy duty transit Vehicle cycle. The CBD portion shall be further modified to add 20 minutes of idle time.

SECTION II. EXTERIOR BODY AND STRUCTURAL

Interchangeability

Components with identical functions shall be interchangeable to the extent practical between buses and within the same bus. These components shall include, but not be limited to, passenger window hardware, interior trim, engine cradle, lamps, lamp lenses, and seat assemblies. Components with non-identical functions shall not be, or appear to be, interchangeable. Similar components must be interchangeable between all buses, built within the same lot, procured under this Contract.

General Dimensions

Buses furnished under these specifications shall comply with the following general dimensions:

Approach Angle	9° min.
Approach Angle (under area of front wheelchair access skid plate)	8° min.
Body Ground Clearance (except at axle area)	7.5" min.
Breakover Angle	7.3° min.
Curb Weight	32,000 lb. Max.
Departure Angle	9° min.
Exterior Width	102" max.
Floor Height From Ground	15" max.
Front Step Height From Ground	15" max.
Front Door Opening (clearance between hardware and assists)	44" min.
GVWR	43,000 lbs. min.
Headroom Center Longitudinal Aisle	77" min.
Overall Height (including roof mounted equipment)	132" max.
Overall Length (excluding bumpers)	45' 6"
Passenger Seating Capacity (number of seats)	46 - minimum; 47- preferred
Rear Door Opening (clearance between hardware and assists)	44 min.

Rear Step Height From Ground	15.5" max.
Seat Back Height, low back	35" max.
Step Riser Height-(access to operators seat platform)	13.5" max
Step Riser Height-(access to rear floor area, if provided)	11.5" max
Turning Radius (front body corners)	47.5' max.
Width of Seat (two positions)	35" min.

General Requirements

Buses shall incorporate features essential for safe, fast, efficient, and comfortable operation by the operator to ensure excellent road and traffic visibility, as well as adequate means for safe passenger movement, under all driving conditions. Buses shall be easily maneuverable in normal and heavy traffic.

Body Construction

The basic structure of the bus shall utilize a single piece resin laminate glass-fiber reinforced structure (composite) or Approved Equal containing the vehicle's body and chassis elements. The total structure shall be designed for maximum strength, reliability, and durability with a considerable weight reduction compared to standard steel bus construction. The overall structure shall be designed to prevent the penetration of fluids, including lubricants, into the structure of the composite material. All exposed surfaces shall be uniform in appearance with no unevenness or random irregularities in finish including seam areas.

Exterior Body

The exterior body shall be smooth and free of removable panels unless specifically approved by MAX. Exterior service and access doors shall be similar in construction, hinged and being made of composite or aluminum, or stainless steel. All body surfaces, including those with louvers or ventilation openings, shall be designed to prevent persons from gaining a hand or foothold if attempting to climb the exterior of the bus.

Rear Wheel Barrier

An S1-Gard or approved equal safety device designed to deflect persons or objects away from the curbside rear wheels while the bus is in motion and mounted directly in front of the rear wheels shall be incorporated into the bus design. This device shall be easily replaced, made of reinforced polyurethane material or equivalent. With the bus at

normal operating ride height, the distance between the ground and the bottom of the S1-Gard shall be no less than 4.5 inches.

Body Insulation Material

Body insulation material, if required, shall be fire resistant and sealed to minimize entry and prevent retention of moisture in sufficient quantities that impairs insulation properties. Insulation properties shall be unimpaired by vibration, compacting or settling during the life of the bus. The insulation material shall be non-hygroscopic, non-asbestos, and resistant to fungus and breeding of insects. Any insulation material used inside the engine compartment shall be fire resistant and shall not absorb or retain oils or water.

Thermal Insulation Performance

The composite bus structure and any material used for thermal insulation purposes, if required, shall provide a thermal insulation sufficient to meet the interior temperature requirements of these Technical Specifications. The bus body shall be thoroughly sealed so that the operator or passengers cannot feel drafts during normal operations with the passenger doors closed.

Sound Attenuation

The composite bus structure and any material used for sound insulation shall perform such that a sound source with a level of 80 dBA measured at the outside surface of bus shall have a sound level of 75 dBA or less at any point inside the bus. These conditions shall prevail with all openings, including doors and windows, closed and with the engine and accessories switched off.

Noise Level

The bus-generated noise level (principally the engine, engine exhaust, A/C system, and radiator fan) shall not exceed the maximum interior and exterior values under the test conditions per the SAE Standard J366. The maximum bus generated exterior noise level shall not exceed 78-dBA. The bus-generated noise level experienced by a passenger at any seat location in the bus shall not exceed 78 dBA and the operator shall not experience a noise level of more than 75 dBA under the test conditions.

Noise Level Test Conditions

Instrumentation and other general requirements shall conform to SAE Standard J366. The bus shall be empty except for test personnel, not to exceed 4 persons, and the test equipment. All openings shall be closed and all accessories shall be operating during the test. The bus shall accelerate at full throttle from a standstill to 35 mph on level commercial asphalt or concrete pavement.

Sound Requirement	DBA Level CNG
Maximum Sound Attenuation	75
Maximum Generated Exterior Sound Level	78
Maximum Generated Interior Sound Level (passengers)	78
Maximum Generated Interior Sound Level (Operator)	75

Water Leak Testing

All buses shall be water tested for a minimum of 20 continuous minutes at a flow rate of 2.5 gallons per minute per nozzle. Water spray nozzles shall be positioned and adjusted to provide an overlapping pattern to effectively test the full length of the roof, sides, front to back of the bus. The water test should replicate a sustained driving rain. During this test period, the engine and passenger ventilation shall be on in order that leaks may be detected and corrected.

Crashworthiness

Contractor shall be required to provide evidence of compliance with this section during the pre-award audit. 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.

The bus shall withstand a 25 mph impact by a 4,000-pound automobile at any location (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.

Exterior body surfaces below floor level shall withstand a static load of 2,000 pounds applied perpendicular to the bus anywhere below floor level by a pad no larger than 5 inches square. This load shall not result in deformation that requires repair to restore the original appearance of the bus.

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

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.

Fasteners and Hardware

All fastener and hardware materials used in construction of the bus and all its parts shall conform in all respects to ASTM, SAE, and other applicable industrial standards and, to the extent practical, shall be exactly duplicated in manufacture, design, and construction on each bus, under this Contract.

Fasteners

Unless otherwise specified all bolts, nuts and washers shall use Metric or English system dimensions. All bolts, nuts, washers shall be SAE Grade 8 or better, stainless steel, cadmium plated, or phosphate coated to prevent corrosion. Stainless Steel fasteners are required for all exterior applications including mirror attachments. Aluminum rivets shall not be used for any attachment to the bus.

Hose Clamps

Hose clamps for fluid and air lines over 3/4" shall be constant torque type to compensate for thermal expansion. Hose clamps for large diameter engine air inlet tubes shall be wide band with T-bolt clamps.

Fluid Line Attachment

All fluid lines shall be secured using suitable "full box" cushioned p-clips. Lines over 1 1/4" diameter (number 20 and above) shall use anchor blocks. The use of plastic tie wraps shall be limited to bundling small diameter lines (under 1" diameter); they shall not be used as an attachment device. The failure of any number of tie wraps over the life of the bus shall not result in a required repair action or service interruption.

Wire and Harness Attachment

All wire harnesses assemblies and wire bundles over 18" long shall be secured with suitable wire trays or nylon insulated p-clips, or other suitable method approved by MAX. The use of plastic tie wraps shall be limited to bundling wires, and shall not be used as a primary attachment device. The failure of any number of tie wraps shall not result in a required repair action or service interruption.

Corrosion

The bus shall resist corrosion from atmospheric conditions and road salts. It shall maintain structural integrity and nearly maintain original appearance throughout its service life, provided it is maintained in accordance with the procedures specified in the

service manual. Materials exposed to environmental elements and all joints and connections of dissimilar metals shall be corrosion-resistant and shall be protected from galvanic corrosion. All body joints and seams shall be protected by application of polyurethane based sealer, or approved equal, at assembly. Representative samples shall withstand a 2-week salt spray test in accordance with ASTM Procedure B-117 with no visual or structural detrimental effects to normally visible surfaces, and no significant structural degradation or weight loss of over 1 percent for other members or components.

Where metal components are used for bus supporting or understructure, they shall be spray-coated prior to installation of subassemblies with suitable corrosion preventative which meets the bus manufacturer's corrosion protection specifications. The contractor shall provide a copy of its proposed undercoating system program at the first Pre-production meeting.

Painting and Color Scheme

Contractor shall utilize MAX's current color scheme in its exterior paint design. Additional information is provided under Exterior Finishes.

Numbering and Signs

Monograms, numbers, and other special signs specified by MAX shall be applied to the inside and outside of the bus as required. Signs shall be durable and fade, chip, and peel-resistant.

Manufacturer's Emblem or Decal

With the exception of required VIN information, exterior manufacturer's emblem plate or decals shall not be installed unless approved by MAX.

Pedestrian Safety

Exterior protrusions greater than 0.5 inch and within 80 inches of the ground shall have a radius no less than the amount of the protrusion. The rear view mirrors and required lights and reflectors are exempt from the protrusion requirement. Grilles, doors, bumpers and other features on the sides and rear of the bus shall be designed to minimize the ability of unauthorized riders to secure footholds or handholds.

Towing

Towing device shall be provided on each end of the coach. Each towing device shall withstand, without permanent deformation, tension loads up to 1.2 times the curb weight of the bus within twenty (20) degrees of the longitudinal axis of the bus. The rear towing device(s) shall not provide a foothold for unauthorized riders. The front towing devices shall allow attachment of a rigid tow bar and shall permit lifting of the bus, at curb weight,

by the towing devices and the tow bar until the front wheels are clear of the ground. Each towing device shall accommodate a crane hood with a minimum 1.5 inch throat.

All buses shall be designed and constructed in such a way as to be able to be towed, or recovered (wheels off the ground) from the front or rear without any frame, structural, or body deformation.

An Auxiliary Air Fitting near the front of the bus to supply air to bus system shall be provided for towing the vehicle.

The bus manufacturer will also provide the BJCTA with one (1) each towing and/or lift bar/devices necessary to recover/tow the bus. Instructions for towing the vehicle will be provided with the bid proposal. Contractor shall demonstrate compliance with these provisions using the First bus.

Jacking

It shall be possible to safely jack up the bus at curb weight with a common hand jack or floor jack 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 any wheel and tire assembly. Jacking pads located on the axle or suspension near the wheels shall permit easy and safe jacking with scissors or bottle jack with the tire flat or dual set on a 6-inch high run-up block not wider than a single tire. The location of the jacking pad shall be identified with a label on the exterior of the bus, directly over the jack pad. Contractor shall provide five (11) sets of any special jacking equipment adapters, if required. Contractor shall demonstrate compliance with these provisions using the First Bus.

Jacking and changing any one tire/wheel assembly shall be completed by one MAX mechanic within the MTTF stated in Specification 0, Maintainability Requirements starting from the time the bus is approached. The bus shall withstand such jacking at any one or any combination of wheel locations without permanent deformation or damage.

Hoisting

The bus axles or jacking plates shall accommodate the lifting pads of a 2-post hoist system. Jacking plates, if used as hoisting pads, shall be approximately 5 inches square, with a turned-down flange not less than 1/2 inch deep on each side to prevent the bus from falling off the hoist. The manufacturer may be required to demonstrate compatibility with MAX hoists. Other pads or the bus structure shall support the bus on jack stands independent of the hoist.

Roof Ventilators

A minimum of one roof ventilator shall be installed along the centerline of the bus. The ventilator shall cover an opening area of no less than 425 square inches and shall be in the rear section of the bus over the rear axle area. The ventilator shall be designed so that they will provide emergency egress. Ventilators with lever type release handles are not permitted.

Engine Compartment Bulkhead

The passenger and engine compartments shall be separated by a bulkhead(s), which shall act as a firewall and manufactured using fireproof materials. This bulkhead assembly shall preclude or retard propagation of an engine compartment fire into the passenger compartment. Only necessary openings shall be allowed in the firewall, and these shall be fireproofed.

Any passageways for the climate control system air shall be separated from the engine compartment by fireproof material. Piping through the bulkhead shall have copper, brass, or fireproof fitting sealed at the firewall with copper or steel piping on the forward side. Wiring may pass through the bulkhead only if connectors are provided to prevent or retard fire propagation through the firewall. The conduit and bulkhead connector shall be sealed with fireproof material at the firewall.

Engine access panels in the firewall shall be fabricated of fireproof material and secured with fireproof fasteners. These panels, their fasteners, and the firewall shall be constructed and reinforced to minimize warping of the panels during a fire that will compromise the integrity of the firewall. Access panels shall be constructed to prevent vapors and fumes from entering the passenger compartment.

Floor

The floor shall be integrated with the composite body structure.

Interior Steps

If there is an interior raised floor area, a maximum of two steps shall be allowed for access to the raised floor area behind the rear door or to the operator's seat pedestal. All step riser heights shall be the same. Risers shall be continuous, flat planes across the entire width. Step risers may be inclined, not to exceed 10° from the vertical (nosing edge lower). All corners shall have radii no less than 1/4 inch to facilitate cleaning.

All step treads shall be of uniform depth which shall be no less than 10 inches and the plane of the step treads shall be parallel to the plane of the floor. Nosing of steps shall be yellow.

Step Structure

Each step shall simultaneously support a 300-pound load evenly distributed over the center half of each step tread without permanent deformation and with elastic deflection of no more than 1/8 inch. Each step tread shall support a load of 500 pounds evenly distributed over the center half of the tread without permanent deformation. The steps shall be sloped only sufficient to preclude water accumulation.

Wheel Housing

Wheel housings shall be constructed of corrosion-resistant, fire-resistant material. Wheel housing, as installed, shall withstand impacts of a tire tread dislodging from the tire at maximum bus speed without penetration. If required for access to suspension components, installation of access panels in the wheel housing must meet all requirements listed including fastening devices, strength and mounting.

Front and Rear Bumper

The rear bumper shall be shaped to preclude persons from standing on the bumper. The energy absorption system of the front and rear bumpers shall require no maintenance in normal operation during the service life of the bus. The flexible portion of each bumper may increase the specified overall bus length by no more than 6 inches each.

Front Bumper

No part of the bus, including the front 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 protect the bus from damage as a result of 6.5 mph impacts at any point by the striker defined in FMVSS 215 loaded to 4,000 pounds parallel to the longitudinal centerline of the bus and 5.5 mph impacts into the corners at a 30-degree angle to longitudinal centerline of the bus.

Rear Bumper

The rear bumper and its mounting shall provide impact protection to the bus at curb weight from a 2 mph impact with a fixed, flat barrier perpendicular to the longitudinal center line of the bus. When using a yard tug with a smooth, flat plate bumper, the bumper shall provide protection at speeds up to 5 mph, over pavement discontinuances up to 1 inch high, and at accelerations up to 2 mph/sec. The rear bumper shall protect the bus, when impacted anywhere along the bumper width by the striker defined in FMVSS 215 loaded to 4,000 pounds, at 4 mph parallel to the longitudinal center line of the bus or into the corners up to a 30 degree angle to the longitudinal center line of the bus.

Fender Skirts

Features to minimize water spray from the bus in wet conditions shall be included in wheel housing design. Fender skirts shall be flexible to resist wear and tear and easily replaceable. They shall be flexible if they extend beyond the allowable width. Wheels and tires shall be removable without disturbing the fender skirts.

Curb Feelers

The bus shall be equipped with one MAX approved curb feeler. Curb feeler sample shall be provided by MAX upon request for installation on the First Bus. Installation of curb feeler shall be subject to MAX approval.

Exterior Mirrors

The bus shall be equipped with mirrors that permit the operator to view the highway along both sides of the bus, including the rear wheels, subject to MAX approval. Each mirror shall be attached to the bus with a single mirror arm in a manor that prevents vibration and loss of adjustment. Mirror arm pivots shall incorporate adjustable tension springs and positive adjustment detents to positively hold the mirror arms in position. Mirror arm pivots shall also allow the mirrors to fold sufficiently to allow bus washing operations. Mechanical stops shall prevent the mirror from contacting the windshield or side window. Mirror head assemblies shall be replaceable with simple hand tools in less than 5 minutes. Mirrors shall be made of 1/4" tempered plate glass.

Street Side Mirror

The street side mirror shall meet Federal and State requirements for size and location. A remote controlled adjustment of mirror shall be provided by a labeled 4-position switch located to the left of the operator in a position that allows mirror adjustment with the operator in a normal driving posture. The mirror shall have a turn signal arrow incorporated either into the glass or as part of the mirror frame. Mirror control wires shall terminate at the bus body adjacent to the mirror bracket attachment point with breakaway connector plugs designed to prevent damage to bus wiring in the event the mirror head is damaged due to impact. Electrical connection shall be waterproof, and located in area protected from bus washer action, and accessible for maintenance to replace mirrors and electrical connections.

Curb Side Mirror

The curb side mirror shall meet all State and Federal requirements for size and location. The remote controlled adjustment shall be operated from the same switch as used for the street side mirror. The remote controlled mirror shall have a turn signal arrow incorporated either into the glass or as part of the mirror frame. Mirror control wires shall terminate at the bus body adjacent to the mirror bracket attachment point with breakaway connector plugs designed to prevent damage to bus wiring in the event the mirror head is damaged due to impact. Electrical connection shall be waterproof, and located in area protected from bus washer action, and accessible for maintenance to

replace mirrors and electrical connections. The mirror shall be mounted such that its lower edge is as high as possible but at least 60 inches above the street surface and is visible through the right side portion of the windshield that is cleaned by the windshield wiper. Front door operation shall not affect the view provided by the right side mirror.

Adjustment of the mirrors shall be provided by a labeled 4 position switch located to the left of the operator in a position that allows mirror adjustments with the operator in a normal driving posture.

Convex Mirrors

Convex mirrors shall be provided, located below the exterior mirrors, on the curb and street side. The convex mirrors shall be 5 inch diameter and shall be attached to the main mirror arm in a similar manner to prevent damage to the exterior mirrors if the convex mirror is hit during operation.

Rain Gutters

Rain gutters shall extend over the front and rear passenger doors and over the operators side window, subject to MAX's approval. The gutters shall be sized to prevent water flowing from the roof onto passengers passing through the doors or onto the operator's window. Gutter cross section shall be no less than 0.25 square inches.

License Plates

Contractor shall supply miscellaneous hardware for MAX installation of standard size US license plates. License plates shall be recess mounted on the front and rear of the bus so that they can be cleaned by automatic bus washing equipment without being caught by the brushes, subject to MAX approval. The rear license plate shall be illuminated. License plates shall be mounted on, or to the left of, the bus center and shall not allow a toehold or handhold for unauthorized riders.

Splash Aprons/Mud Flaps

Splash aprons, composed of 0.25 inch (minimum) rubberized fabric, shall be installed at each rear wheel and shall extend downward to within 3 inches of the road surface. Rear apron widths shall be no less than tire widths. Front apron shall extend across the width of the bus.

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. Splash aprons and their attachments shall not be included in the road clearance measurements. Additional splash aprons shall be installed where necessary to protect bus equipment.

Service Doors, Exterior

Hinged doors shall be used for the engine compartment and for all auxiliary equipment compartments. An access door for checking and adding engine coolant from outside the bus shall be located no more than 66 inches above the ground. Access doors shall be provided at the front of the bus, only if needed, to service and/or replace the front windshield defroster unit, windshield wiper units, brake application valve, steering gear box, throttle pedal assembly, and associated pressure and electrical switches, airline fittings, and electrical connections.

Access openings shall be sized for easy performance of tasks including tool operating space within the compartment. Access doors shall be of rugged construction and shall be capable of withstanding severe abuse throughout the life of the bus. The use of expanded metal for side and rear service doors is prohibited. All access doors shall be aluminum, fiberglass, or stainless steel. They shall close flush with the body surface. All doors shall be prevented from coming loose or opening during transit service or in bus washing operations.

The radiator access door shall incorporate air inlet openings (perforated metal or louvers) and debris screens as necessary to provide adequate air flow and prevent large debris from reaching and blocking air flow to the radiator including charge air cooler (CAC).

Access Door Hinges, Springs and Latches

All access doors which are horizontally hinged shall be retained in the open and closed position with gas filled springs. Gas springs used for the engine access door shall be designed to operate in temperatures encountered within the engine compartment and are capable of retaining a minimum of 200 percent of the door weight when in the open position and be simple to operate by one person when closing the door. Mechanical locking devices shall be provided on all access doors.

Access doors shall hinge up and out of the way to within 30° of side of the bus. The fuel fill door shall be hinged at the top and shall open fully up against the side of the bus subject to MAX approval. Pantographic door mechanisms for engine and A/C system access doors are not acceptable. Large access doors shall be opened and closed by one person including the 5th-percentile female. These doors, when opened, shall not restrict access for servicing other components or systems.

Latch handles shall be flush with, or recessed behind the body contour and shall be sized to provide an adequate grip with a gloved hand for opening. Large access doors shall be equipped with locks requiring one nominal 5/16" square end tool to open. The locks shall be standardized so that only one tool is required to open all major access doors on the bus. Locking devices shall lock clockwise and unlock counter clockwise.

Windshield Wipers

The bus shall be equipped with variable speed electric powered windshield wiper for each half of the windshield with either a single control for both or separate controls for each side. No part of the windshield wiper mechanism shall be damaged by manual manipulation of the arms. At maximum bus speed, no more than 10 percent of the wiped area shall be lost due to windshield wiper lift. Both wipers shall park along the inside edges of the windshield glass. Windshield wiper motors and mechanism shall be easily accessible for repairs or service from inside or outside the bus and shall be removable as complete units.

An intermittent wiper control shall be provided. The unit shall provide an operator an adjustable 5 to 30 second variance in activation of the wiper arm. After each stroke, the wiper arm shall return to the parked position.

Windshield Washers

The windshield washer system shall deposit washing fluid on the windshield and, when used with the wipers, shall evenly and completely wet the entire wiper area.

The windshield washer system shall have a minimum 2-gallon reservoir, located for easy refilling from the exterior of the bus. Reservoir pumps, lines and fittings shall be corrosion-resistant. The reservoir shall be translucent for easy determination of fluid level, if visible, or a fluid level indicator shall be provided.

Passenger Doors

Operation of, and power to the passenger doors shall be completely controlled by the operator using a Door Control Handle (reference System Control Definitions). Power to the door may be air or electric. Doors shall open or close completely in one and a half to three (1.5 to 3) seconds from the time of actuation. Doors opening speed and closing speeds shall be independently adjustable. The doors must close and lock when the bus is stopped with the left side ten (10) inches higher than the right side.

The door motors may be electric or air powered. Exhaust from the air door motors shall be piped to the underside of the bus. Door mechanism shall be concealed from passengers, but shall be easily accessible for servicing. Regardless of door mechanism type, the Contractor shall meet all FMVSS and State codes for door function and emergency operations.

Door Construction

Door structures, their attachments, inside and outside trim panels, and any other mechanism exposed to the elements shall be durable and corrosion-resistant. Pantographic type passenger rear doors are not acceptable. Fully opened doors shall

provide a firm support and shall not be damaged if used as an assist by passengers during ingress or egress. When the doors are fully closed, the door design must exclude the entry of water from the bus washer operation. Lower and upper edges of the doors shall have a brush or rubber trim as needed to reduce noise and keep debris from entering the bus when in operation.

The upper section (1/2 door height) of both front and rear doors shall be glazed with flat glass for no less than 45 percent of the respective door opening area of each section. The lower section of the front door shall be glazed for no less than 25 percent of the door opening area of the section. The lower section of the rear door shall be solid and constructed of the same material as the door. The interior rear door surface below the door glass shall be protected by a minimum 12" high replaceable stainless steel or aluminum "Kick Panel" that is easily replaceable with simple hand tools.

Front Door Operation

When the Master Control Switch is turned to the OFF position and the bus is stopped with the parking brake applied the front doors shall automatically open. If power to the door control fails, the front doors shall remain in the open position.

An electrically controlled switch or air release valve located on the operator's side console shall shut off the power or air to the front door mechanism, bypassing all other door controls, to permit manual operation of the front door when the bus engine is shut down.

The bus must be capable of being driven with the front door open at speeds above 3 MPH.

Front Door Lock

A key switch shall be provided to lock the front door. The switch shall be located behind an exterior access door near the front curb side of the bus a minimum of 45 inches above the ground. The access door shall be hinged to allow the door to open completely to view and aid inserting the switch key. The bicycle rack in the stowed position shall not obstruct access to the switch. The switch shall use a MAX standard key. A sample key will be provided by MAX following the Pre-Production meetings.

The Door Lock system shall be controlled by the bus Electrical System (MULTIPLEX). When the Master Control Switch is in the OFF position and the Parking Brake is applied, the key switch shall close and lock the front door. If left unattended with the front door locked, the front door lock system shall go to sleep when the Bus Electrical Control system goes to sleep. When the operator unlocks the front door, the door shall automatically open and the entire bus electrical system shall wake up.

The door lock system shall be powered through the master battery switch such that opening the battery switch will unlock the door. The front door lock system shall be able to sustain the door in the locked condition for a minimum programmable period between 0 and 2 hours and still meet the specified engine starting requirements.

Rear Door Interlock

To preclude movement of the bus while the rear door is activated and open, an accelerator interlock shall disable the accelerator and a brake interlock shall engage the service brake system. Provisions shall be made to ensure that the rear doors cannot be activated or opened while the bus is moving above 3 mph. When the rear door is closed, neither the rear doors, nor the interlock system shall activate at speeds greater than 3 mph. Provisions shall be made to activate the brake interlock if the rear doors are forced or accidentally opened at speeds above 3 mph. The interlock system shall also energize the emergency four-way flasher system.

Interlock Override

An interlock override switch, which is not within reach of the seated operator, shall close and lock the rear door, deactivate the rear door control system and front door wheel chair access system, release the interlocks, and permit normal operation of the front door when set in the "OFF" position (reference Operator Controls and Indicators). A red indicator shall illuminate and an audible alarm shall sound when the interlock override is in the "OFF" position, and shall be labeled "interlock deactivated."

Rear Door Control

Control of the rear door opening and closing shall be by the operator door control mechanism. At speeds of 3 mph or less, and with the rear door interlock activated, the rear door control shall illuminate green LED light(s) near the door to signal passengers that the door will open automatically. The door controls shall then unlock and enable the door opening mechanism. The door signal light(s) shall be visible to passengers standing in the step well directly in front of the rear door as well as passengers in the door exit area.

When activated by the Operator, the rear door shall use air or electric to open and spring to close. The closed rear door shall be locked by means of a positive mechanical device. Rear door shall include a sensitive edge, which will prevent the door from closing and locking when contact is made to a patron exiting the bus. An indicator light and buzzer located on the dash shall warn the operator of any obstruction contacting the sensitive edge.

Door Emergency Operation

In the event of an emergency, it shall be possible to open the front and rear door manually from inside the bus using a force of no more than 25 pounds after actuating an unlocking device at the door. The unlocking device shall be clearly marked as an emergency only device and shall require two distinct actions to actuate. The front and

rear door emergency unlocking device shall be accessible from the area near the doors. Locked doors shall require a force of more than 100 pounds to open manually.

Door Dimensions

When open, the doors shall leave an opening no less than 76 inches in height. The front door (equipped with a wheel chair access system) shall have an opening no less than 34 inches in width with the doors fully opened. The rear door shall have an opening no less than 34, inches in width with the doors fully opened. Door opening widths may be reduced 3 inches on the sides of the extreme top and extreme bottom of each door opening. This 3-inch projection shall be reduced to 0 inches within 26 inches of the bottom and within 18 inches of the top. Projections shall not form a hazard to passengers. The clear door opening widths, including door-mounted passenger assists, shall be no less than 34 inches.

Door Projection

Exterior projection of the doors shall be minimized and shall not exceed 14 inches during the opening or closing cycles or when doors are fully opened. Projection inside the bus shall not exceed 21 inches. The closing edge of each door panel shall have no less than 2 inches of soft weather stripping. The doors, when closed, shall be effectively sealed and the hard surfaces of the doors shall be at least 4 inches apart.

Door Motor Adjustment

A mechanic shall be able to access the door motor and mechanism through a dedicated hinged access cover within 2 minutes.

Side Window Glazing

All side window glazing and door glazing material shall be 4 mm monolithic tempered safety glass. Operator's side window shall be laminated flat safety glass with the upper portion above the sunshade shaded dark to match the front windshield. Side window glazing shall be blue tinted and shall conform to the applicable requirements of ANSI Z26.1 Standard, latest revision for Safety Glazing Materials. The maximum solar energy transmittance shall not exceed 44 percent, as measured by ASTM E-424, and the luminous transmittance shall be no less than 71 percent as measured by ASTM D-1003. To the extent practical, side window glazing for fixed and emergency egress windows shall be interchangeable. Reference Colors, Materials, and Finishes for glazing specifications.

Passenger Side Windows

Transom style side windows shall extend from the shoulder height of a seated 5th-percentile female passenger to the eye level of a standing 95th-percentile male

passenger in the front section; the rear section window upper edge shall be approximately 56" above the floor. Each individual window glazing shall be easily replaceable without removing the entire window assembly or disturbing adjacent window assemblies and shall be mounted so that flexing or vibration from engine operation or normal road excitation is not apparent. To the extent practical, the number of different sizes of windows should be minimized.

Passenger Window Construction

Window assemblies shall be constructed of heavy-duty black anodized aluminum. Window assemblies shall incorporate "change in place" design to permit replacement (removal and installation) of each glazing (transparent glass piece less any framing) from windows installed on the bus. This requirement shall permit one mechanic to enter the bus and remove and install each glazing using common hand tools in three (3) minute, or less. No additional sealer materials or adhesive shall be required. The window shall be fully serviceable immediately following replacement of glazing. Change in place method shall be tamper resistant. An additional one (1) minute will be added for each glazing replacement, if necessary, for replacement of the associated sacrificial window guard.

All frame surfaces and components (except the emergency escape handles) shall be finished with black anodized natural aluminum or stainless steel finish. Emergency escape latches shall be red, and labeled to indicate their purpose and function and shall be affixed adjacent to the latch. Miscellaneous hardware, such as fasteners and latches, shall be the window manufacturer's standard hardware.

All side windows, except windows in passenger doors and those smaller than 500 sq in., shall have window panels that are openable by passengers. Openable window panels shall be equipped with latches that secure the window in the fully open and fully closed positions. openable windows with inward-opening transom panels: Each openable side window shall incorporate an upper transom portion. The transom shall be between 25 and 35 percent of the total window area. The lower portion of the window shall be fixed. The transom portion shall be hinged along the lower edge and open inward.

Passenger Window and Door Glazing Guards

Interior surfaces of passenger side window glazing and rear door glazing shall be protected by disposable sacrificial plastic guards. The window guards shall be held in place by a suitable method designed for the window assembly. Replacement of damaged panels shall require a maximum of one minute using simple hand tools.

Operator's Side Window

The operator's side window(s) shall slide open (rearward) a maximum of 5 inches and lock to permit the seated operator to easily manually adjust the street side rearview mirror should the remote device fail. The window shall include a simple release mechanism to permit the window to slide open beyond five inches to the fully open and locked position. The window frame shall not block the view of the street side mirror when in the fully closed or fully open positions. The operator's side window shall not be bonded in place and shall be easily replaceable.

Windshield

Windshield glazing material shall be 1/4" laminated safety glass conforming to the applicable requirements of ANSI Z26.1 Standard, latest revision, for Safety Glazing Materials. 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 15°, measured above the horizontal and excluding any shaded band. The vertically downward view shall permit detection of an object 3.50 feet high no more than 2 feet in front of the bus. The peripheral view shall be a minimum of 90° about the line of sight. Any binocular obstruction due to a center divider may be ignored when determining the 90° requirements provided that the divider does not exceed a 3-degree angle in the operator's field of view. Windshield pillars shall not exceed 10° of binocular obstruction. The glazing material shall have single density tint except for the upper portion of the windshield above the operator's field of view, which shall have a dark green, shaded band. The green shaded band shall have a minimum luminous transmittance of 6 percent when tested in accordance to ASTM D-1003. Reference Glazing, for specifications.

Windshield Installation

The windshield shall be designed and installed to minimize external glare as well as reflections visible in the windshield immediately forward of the operator's barrier. Reflections in the remainder of the windshield shall be minimized, and shall be subject to Alabama State Trooper approval. Windshield glare shall be subject to the approval of the Alabama State Trooper. The windshield shall be easily replaceable by removing zip-locks from the windshield retaining moldings.

SECTION III. INTERIOR FEATURES

Interior Features

The interior shall be light colored, well lighted, simple, modern, and free from superficial design motifs. There shall be no sharp depressions or inaccessible areas, and it shall be easy to clean and maintain. To the extent practical, all 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. With the exception of the operator's area, equipment compartment and dash, the entire interior shall be cleanable with a hose that utilizes a liquid soap attachment.

Handholds, lights, air vents, armrests, and other interior fittings shall appear to be integral with the bus interior. There shall be no sharp, abrasive edges and surfaces and no unnecessary hazardous protuberances. All materials used in the construction of the Passenger Compartment of the bus shall be in accordance with the Recommended Fire Safety Practices defined in FTA Docket 90, dated October 20, 1993. Contractor must provide required certificates of compliance prior to manufacture of the First bus.

Interior Trim

Interior trim materials shall be selected on the basis of maintainability, durability, appearance, safety, flammability, and tactile qualities. Trim and attachment details shall be kept simple and unobtrusive. Materials shall be strong enough to resist everyday abuse and vandalism and shall be resistant to scratches and markings.

Interior Headroom

Headroom above the aisle shall be no less than specified in General Dimensions. At the centerline of the window seats, headroom shall be no lower than the required top of the side window. Headroom at the back of the rear bench seat may be reduced to a minimum of 56 inches, but it shall increase to the normal ceiling height at the front of the seat cushion.

Service Panels and Doors, Interior

Access for maintenance and replacement of equipment shall be provided by panels and doors that appear to be an integral part of the interior, subject to MAX approval. Access doors and panels shall prevent entry of mechanism lubricant into the bus interior.

Access Panels

Retention of all interior access panels shall be with tamper resistant screws. Panel fasteners shall be standardized so that only one tool is required to service all special fasteners within the bus subject to MAX approval. All fasteners that retain access panels, excluding wheel well housing, and floor access panels, shall be captive in the cover. Access openings in the floor shall be sealed to prevent entry of fumes and water into the bus interior. Flooring material shall be flush with the floor and shall be edge bound with stainless steel, anodized aluminum, or approved equal to prevent the edges from coming loose. Fasteners shall tighten flush with the floor.

Access Doors

Access doors, with the exception of the engine access door under the rear seat, shall be hinged, or positioned by props, or over-center springs, to hold the door out of the mechanic's way. Access doors shall be equipped with locks requiring one nominal 5/16" square end tool to open. The locks shall be standardized so that only one tool is required to open all access doors on the bus. Locking devices shall lock clockwise and unlock counter clockwise.

Interior Side Trim

Interior mullion trim, moldings, and trim strips at window level and above shall be easily replaceable and be tamper-resistant. They shall be designed and reinforced, as necessary, to resist vibration, denting, vandalism, and other rigors encountered in MAX service. Individual trim panels and parts shall be interchangeable to the extent practical.

Interior Side Panels

Interior side panels, below the passenger windows, shall be easily replaceable and be tamper-resistant. They shall be designed and reinforced, as necessary, to resist vibration, denting, vandalism, and other rigors encountered in MAX service. Individual trim panels and parts shall be interchangeable to the extent practical.

Interior Headlining

Headlining shall be supported to prevent buckling, 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 tamper-proof, shall be stainless steel, aluminum, or plastic, and colored to complement the ceiling material.

Headlining panels covering operational equipment mounted above the ceiling shall have an access panel installed to permit access to the equipment and meet

all requirements of Service Panels and Doors, Interior. Antenna access panel may be hinged or removable using captive tamper proof screws. Individual head lining panels shall be easily replaceable by one mechanic using simple hand tools in a maximum of 30 minutes not including stanchion removal.

Interior Rear Bulkhead Panels

To the extent practical, all flat surfaces on the rear bulkhead shall be covered with panels which are easily replaceable and tamper-resistant. They shall be designed and reinforced, as necessary, to resist vibration, denting, vandalism, and other rigors encountered in MAX service. Individual panels shall be interchangeable to the extent practical.

Interior Front Section Panels

The entire front end of the bus shall be sealed to prevent debris accumulation behind the dash and to prevent the operator from kicking or fouling wiring and other equipment with his feet. The front end shall be free of protrusions that are hazardous to passengers standing or walking in the front of the bus during rapid decelerations.

Paneling across the front of the bus and any trim around the operator's compartment shall be formed metal or plastic. Plastic dash panels shall be reinforced, as necessary, vandal-resistant, and replaceable.

Interior Modesty Panels

Sturdy modesty panels shall be provided as necessary at wheelchair parking facilities, between forward and aisle facing seats, and on the forward edge of the upper floor area on both sides of the interior steps.

Modesty Panel Construction

Modesty panels shall be constructed of solid durable min. .375 inch, unpainted, corrosion-resistant material complementing the interior trim (reference Modesty Panels). The modesty panel and its mounting shall withstand normal kicking, pushing, and pulling loads of 200-pound passengers without permanent visible deformation.

Modesty Panel Installation

Modesty panels shall be securely mounted to the sidewall on the outboard side and to a vertical stanchion on the inboard side. Modesty panels shall project toward the aisle no further than passenger knee projection in aisle facing seats or

the aisle side of the forward facing seats. Panels forward of aisle facing seats shall extend below the level of the seat cushion. Modesty panels positioned at the doorways shall provide no less than a 2.25 inch clearance between the modesty panel and the opened door to protect passengers from being pinched. Modesty panels in front of forward facing seats shall be mounted between 2.0 to 3.0 inches off the floor. Modesty panels located adjacent to a side window shall not extend above the lower edge of window.

Modesty panels shall be bolted or riveted to handrails or installed in U channel with self-locking nuts and securely attached to stanchion and body side. Modesty panels located at the forward edge of the upper floor area shall be attached along the top to handrails for added stiffness. Panels shall be attached to bottom extruded anodized aluminum rails for stiffness.

Modesty panels shall be bolted or riveted to handrails or installed in U channel with self-locking nuts and securely attached to stanchion and body side. Modesty panels located at the forward edge of the upper floor area shall be attached along the top to handrails for added stiffness. Panels shall be attached to bottom extruded anodized aluminum rails for stiffness.

Operator's Barrier

A barrier or bulkhead between the operator and the street side front passenger seat shall be provided. The barrier shall eliminate glare and reflections in the windshield directly in front of the barrier for interior lighting during night operation. The barrier shall extend from below the level of the passenger or operator's seat cushion, whichever is lower. The operator barrier shall be shaped to fit within 1.5 inches of the ceiling, sidewall and window contour to prevent passengers from reaching the operator or his personal effects. Reference Operators Barrier.

Interior Advertising

Advertising media 11 inches high and 0.09 inches thick shall be capable of being retained near the juncture of the bus ceiling and sidewall. Interior advertisement card racks shall be integral with the lighting fixture and be reinforced by use of structural members attached directly to the bus structure. The advertisement racks shall be hinged to provide access at every fixture location without removing the fixture from the bus structure. The card racks shall be retained in the closed position by use of vandal resistant threaded closing screws. The card racks shall be self-retained in the open position to allow maintenance accessibility. The retainers may be concave and shall support the media without adhesives. The media shall be illuminated by the interior fluorescent lighting system.

Passenger Information

A total of two information "take one" boxes and one "take ten" unit shall be supplied. "Take one" boxes shall be mounted at both the front and rear doors in convenient locations for passengers and the "take ten" unit shall be located in a convenient location towards the front of the bus, subject to MAX approval.

Passenger Assists

Passenger assists in the form of full grip; vertical stanchions and seat mounted 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 95th-percentile male and the 5th-percentile female standees. Starting from the front door and moving or standing anywhere in the bus, a vertical assist shall be provided so that a 5th-percentile female passenger may easily stand or move from one assist to another using one hand then the other without losing support. Two overhead black grab straps are to be provided on each side of the Wheelchair areas. Vertical assists shall additionally be provided toward the center of three and four passenger aisle facing seats attached to seat frame and overhead assist. 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. A Passenger Assist shall be installed vertically at the rear of the radio enclosure box, subject to MAX approval, to provide assists for ADA personnel seated directly behind the operator's enclosure.

Passenger Assists and Construction

Unless otherwise specified, the assists shall be between 1.25 and 1.50 inches in diameter or width with radii no less than 0.25 inch. All passenger assists shall permit a full hand grip with no less than 1.50 inches of knuckle clearance around the assist. A crash resulting in a 1 foot intrusion shall not produce sharp edges, loose rails, or other potentially dangerous conditions associated with a lack of structural integrity of the assists. Any joints in the assist structure shall be underneath supporting brackets and securely clamped to prevent passengers from moving or twisting the assists. Assists shall withstand a force of 300 pounds applied over a 12-inch linear dimension in any direction normal of the assist without permanent visible deformation. Overhead assists shall simultaneously support 150 pounds on any 12 inch length. Assists shall be provided on both sides of passenger doors to provide safe ingress and egress. Brackets, clamps, screw heads, and other fasteners used on the passenger assists shall be flush with the surface and free of rough edges.

Passenger Assists, Front Doorway

Front door or entry area passenger assists shall be no less than 0.75 inch in width. Assists shall be approximately 6 inches from the outside edge of step tread. Assists 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 vertical assist at the front door opening.

Passenger Assists, Entry Area

The aisle side of the operator's barrier and the modesty panels shall be fitted with vertical passenger assists that are functionally continuous with the overhead assist and extend within 33 inches of the floor. Assists shall have sufficient clearance from the barrier to prevent inadvertent wedging of a passenger's arm.

A horizontal passenger assist shall be located across the front of the bus to prevent passengers from sustaining injuries on the fare collection device or windshield in the event of a sudden deceleration. The assist shall provide support for a boarding passenger from the front door through the fare collection procedure without restricting the entry area space. Passengers shall be able to lean against the assist for security while paying fares. The assist shall be no less than 36 inches above the floor or the step tread and 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 or front modesty panel. The front assist should not impede wheelchair boarding and provide adequate clearance and access to the farebox during vaulting and maintenance.

Passenger Assists, Overhead

Except forward of the standee line and at the rear door, a continuous full-grip overhead assist shall be provided. The assist shall be convenient to standees anywhere in the bus and shall be located over the center of the aisle seating position of the forward facing seats. The assist shall be no less than 70 inches above the floor and shall terminate at the rear bulkhead or curve up to the ceiling with a minimum six inch radius.

Passenger Assists, Aisle Facing Seats

A minimum of one vertical grab rail shall be installed with all two or three passenger aisle facing seat sets with the exception of the rear settee and wheelchair area flip seats. A minimum of two vertical grab rails shall be installed with all four-passenger aisle facing seat sets with the exception of the rear settee and wheelchair area flip seats. Assists shall extend from near the leading edge between adjacent seats and shall be functionally continuous with the overhead assist. Additional grab rail may be installed in front of aisle facing seats, attached to seat frame and ceiling grab rail.

Passenger Assists, Rear Doorway

Vertical assists that are functionally continuous with the overhead assist shall be provided at the aisle side of the forward facing seat immediately forward of the

rear door and on the aisle side of the rear door modesty panel. Rear doors, or the exit area, shall be fitted with assists no less than 0.75 inch in width and shall provide at least 1.5 inches of knuckle clearance between the assists and their mounting. A 5th percentile female shall be provided assists that are functionally continuous during the entire exiting process.

Passenger Assists, Forward Facing Seats

Vertical assists shall be located on the aisle side of each forward facing aisle seating position. A vertical assist or grab rail shall be provided convenient to the outer rear settee seats if they are immediately behind an aisle facing seat subject to MAX approval. Assists shall extend from near the leading edge of the seat and shall be functionally continuous with the overhead assist.

Passenger Seating and Layout

Seating capacity shall be no less than specified in General Dimensions). Passenger seats and supporting structure shall be stainless steel. Complete seat assemblies shall be interchangeable to the extent practical. Seats panels shall be brushed (180 grit polish) stainless steel and shall be attached to the seat frame with tamperproof fasteners. Surface texture shall be consistent throughout the seat material, with no visually exposed portion painted. All visually exposed metal of the standard seat structure including mounting brackets and other components shall be stainless steel.

The seats shall be contoured for individuality, lateral support, and maximum comfort and shall fit the framework to reduce exposed edges. Objects within any portion of the head or chest impact zone such as handholds and seat backs shall not have sharp corners or edges less than 1/4" inch radius.

Forward Facing Seats

Passenger seats forward of the exit door shall be arranged in a forward facing configuration to meet minimum seating requirement and wheelchair area clearance requirements. Hip-to-knee room, measured from the front of one forward facing seat-back horizontally across the closest part of the forward facing seat or panel immediately in front, shall be no less than 26 inches. Foot room, measured at the floor forward from a point vertically below the front of the seat cushion, shall be no less than 11 inches. Seats immediately behind the wheel housings may have foot room reduced, provided the wheel house is shaped so that it may be used as a footrest.

Rear Seats

The rear seat assembly shall accommodate four or five passengers as needed to meet the minimum seating requirement. A maximum of three of the rear seat(s)

shall be hinged to fully open, and supported for easy access to the engine compartment. The hinged seats shall latch in the closed position and be supported by a convenient prop in the open position.

Aisle Facing Seats

The maximum number of aisle facing (perimeter) seats shall be provided rearward of the exit door while still meeting the maximum seating requirement. Aisle facing seats may be mounted on a wheel housing.

Aisle Space

The aisle between the forward facing seats shall be no less than 20 inches wide at seated passenger hip height and no less than 24 inches at standing passenger hip height.

Passenger Seats Structure and Design

The passenger seat frame and its supporting structure shall be cantilever mounted so it is completely free of obstructions to increase wheelchair maneuvering room and aid in cleaning operations. The lowest part of the seat assembly that is within 12 inches of the aisle shall be at least 10 inches above the floor.

The underside of the seat, seat structure, and the side wall shall be configured to prevent debris accumulation. Closeouts are not permitted.

Armrests

Armrests shall be included on the ends of each set of aisle facing seats except on the forward end that is immediately to the rear of a forward facing seats, the operator's barrier, a modesty panel or any fixture which performs the function of restraining passengers from sliding forward off the seat. Armrests are not required on aisle facing fold-up seats located in the wheelchair parking area when the armrest on the adjacent fixed aisle facing seat is within 1.5 to 3.5 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 made of stainless steel and shall be constructed and trimmed to complement the modesty panels. The top and sides of the armrests shall be free from sharp protrusions that could form a safety hazard. Soft padded armrests shall not be utilized. Armrests shall not be included in the design of forward facing seats. Armrests shall withstand static horizontal and vertical forces of 250 pounds applied anywhere along their length with less than 0.25 inch permanent deformation.

Passenger Seat Handholds

Forward facing seats shall incorporate a handhold no less than 0.875 inch in diameter for standees and seat access/egress. The handhold color shall be complimentary to the interior, subject to MAX approval. The handhold shall extend above the seat back no less than 4 inches and allow a full hand grasp so that standees in the aisle shall have a convenient vertical assist. The handhold shall not cause a standee using the assist to interfere with a seated passenger. Handholds shall withstand static horizontal and vertical forces of 250 pounds applied anywhere along their length with less than 0.25 inch permanent deformation. Handholds shall be padded and/or constructed of energy absorbing materials to provide passenger head protection.

Passenger Seat Inserts

Vandal resistant seat inserts with fabric cover shall be provided. All seat inserts, bottoms and backs, shall have a minimum 1" padding. To the extent practical, seat inserts shall be interchangeable throughout the bus. Each seat insert shall be easily replaceable in less than one minute using simple hand tools and shall be demonstrated not to fail for a minimum of ten insert changes. Attachment system shall be tamper resistant and is subject to MAX approval. The use of padded seat inserts shall not impact the requirements for hip to knee clearance.

The fabric material shall have high resistance to tearing, flexing, and wetting and the coloring shall be consistent throughout the materials.

Operator's Seat

The heavy duty operator's seat manufactured by USSC, Model Q-91, or approved equal, shall support operators' in the orthopedically correct seating position and shall be provided with comfort and adjustment features so that persons ranging in size from the 95th-percentile male to the 5th-percentile female may operate the bus. The seat shall have the following features and adjustments:

- The operator's seat back height, measured from the point of intersection of the uncompressed seat cushion to the top of the seat back, shall be 23 ± 3 inches. The angle formed between the seat back and the seat cushion shall be manually or power adjustable in the range of 5° lean forward to 20° lean back.
- The operator's bottom seat cushion shall have a minimum width of 18 inches and rearward slope of 5° to 12° . The height of the seat shall be 15 to 20 inches from the top of the uncompressed bottom seat cushion and the floor with a minimum power adjustable range of 4 inches. The seat shall comfortably accommodate persons ranging in size from the 95th-percentile male to the 5th-percentile female.

- The seat shall use a heavy duty air ride suspension with dual shocks to absorb vertical shock.
- The distance from the center of the steering wheel to the seat back shall be a minimum 23 inches when measured with the seat back vertical (90°) with the seat adjusted as far forward as possible, and the steering wheel adjusted as far forward and down as possible. The seat shall have a minimum total of 9 inches forward and rearward travel. The adjustment lever shall be on the street side.
- The seat shall have adjustable lumbar support.
- The seat shall have black pleather vinyl covering.
- Air ride height adjustment shall be on the left side of the operator's seat.
- The operator seat shall be centered in the operator area so that a straight line from the center of the horn button to the center of the seat back is equal when measured from that line to the operator's side window.
- The Operator's seat belt shall be of the three point harness type.
- Belt Extensions

While seated, the operator shall be able to make all seat position adjustments and reach controls by hand without complexity, excessive effort, or being pinched. Heavy-duty adjustment mechanisms and controls shall hold the adjustments and shall not be subject to inadvertent changes. Seat belt shall be fastened to the seat so that the seat may be adjusted by the operator without resetting the seat belt. Seat belt shall have a minimum 72" pull out from the automatic retractors. Seat belt shall latch on the operator's right side.

Operator's Seat Materials

The operator's seat shall be contoured to provide maximum comfort for extended period of time. Seat bottom and back shall be full padded with at least 3 inches of foam cushion material.

Wheelchair Accommodations

Two wheelchair passenger parking spaces shall be provided, per applicable ADA regulations. Location of spaces shall be as close to the wheelchair ramp or system as practical.

Wheelchair Maneuverability

Maneuvering room inside the bus shall accommodate easy travel by a passenger in a wheelchair from the access through the bus to the designated parking areas, and back out. No portion of the wheelchair or its occupant shall protrude into the normal aisle of the bus when parked in the designated parking space(s). MAX

will require a demonstration of wheelchair maneuverability prior to accepting the First bus.

Wheelchair Equipment

Additional equipment, including passenger restraint seat belts and wheelchair securement devices shall be provided for two wheelchair passengers per ADA. A telescoping "ARM" type system and palm type stop request switches, or approve equal, shall be provided.

Floor Covering

All interior floor areas including operator and wheelchair parking areas shall be covered with a nominal 1/8" thick slip resistant smooth material that remains effective in all weather conditions. The floor covering, as well as transitions of flooring materials from the main floor area and to the step areas shall be smooth and present no tripping hazards. Reference Floor Covering. Floor material shall be installed in such a manner that the material is fully adhered to the floor, access covers, cove or other supporting structure. In no cases shall the floor material be unsupported. All seams shall be smooth, and fully sealed to prevent water intrusion and peeling. The floor covering shall closely fit the sidewall cove or extend to the top of the cove. Floor covering applied to wheel housings may be separate pieces. To the extent practical the center strip shall be one piece and shall extend from the rear seat between the aisle seats to the front standee line.

Standee Line

A standee line shall be integrally molded yellow at least 2 inches ($\pm 1/8$ ") wide and shall have a consistent dimension across the bus aisle in line with the operator's barrier.

Step Treads

Interior step treads (if required) shall be clearly identified. The first step shall be yellow, and the second (if needed) shall have a two inch wide yellow nosing the full width of the tread, which is fully blended, into the tread material. Sides of the steps shall be the same color as the rest of the floor, and fully sealed to prevent peeling, tripping hazards, and water intrusion. The edge of any interior steps shall have a minimal overhang. Tread depth shall meet the ADA requirements.

Inside Mirrors

Mirrors shall be provided to permit the operator to observe passengers throughout the bus. MAX Inside mirrors shall not be in the line of sight and obstruct the view of the right outside mirror.

- A mirror shall be provided above the front door for use by the operator in determining that the front door is clear of passengers.
- Mirror(s) shall be provided so that with a full standee load, including standees in the entry area, the operator will be able to observe passengers in the front and rear door, anywhere in the aisle, and in the rear seats.

Mirror Dimensions

<u>SIZE</u>	<u>DESCRIPTION</u>
16"x 8" 1/4" Flat Glass	Operator's Rearview
5", 11", 12" Diameter	Convex
7"x7"	Convex
7"x10"	Front Entrance

Operator's Sunshade

Separate pull down sunshades shall be provided at the operator's side of the windshield and full width across the operator's side window sized to minimize light leakage between the shade and windshield pillars. Sunshade shall store out of the way and shall not obstruct airflow from the climate control system or foul other equipment such as the PA microphone, MAX radio handset, or the headsign control unit.

Sunshade, when deployed, shall be effective in the operator's field of view at angles more than 5° above the horizontal. Deployment of the sunshades shall not restrict vision of the rearview mirrors. Sunshade construction and materials shall be strong enough to resist breakage during adjustments.

Passenger Stop Request Signal System

A passenger "Stop Requested" signal system shall be provided. A passenger "Stop Requested" message shall be displayed on the ITS AVA sign. The system shall consist of the pull cord style, chime, and ITS AVA interior sign message. It shall be easily accessible to all passengers, seated or standing. In addition, mushroom shaped "palm type" chime switches shall be located at wheelchair parking positions. Stop request switches located in the wheelchair parking area shall be no higher than 4 feet above the floor.

A single "Stop Requested" chime shall sound when the system is activated. A double chime shall sound when the system is activated from wheelchair passenger area signal switches.

The "Stop Requested" message shall remain visible until one or both passenger doors are opened. The message shall be visible to the seated operator and seated passengers. A switch to deactivate the signal system shall be provided on the Operators control panel.

Operator's Coat Hook

A stainless steel, aluminum, or approved equal, coat hook shall be furnished and installed, subject to MAX approval.

Safety Equipment

The following items shall be provided and installed within 7 feet of the operator's seat in a location that is easy reach, subject to MAX approval.

- a) DOT approved heavy duty emergency reflector kit stored in storage box.
- b) 5-pound (5lbs) multipurpose fire extinguisher (ABC retardant agent), stored in the storage box or mounted outside the storage box with universal bracket.
- c) A storage box for item a) and b).

The box shall include a door, with latch, and be prominently marked, indicating the equipment stored inside.

Bus Registration Holder

A bus registration holder shall be installed above the operator near the ceiling, subject to MAX approval.

Fare Collection Provisions

A GFI Genfare ODYSSEY Validation Farebox, shall be provided and installed by the contractor. Space and structural provisions shall be made for the electronic farebox, which requires approximately 12" X 12" steel tapping plate under floor area, subject to MAX approval. The farebox mounting location shall not restrict access to the operator's area, hinder the operation of the operator controls, restrict farebox servicing requirements, restrict wheelchairs maneuvering or ramp operation, obstruct the data probe location and provide adequate space for the farebox vaulting, and subject to MAX approval.

The floor under the farebox shall be reinforced, as necessary, to provide a sturdy mounting platform and to prevent vibration or swaying of the farebox when the bus is in motion. The under floor reinforcement shall be a steel plate of adequate strength to anchor the farebox using four predrilled and tapped holes provided to

accept 3/8"-16 anchor bolts installed from inside the bus. A one-inch inside diameter waterproof conduit shall be provided from the ITS enclosure to the farebox mounting location, through the bus floor, and shall contain a power cable for 24 volts, 20 amp circuit with circuit protection. The protected and switched circuit shall be energized in all positions of the Master Control Switch including the OFF position. This power circuit shall include a grounded lead.

Trash Hooks

The Contractor shall provide two interior metal hooks with two 90 degree bends in the area near the farebox for MAX supplied plastic trash bags. Placement of the hooks shall be reviewed on the First bus and are subject to MAX approval.

SECTION IV. ELECTRICAL

General Requirements

The performance and reliability of all electrical and electronic systems shall not be adversely affected by, or create surges, spikes, and other harmful electrical disturbances. The Electric Power System shall be provided to store and distribute sufficient power to ensure satisfactory performance of all electrical components including subsystems that require power when the engine is not running. Ripple voltage and transients for power provided to electronic subsystems shall not exceed typical bus electrical characteristics (as specified on J1455 portion of the SAE J1708 electrical characteristic) on buses. When the Master switch is off, the MAX installed ITS equipment such as radios and farebox is estimated to require a maximum of 2 amps which is in addition to the power required to run other specified equipment. Labeled ground points for use during welding or other service work shall be provided at both front and rear of the bus. Location and type subject to approval by MAX.

Power Generation

The system shall supply a nominal 12 and 24 volts of DC utilizing one or two alternators charging separate 12 and 24 VDC battery packs. The power generating systems shall be rated at 125 percent of the electrical demands of the bus, when all electrical components are on. Sixty Percent (60%) of the maximum output shall be at idle RPM. The contractor shall submit a complete and detailed load analysis and Power Generation system operating description, including schematic electrical diagrams, during Pre-production meetings and prior to building the First Bus. The format and content of these submittals subject to MAX approval.

Redundant grounds shall be provided for all electrical equipment except where it can be demonstrated that they are not feasible or practical. Grounds shall not be carried through hinges, bolted joints (unless they are specifically designed as electrical connectors), or power plant mountings.

Wiring and Cables

All wires for electrical components and terminations, including bus controls, A/C, engine, transmission, and door systems, with the exception of battery cables, shall have a separate number for identification. All wiring shall meet the requirements of SAE Recommended Practice J1292 and J1128 for type GXL and SXL wiring. The requirement for double insulation shall be met by sheathing all wires and harnesses with nonconductive, rigid or flexible conduit. Double insulation shall be maintained as close to terminals as practical.

Wiring length shall allow for a minimum 4 inch service loop to permit replacement of end terminals twice without pulling, stretching, or replacing the wire. With the exception of large wires such as battery cables, terminals shall be crimped to the wiring and may be soldered only if the wire is not stiffened above the terminal and no flux residue remains on the terminal. Terminals shall be full ring or interlocking type and corrosion resistant incorporating heat-shrinkable sleeving in the terminal design. MAX shall consider the use of alternative terminal types on a case-by-case basis. T-splices may be used when less than 25,000 circular mills of copper in cross section. A mechanical clamp shall be used in addition to solder on the splice. The wire shall support no mechanical load in the area of the splice, and the wire shall be supported to prevent flexing. Large cables such as battery cables, starter cables, and alternator cables shall be routed to allow for engine movement without pulling on terminals, and shall not be bent past recommended radius resulting in stressed and cracked insulation.

Wire Harnesses and Installation

Wires shall have double electrical insulation and shall be protected using covers such as flexible loom. All wiring harnesses over 5 feet long, which contain at least 5 wires, shall include 10 percent excess wires for spares. A minimum of 50 percent of the spare wires shall be the same size as the largest wire in the harness excluding the battery cables. Ends of all spare wires shall be terminated in an approved SAE manner. Wiring harnesses shall not contain wires of different voltages unless all wires within the harness are sized to carry the current and insulated to the highest voltage wire in the harness. Each wire harness assembly shall include, at each connector, a color code or part number for identification of the harness assembly and the connector.

Harness Routing

Under floor wiring shall be eliminated to the extent practical. Wiring, electrical connectors, and electrical equipment necessarily located under the bus shall be protected and insulated from water, heat, corrosion, and mechanical damage. Wiring harness assemblies shall not be routed or located under the bus floor unless they are routed in protective conduits or wire-ways which permit easy replacement of harness assemblies (less large connectors) without removal of adjacent equipment. Split loom shall not be used under the floor unless all wires within the loom are wrapped. Installation of under floor wiring shall be subject to MAX approval.

Grommets

Grommets of elastomeric material shall be provided at points where wiring penetrates structures. Support clamps with direct contact with wires, cables, or harnesses shall be insulated from contact with wire, cable or harness by a fully

cushioned, non-conductive material. Clamps for all electrical cables, harnesses and bundles will be subject to MAX approval and shall be of premium quality. Grommet and clamp material shall be selected and installed in such a manner to last the life of the bus and avoid damage from heat, water, fuel, oil, solvents, or chafing.

Unless otherwise specified all wiring harnesses in the engine compartment shall terminate there for ease of replacement. Wire harnesses going through the bulkhead shall have a junction at the bulkhead.

Relays and Circuit Breakers

All necessary mechanical relays and circuit breakers shall be constructed and positively retained to be free from accidental operation or interruption due to shock or vibration in service. Spare or empty relay sockets shall be covered. Relays and power contactors shall be designed for continuous duty cycle at a minimum of 30 amp rating or 150% of maximum surge current load, whichever is greater. All electrical components including relays and circuit breakers must be completely waterproof when mounted lower than 24 inches above street level when bus is at normal operating height.

Circuit Protection

All circuits and circuit branches, with the exception of those involved in propulsion system startup shall be protected individually by manual reset circuit breakers, current limiters, or fuses installed at the source of the circuit. Fuses shall be used only where it can be demonstrated that circuit breakers are not practical, and they shall be clearly identified and easily accessible for replacement. 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 a MAX mechanic with visible indication of open circuits. MAX 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.**

Junction and Control Boxes

All relays, controllers, manual reset circuit breakers, and other electrical components shall be mounted in easily accessible junction or control boxes. Electrical components and circuits shall be identified by name with locations recorded on a schematic drawing permanently glued to or printed on the inside of the box cover or door. The drawing shall be protected from oil, grease, fuel, and abrasion. Junction and control boxes shall be sealed to prevent moisture from normal sources, including engine compartment cleaning, reaching the electrical

components and circuits in each box. Junction and control box fires shall not propagate outside the box.

Electric Motors

Unless otherwise required, all electric motors shall be heavy-duty brushless with a constant duty rating of no less than 10,000 hours. Components shall be polarized where required for proper function and the components shall be positively retained. Electric motors shall be located for easy replacement and shall be replaceable in less than 30 minutes by a MAX mechanic.

Batteries

Batteries shall be provided for: a) engine starting (including fuel controls, electronic control units and ignition system), and b) other bus loads as needed.

Starting Batteries

Starting batteries shall be premium, heavy-duty, sealed, dry cell, group 31 battery type, subject to MAX approval. Batteries used for starting the engine shall be located as close to the starter as possible.

Starting with a full charge, starting batteries shall have sufficient energy to provide adequate power after a minimum of four days (Master Run Switch OFF, Battery Disconnect Switch ON, lights OFF, MAX installed ITS equipment operating) without charging or engine operation and then meet the starting requirements under Starting System.

Starting batteries shall be protected from power loss in the event that any lights or other loads are inadvertently left on, up to two hours, which would normally drain the batteries when the engine is not running. Starting with a full charge batteries shall have sufficient energy to provide adequate power after a minimum of two hours (Master Run Switch ON, Battery Disconnect Switch ON, lights ON, MAX installed ITS equipment operating) without charging or engine operation and then meet the starting requirements under Starting System.

Both the four-day and two-hour restart capability of the battery system(s) shall be successfully demonstrated on the first bus.

Auxiliary Batteries

Auxiliary batteries, if used for other loads (not used for cranking), shall be sized to provide sufficient energy to operate all bus electrical subsystems which continue to draw power with the Master Control Switch OFF, battery switch(es) closed, no lights on, and MAX installed ITS equipment operating for a minimum of 48 hours without charging or engine operation ITS

Provisions, Power Supply. Batteries shall be premium, heavy-duty, sealed, dry cell battery type subject to MAX approval. Battery eyes shall be easily accessible for inspection and service only from outside the bus. Terminals shall be threaded stud type. The Auxiliary batteries shall be charged in same manner of the Starting Batteries in 4.5.1.

Battery Tray(s)

A minimum of four batteries shall be securely mounted on a heavy battery tray(s), which shall accommodate the battery system. Tray(s) shall pull out on heavy-duty rollers or swing out easily from outside the bus for service, inspection, and replacement. Batteries shall be held in position by tray separators and retained to the tray by a hold-down bracket. Battery tray shall be self draining and be made of stainless steel. Provisions shall be made to retain the battery tray in the normal stowed position by positive locks to prevent the tray from rolling out inadvertently while the bus is in motion.

Battery Cables

Battery cables shall be flexible and of sufficient length to reach the batteries when the battery tray is in the extended position without stretching or pulling on any connection or resting on top of the batteries or on the compartment floor when the tray is stowed. The battery cables shall be color-coded with red for the primary positive, black for negative, and white for any intermediate voltage cables. A diagram showing proper cable connections and interconnections shall be located in the battery enclosure. Cables shall be arranged to prevent incorrect installation. Except as interrupted by the master battery disconnect switch, battery wiring shall be continuous cables with connections secured by bolted terminals, and shall conform to specification requirements of SAE Standard J1127-Type SGT or SGX and SAE Recommended Practice J541. Heavy duty battery cables shall not be bent in a radius, which stresses insulation and promotes propagation of cracking. Jumper or interconnecting cables between batteries shall be of the same flexible cable. Solid copper or brass jumpers are not acceptable.

Battery Enclosure

Batteries shall be protected with a suitable non-corrosive enclosure. The battery enclosure shall incorporate vents on the sidewalls of the compartment and drains on the bottom to prevent buildup of fluids or gases while minimizing the intrusion of dust and debris. Battery enclosure, including access door or cover, shall be constructed of fiberglass, suitable plastic material.

Master Battery Switch(s)

A labeled, master battery disconnect switch(s) shall be located near the batteries. The switch(s) shall be adequately sized to carry and interrupt the total circuit load for all 12 and 24 volt electrical systems, with the exception of those systems that require power to maintain computer memory. An exterior access door for the master battery disconnect switch(s), size and location subject to MAX approval, shall be provided. Opening the master battery disconnect switch(s) with the Powerplant operating shall cause immediate engine and fuel system shutdown following engine and fuel system manufacturer protocol without damage to any component of the bus.

Auxiliary Power Connections

Independently wired quick connect-disconnect receptacles (one for systems which use a battery equalizer) shall be provided. Connections shall be made through 4/0 cables to the respective battery circuit. One 12-volt (if not an equalizer equipped system), and one 24-volt, female labeled receptacles shall be provided to boost start the bus. The receptacles shall be designed to prevent incorrect connection of MAX's jumper cable(s) and shall be provided with protective cover attached with a lanyard. The receptacle(s) shall be located at the left or right rear corner of the bus for convenient jumper cable connection, subject to MAX approval. The receptacle(s) must be labeled. Cables used shall not be bent in such a manner that the radius places stresses on the cable insulation, promoting propagation of cracks.

Exterior Lights

All exterior light bulbs shall be 12 volt and shall meet applicable DOT regulations. All colored lights shall be shock resistant LED if available and where applicable, subject to MAX approval.

Headlamps

Each bus shall be equipped with a minimum of two (2) dual, 12-volt round or rectangular face sealed beam, rough service halogen automotive headlights of countersunk type, having tilt-ray features, 60 watt high beam and 40-50 watt low beams. Headlights are turned on by the master switch in the NIGHT/RUN position, with a button type dimming switch mounted on the floor convenient to the operator's left foot.

Headlights and headlight supports and mountings shall be sufficiently rugged to maintain adjustments under road shock and service conditions. A headlight high beam indicator shall be installed on the instrument panel.

Stop, Tail, and Rear Directional Lights

Two LED 7-inch diameter sealed taillights shall be mounted on each side of the engine closure door or rear end panels, so that the lights are not affected by engine heat. The (red) stop/tail lights shall be mounted directly above the (amber) directional signal lights. Two additional LED 4-inch diameter (red) stoplights shall be located above the engine compartment door on the centerline of the bus. If stop and tail lights are not visible from the rear when engine door is in the open position, two LED 4-inch diameter amber hazard warning lights, one on each side of engine compartment, shall be furnished. Each light shall be replaceable as an individual unit. Plastic lenses shall be protected with a high performance scratch and chemical resistant coating to prevent deterioration and shall be non reflective.

Back-Up Lights

The white back-up lights, which meet all legal requirements, shall be mounted on the bottom of the lights described under Stop, Tail, and Rear Directional Lights. Visible reverse operation warning shall conform to SAE Standard J593.

Directional Lamps, Front and Side

Two amber colored LED directional signal lights that meet all legal requirements, and a minimum five (5) year warranty, shall be mounted on the front of the bus, subject to MAX approval.

Two LED directional signal lights shall be installed on each side of the bus, one located forward of the front wheel opening and one located behind the rear wheel opening at approximately 45 inches measured from ground level, subject to MAX approval. LED Directional lights shall be visible from automobiles and patrons next to the bus from various angles to prevent side collisions from turning buses. The interface between the light and the bus body shall be protected from or corrosion.

Clearance Lamps

Marker lights required by FMVSS 571-108 shall be LED flush or low profile, a keyed connector and be replaceable from outside the bus using simple hand tools. The interface between the light and the bus body shall be protected from corrosion. Marker lights shall be installed in such a manner as to prevent water leakage through the roof of side panels. Separate from any marker lights required by FMVSS, LED clearance lamps shall be provided on the roof surface at each bus corner to delineate bus height. These four corner clearance lamps shall be lighted when the master switch is in the night run position. An additional thirty-two candlepower filament shall be provided to flash through a silent electronic flasher unit when the SAS switch is activated.

Silent Alarm System

The SAS switch shall be (Microswitch Part No. 4TL 1-3) with spring load black cover. The SAS switch shall be mounted on control panel located to the left of seated operator. Two 16 ga. leads, one red and one orange, shall be wired to the normally open SAS switch terminals and routed to the ITS Equipment enclosure. SAS switch location and lead wire routing is subject to MAX approval.

Wheelchair Access System Lighting

Lights shall be provided at the doorway equipped with the wheelchair access system to floodlight the loading area. The LED lamps shall illuminate when the system is in operation and shall illuminate the street surface to a level of no less than 1 foot-candle for the distance of 3 feet square outward from the step tread edge.

Interior Lighting

An overhead LED lighting system, Dinex LED Lighting System or approved equal, shall provide general illumination in the passenger compartment. Complete lighting system shall include fixtures, lights, controls modules, and accessories. LED light fixtures shall be located above the side windows at or near the juncture of the bus ceiling and the sidewall and may be provided over the rear door. Interior lighting requirements shall be attained with advertising media installed. Interior lighting system shall have the capability to program each light panel separately.

Interior Lighting Levels

Light levels shall be measured on a one square foot plane, centered 33 inches above the floor at a 45-degree angle and 24 inches in front of the seat back at each seating position. The system shall be controlled by the master run switch and provide a minimum of 15 foot-candles of light at all times the floor surface in the aisle shall be illuminated at a minimum of 10 foot-candles. The floor surface in the vestibule shall be illuminated at a minimum of 4 foot-candles with the front door open and a minimum of 2 foot-candles with the front door closed.

Interior Lighting, Construction

The lighting system materials shall comply with the Federal Transportation Administration Docket 90-A Specification and shall meet all federal, state and local laws. The lighting components shall be located and constructed to prevent the entrance of dust, water, contaminants and insects. Lighting fixtures shall be hinged to provide easy access to bus wiring and equipment mounted behind the light fixture. The fixture lens cover shall be easy to remove and clean and shall be retained by vandal resistant threaded screws typical to those specified in

Access Panels. Access to the fluorescent lamps, ballast, and wiring interconnects shall not require removing the fixture from the bus structure. The fixture lenses shall have a cover with louvers or baffles designed to reduce glare in the windshield, which might affect operator visibility. The front lamps shall have removable blue filter covers installed over the tubes to further reduce windshield glare. Specified interior lighting intensity shall be met without these filters installed.

Interior Lighting, Lamp

The fluorescent lamps shall be US standard T12 single pin type and be “mercury free”. Wiring to the input connector and to the lamps shall be continuous, without splices or secondary connections.

Passenger Door Area Lighting

Front and rear passenger door areas shall be lighted by overhead lights so that entire door step and a portion of the ground area immediately outside the bus is sufficiently illuminated.

When the Master Switch is in the Night Run position the front and rear door area lights shall be on when the doors are open and off when the doors are closed.

Interior Step Lighting

Interior steps shall be lighted by two LED lights, suitably mounted so that entire step is sufficiently illuminated to a minimum level of 9 to 15 foot-candles. These lights shall be shielded to protect passengers' eyes from glare. The interior steps lights shall be on in all positions of the Master Switch except off. Lights shall be sealed to protect against direct water spray.

Operator's Lighting

The operator's area shall have a LED light to provide general illumination that shall illuminate the half of the steering wheel nearest the operator to a minimum level of 9 to 15 foot-candles. This light shall be controlled by a switch that is convenient on the console to the left side of the operator. The operator's light shall be off when the Master Run Switch is in the OFF position.

Fare Box Lighting

A pre-aimed overhead LED light shall be installed to provide general illumination of the fare box area to assist the operator with fare collection and bus pass identification at night. The light shall illuminate the top of the fare box and the surrounding floor area to a minimum of 15 foot-candles. The light shall come on only when the master switch is in "Night Run" position and the front door is open.

A by-pass switch shall be provided to deactivate the fare box light located on the Operators Side Control Module.

Engine and Service Compartment Lights

One or more incandescent service light(s), with a minimum 21 candle power each, shall be located in each equipment enclosure to provide adequate light for routine maintenance. Each lighting circuit shall include a suitable light switch provided in easily accessible location. Service lighting shall be provided in, but not limited to enclosures for: MULTIPLEX compartment(s), front and rear door actuators, battery box(s), electrical apparatus, and engine compartment(s). A minimum of five lamps shall be provided for engine compartment illumination. A common automotive electric lighter accessory socket shall be provided on, or adjacent, the rear control panel to power 12-volt portable service lights and diagnostic computers, subject to MAX approval.

SECTION V. ELECTRONIC AND CONTROL SYSTEM DESIGN

GENERAL REQUIREMENTS

The electrical control system shall use programmable logic controllers using I/O Controls or approved equal and utilizing the most current technology available including single point programming for basic bus function to reduce weight, improve diagnostics, and facilitate control design changes. The system shall be considered as a major subsystem with its own independent architecture.

The electronic vehicle control system shall be capable of arc detection and current sensing to provide advance warnings of impending component failures.

Prior to manufacturing the First Bus, the Contractor shall coordinate a technical review with MAX covering control integration, installation, and design. As part of the technical review, the Contractor shall advise MAX concerning control system features, options, and accessories, and shall conform, to the degree possible, to those already in use at MAX in an effort to increase component and system commonality.

Interconnection and Connectors

Interconnection and connectors shall be water resistant self-aligning pin and socket type, typical to Weatherpack, or equal. Individual slip-on "spade" or "blade" type connectors are not acceptable. Control devices shall have distinct and separate connections for input signals and output load. The wires used between data bus and devices shall consist of between 18 to 22 ga. UL or CSA approved multi strand wires. The load side shall have a minimum of 18 ga. load transfer wire UL or CSA approved.

Status Indicators

Each control module shall have built in diagnostic LED's that indicate input signal and output circuit operational condition. All devices must be made to survive rugged handling typical in a maintenance facility.

Interchangeability

Each identical module shall be interchangeable with every other identical module without adjustment or modification to the hardware. Prior written approval is required if special calibration or programming are needed to be downloaded when modules are replaced.

Firmware/Software

The manufacturer shall provide within 30 days after the acceptance of the last bus, the proper software to allow downloading system data from firmware using a personal computer. The operator interface shall be simple enough to allow a MAX mechanic to operate. The software shall be provided with the first production bus.

Vendor shall assure that all buses are equipped with the same revision software for all components. A listing of the software part and revision numbers, along with procedures for obtaining new releases shall be identified for each component that is software controlled.

Vendors shall supply two (2) laptops compatible with provided software, as described above.

Modular Design

Design of the electrical system shall be modular so that each major component, apparatus panel, or wiring bundle is easily separable with standard hand tools or by means of connectors. Each module, with the exception of the main body wiring harness, shall be removable and replaceable in less than 30 minutes by a MAX mechanic. Powerplant wiring shall be an independent module and shall be easily accessible. Replacement of the engine compartment wiring module(s) shall be possible without pulling wires through bulkhead or removing the PPA.

All system components shall be easily accessible without requiring any special tools. Electrical equipment shall not be located in an environment that will reduce the performance or shorten the life of the component or electrical system.

Electrical Components

Electrical components including MULTIPLEX modules, switches, relays, flashers, and circuit breakers, shall be heavy-duty, continuous duty design. To the extent practical, these components shall be designed to last the service life of the bus and shall be replaceable in less than 5 minutes by a MAX mechanic. Sockets for plug-in components, such as relays and circuit breakers, shall be keyed for proper installation and alignment. Plug-in components shall be positively retained in sockets.

Location of MULTIPLEX modules shall be reviewed for environmental suitability such as heat, water, vibrations, contamination from dust and debris, and other electrical equipment. The system including modules, external wire, connectors, and data bus wiring shall be designed to operate in the following environments:

- a) Temperature range between -30°C to +65°C.
- b) Moisture, rain, snow, and bus cleaning.
- c) Exposure to bus oil & grease.

d) Shall withstand 5g rms.

Operator Controls and Indicators

Switches and controls required for routine operation shall be within the hand reach envelope described in SAE Recommended Practice, J287, Operator Hand Control Reach. All controls (switches, pushbuttons, knobs, etc.) and indicators shall be labeled and lighted for optimum visibility in all operating conditions. Switches shall be protected against accidental operation. Knobs shall be securely mounted and affixed to preclude loosening. Audible alarms shall be loud enough for the operator to hear and to be inclined to discontinue operation of the bus. Wherever possible, sensors shall be of the closed circuit type so that failure of the circuit and/or sensor shall activate the indicator.

All controls, indicators, and signals necessary for the operation of the bus shall be conveniently positioned in the operator's area in one of the following locations

- Front Console Panel.
- Side Console (located on left side of the operator).
- Floor Mounted.

Gauges

Gauges shall be readable in all direct or reflected sunlight conditions. All lighting in the dash area shall be a night red, orange color, clear incandescent, or an approved equal. No unlit dash markings shall be permitted. The front console panel shall contain the following gauges:

- a) **Air Brake Reservoir gauge(s)**, min. 3 inch diameter, 0-150 psi range- Accuracy ± 2 psi with dual indicators, red for primary system tank and green for secondary system tank(s).
- b) **Speedometer 0-85 mph range-** Accuracy ± 2 mph. Unit shall incorporate an odometer and shall be installed so as to be easily readable by the operator.
- c) **Battery Voltage Gauge(s)** - as required by the system installed.

Indicators

All indicators and audible alarms (signals) shall have a method of momentarily testing their operation by using a spring loaded "press-to-test" button or toggle switch mounted on the dash panel.

Critical systems or components monitored by onboard diagnostic systems shall be displayed in clear view of the operator. This display shall have 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 through the use of back lighting.

Space shall be provided on the panel for future additions of no less than 5 spare indicators as the capability of onboard diagnostic systems improves. Blank spaces shall contain bulbs (or LED's).

The minimum indicators to be supplied on the Operator's Status Panel are:

VISIBLE INDICATOR	AUDIBLE ALARM
1. A/C Stop	None
2. AFSS Status (b)	None
3. Alternator Stop	None
4. Back-Up (a)	Back-Up Alarm
5. Check Engine	None
6. Check Transmission	None
7. Fire	Fire Bell
8. Gas Detection (b)	Sonic Horn
9. Hazard	Click
10. Headlight High Beam	None
11. Hot Engine	Hot Engine Buzzer
12. Interlock System Deactivated	Sonic Horn
13. Kneel/High Curb	Kneel Horn or Beeper
14. Left Turn Signal	Click
15. Low Air	Low Air Buzzer
16. Low Fuel	Buzzer
17. Low Oil Pressure	Low Oil Buzzer
18. Low Water	Low Water Buzzer
19. Parking Brake	None
20. Rear Door Sensitive Edge	Buzzer
21. Right Turn Signal	Click
22. Security Camera System	None
23. Speed	None
24. Stop Engine	Stop Engine Buzzer

VISIBLE INDICATOR	AUDIBLE ALARM
25. Stop	None
26. Stop Request	Stop Request Chime
27. Wheelchair Request	Wheelchair Request Chime

NOTE:

- (a) Indicator may be located on electronic transmission control panel
- (b) May be provided on AFSS control panel

Operator Controls

The following controls shall be positioned in operators' area subject to MAX approval:

Control	Preferred Location
1. Curb Side Mirror Controls	Side Console
2. Defroster control	Front Console, R/H side of Steering Column
3. Destination sign controls	Headsign Door (if required)
4. Diagnostic test port(s) (included with subsystems)	Operators area and ITS enclosure, subject to MAX approval
5. Engine Shutdown Override Switch (spring loaded, red cover)	Left Console
6. Engine Start push-button	Side Console
7. Farebox lighting bypass switch	Left Console
8. Fast idle switch	Side Console
9. Front door dump valve	Left Console
10. Hazard warning switch	Side Console
11. High curb switch	Front Console, R/H side of Steering Column
12. Horn button	Steering wheel hub
13. Indicator light test switch(es)	Front Console
14. Interior climate control	Side Console
15. Interior lighting switch	Side Console
16. Interlock Override Switch	Behind the Headsign door.
17. Kneel switch	Front Console, R/H side of Steering Column
18. Master run switch	Side Console

Control	Preferred Location
19. Operator's area light switch	Side Console
20. Operator's heater control	Front Console, R/H side of Steering Column
21. Parking brake control	Left Console
22. Passenger chime switch	Side Console
23. Public Address system controls (speaker selector and volume control)	Left Console
24. SAS System Switch (spring loaded cover)	Left Console
25. Standard Door Cycling Handle	Side Console
26. Transmission control	Left Console
27. Wheelchair ramp Controls	Front Console, R/H side of Steering Column
28. Windshield wipers and washer control	Front Console

Automated Light and Signal Test

An automated “pre-trip” test system shall enable MAX to perform a “walk-around” function check of all interior and exterior lights and audible signals. The system shall be activated from the Operators seat when the bus is in neutral, parking brake applied, and engine running. The system shall self cancel after approximately 3 minutes if left unattended. A dedicated dash mounted switch or combination of existing switches (such as depressing both turn signal switches) shall activate the test. The test shall be canceled when the service brake is applied.

Floor Mounted Controls

All floor mounted controls must be installed in a manner that removal can be accomplished by one mechanic working inside the bus. Foot surfaces of the pedals shall be faced with wear-resistant, nonskid, replaceable material. Pedal travel shall be limited by stops under the pedals. Contractor must provide proof that the ergonomics are appropriate before the First bus is accepted, subject to MAX approval.

- a) Accelerator and Brake Pedals
- b) Turn Signal Switches
- c) High Beam Switch

Engine Compartment Control Panel

A rear control panel shall be provided for the convenience and safety of MAX mechanics. The control panel shall be located in the engine compartment located in an area where it shall not be damaged during repairs. The control panel wiring, switches, and gauges shall be waterproof to withstand steam cleaning.

Control Panel Gauges

The following mechanical or electrical dial gauges shall be mounted on, or adjacent to, the engine compartment control panel:

- a) **Oil Pressure Gauge**, 0-100 psi - Accuracy ± 2 , psi, shall indicate oil pressure at a main oil galley.
- b) **Temperature Gauge**, 0-250 °F - Accuracy ± 2 , °F, shall indicate engine block coolant temperature.
- c) **Air Filter Restriction Gauge**, 0-20 inches H₂O- Accuracy ± 1 inch H₂O, shall indicate air filter restriction.
- d) **Voltage Gauge, 0-48 volts-** Accuracy ± 2 volts for 24 volt system.

Engine Panel Controls

The following controls shall be located on the engine compartment control panel:

- a) **Rear Run Switch:** Three-position toggle switch, marked REAR, OFF, and FRONT positions.
- b) **Light Switch:** Two-position toggle switch with waterproof cover labeled "Compartment" for control of the minimum of five incandescent lamps.
- c) **Engine Start:** Starter switch marked "START" shall operate the starter motor only when the rear run switch is in the "REAR" position and transmission is in neutral, and fuel fill door is closed. The Operators start button shall be deactivated when the Rear Run Switch is in "REAR" Position.
- d) **Engine Speed Control:** A spring return control Knob marked "ENGINE SPEED" shall be provided which will increase engine RPM from idle to maximum controlled free speed. The switch shall be activated only when the Rear Run Switch is in the "REAR" position, the transmission is in neutral, and parking brake set.
- e) **Diagnostic Test Ports:** Additional to the ports required in the operators' area under Operator Controls.

SECTION VI. ELECTRICAL SUB-SYSTEMS

Public Address System

Contractor shall install a public address (PA) system which enables the operator to perform audible announcements. A switch shall be provided to allow the operator to select announcements either inside, outside, or both. The location of the gooseneck microphone is subject to MAX approval.

PA Amplifier

The PA amplifier shall be installed in the ITS compartment, subject to MAX approval. The amplifier shall be supplied with a 12-volt D.C. switched service. The amplifying system shall be balanced such that no adjustment of volume is necessary when switching from inside to outside. The system shall automatically mute when not in use. A volume control shall be located in easy hand reach of the operator to adjust the volume of the gooseneck microphone.

Gooseneck Microphone

A microphone shall be mounted on a heavy-duty black anti-glare gooseneck with quick release input jack. The gooseneck microphone shall be mounted in a position to allow the operators' to comfortably speak without using their hands. The microphone, when deployed, shall remain stable in its position and be easily adjusted by the operator to reach approximately 4 inches from their mouth, in all normal seat adjustment positions. A strain relief (p-clip, or equal) shall be installed near the base as needed to prevent a gooseneck failure when the microphone is pulled to its adjustment limit. A padded bracket shall be provided to support the gooseneck when not in use. A replaceable foam cover shall be installed on the microphone to prevent damage to the Operator's side window or windshield.

Speakers

Interior and exterior speakers shall be of sufficient capacity to ensure that they are not damaged when full amplified power is applied. Inside speakers shall broadcast, in a clear tone, announcements that are clearly perceived from all seat positions at approximately the same volume level. Speakers shall be located in the light panel/HVAC duct to deter vandalism. The speakers shall not be mounted directly on the surface of the ceiling panels. A weather-proof speaker(s) shall be provided outside the bus so that announcements can be clearly heard by passengers standing near the door equipped with the wheelchair access.

Back-Up Alarm

An electrical back-up alarm or buzzer connected to the back-up lights which produces an intermittent sound shall be furnished to warn others that bus movement is in reverse. Audible reverse operation warning shall conform to SAE Recommended Practice J994 Type C or D.

Destination Signs

An automatic electronic full color, LED only destination sign system shall be furnished on the front, on the right side near the front door. Rear Route Number Sign shall be located as outlined under Rear Route Number Sign and shall display in amber LED display. Display areas of destination signs shall be clearly visible in direct sunlight and/or at night. Sign system shall provide optimum visibility of the message display units for passengers and shall meet applicable ADA requirements.

Destination signs shall be installed in such a manner as to facilitate easy access and replacement of the entire sign assembly, or components. Components such as fluorescent lamps and electronic control modules shall be replaceable from inside the bus. Lamps and associated parts shall be commercially available.

Front Destination Sign

The front destination sign shall full color LED display and have no less than 4800 pixels, 24 rows by 200 columns, with a message display area of not less than 7.75 inches high by not less than 64 inches wide.

Side Destination Sign

Side display area shall be full color LED display and have no less than 768 pixels, 16 rows by 120 columns with a message display area of not less than 2.8 inches high by not less than 36 inches wide.

Rear Route Number Sign

The route number display area shall be of amber LED display and have no less than 768 pixels, 16 rows by 48 columns with a message display area of not less than 6.1 inches high by not less than 18 inches wide. The rear route number sign shall be capable of displaying 4 alphanumeric characters (1 through 9 and A through Z). The rear route number sign shall be located a minimum of 90 inches above ground on the curb side rear corner of the bus.

Destination Sign Control

Power to the sign system shall be controlled by the bus "Master Run" switch. Sign system shall be operable in all switch positions except "Off".

Destination messages, route designations, and public relations messages shall be independently selectable via the Operator's Control Unit (OCU), which shall include a display monitor. The OCU shall communicate to the main processor board via a standard RS 485 serial bus or SAE J1708. Software shall be capable of programming 10,000 message lines. The number of public relations messages shall be limited only by the remaining number of message lines not used for destination purposes. The three-digit destination code shall accept all hexadecimal numbers (i.e. 0-9, A, B, C, D, E, & F).

The rear route number sign shall be controlled by the same OCU that operates the destination signs. The OCU display monitor readout shall show the exact information displayed on the destination signs and route number sign.

Sign displays shall have alternating message capability with programmable blanking time between message lines as may be required. Variable blanking times shall be programmable between 0.5 to 25 seconds in duration. Each line message or blanking time for each message shall be individually programmable. The message display units shall incorporate an automatic blanking feature that will cause the display area to blank within 30 seconds of the bus master power switch being turned off.

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

Destination Sign Programming

The electronic sign system shall be programmable via a integral connector located in the front destination sign area. Software shall be furnished for programming the sign system via an IBM compatible laptop computer. Software shall be capable of providing a high degree of flexibility to create, or select preprogrammed, fonts and graphic displays. The sign shall have the capability of being programmed in the field using a PC or field programmer. Message program information shall be transferable to and/or from the field programmer device, via a standard PC RS-232 or USB port.

MAX shall provide the Contractor with a complete listing of destination sign readings for initial sign programming by the manufacturer.

Run Number Sign

A four (4) character electronic run number display shall be provided at a MAX approved location in the right front windshield. All four (4)-character spaces shall have the capability to display 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 and X readings. The Run Number Sign shall display in amber LED.

ITS Equipment Enclosure

An equipment enclosure shall be provided to accommodate installation of the ATMS equipment, and future ITS equipment. The existing ATMS radio requires a clear space above the slide out tray of 11 inches high, 27 inches wide and 21 inches deep. Unless otherwise specified, additional ITS equipment provided and installed by the Contractor shall also be installed within the ITS enclosure. The enclosure shall be located directly behind the operator's area on the street side wheel housing. The ITS enclosure shall be as large as practical to facilitate future expansion of ITS equipment. The ITS enclosure shall be splash proof and properly ventilated when the service door is secured. The ITS enclosure shall include a minimum of three (3) modular slide out trays which are removable and can be repositioned to accommodate changes in equipment position as needed. Depending upon the configuration of the enclosure, MAX may required up to four (4) modular slide out trays which are removable and can be repositioned to accommodate changes in equipment position as needed. Slide out trays shall incorporate heavy duty slide or roller mechanism to support a minimum of 150 lbs. of loading and shall be able to withstand the normal shock and vibration, (under full load) experienced in MAX revenue service, without damage to the slide or roller mechanisms. The trays shall lock in both the in and out positions. The locking mechanism shall not interfere with the electrical connections or electrical components that will be installed within the enclosure. Service light(s) with suitable switch shall be provided within the enclosure, subject to MAX approval.

ITS Provisions, Power Supply

The ITS enclosure shall be provided with protected power buss circuits for the ATMS and future installed ITS equipment. These power requirements are in addition to Contractor provided equipment power requirements. In addition to the power provisions for ATMS, a 30 amp, 12-volt DC time switched circuit and a two (2) amp, 12 volt DC switched circuit shall be included for future ITS growth. Ripple voltage and transients shall not exceed 0.1-volts peak to peak.

Source	Volt	Circuit	Qty
Through Master Disconnect Switches	12	a) 30-amp, DC	1
	Gnd	b) Return for 30 amp circuit	1
Ignition	12	2-amp, DC switched circuit.	1
	Gnd	a) Return for switched circuit	1

Camera Security System

An automatic digital video recording system with motion activation shall be powered directly from batteries, bypassing the Battery Disconnect switch(es), to operate (record images) at all times when the Master Run switch is in any position. The system shall operate up to one hour (independently programmable) after the Master Run switch is turned off. The system shall be self-initiating and operate at any time, with the Master Run switch in any position, including "OFF", if triggered by the activation of the Vehicle SAS. When triggered, the system shall tag images (write protect).

An indicator light shall be integrated into the operator control panel, subject to MAX approval. When the indicator light goes off after illuminating during initial system startup, it will indicate system readiness including hard drive installed and system functionality. If the indicator light stays illuminating following initial system startup, it shall signal that the system may require service.

Interior Surveillance Cameras

The camera housing shall be vandal resistant but allow access for routine servicing. Field of view of the cameras to be adjusted with a 60 degree vertical and 60 degree horizontal without relocating the camera. Each camera shall be able to take minimum 720 X 243 pixel color images at one-second intervals, compressing these images, and storing those images until the system can download them to the central processor. Cameras should be configured to record both audio and video.

Four (4) interior cameras shall be placed for recording interior areas of the Vehicle, subject to MAX approval. The areas to be recorded include:

- a) Forward 1/2 of the bus passenger area, view of the front vestibule, and farebox transactions. The field of view for this camera will also include the Vehicle number located on the front destination sign door.
- b) Front door, passenger boarding.
- c) Rear door, passenger exiting area.

- d) Rear bus passenger settee area starting from behind rear door with a primary emphasis on the rearmost seats.
- e) Rearward 1/2 of the bus passenger area. The field of view will include forward 1/2 of the concertina. (optional)
- f) From the back settee area forward passenger area. The field of view will include rear 1/2 of the concertina. (optional)

Each camera shall be individually programmable to record sequentially.

Central Processor

The vehicle security system central processor shall be packaged in a suitable ventilated and splash resistant enclosure keyed to MAX standards, located within the ITS enclosure, subject to MAX approval. The Central Processor shall be capable of a minimum 12 camera inputs. Images shall be stored by the system on a removable hard drive provided with a security lock typical to the existing MAX base station. The hard drive shall have capacity to store eight images per second for 7 continuous days (18 hours per day) before automatic overwrite occurs. All image requests and subsequent downloaded files shall have the capability to be stored on a hard drive. The cartridge shall be easily removed and viewed at a separate location equipped with the same drive mechanism.

The video security system shall be integrated with a "3 axis" accelerometer or motion sensor that "Tags" images during "High G-force" events such as vehicle impacts or erratic driving.

Automatic Fire Sensing and Suppression System (AFSS)

The engine compartment shall be equipped with an automatic fire sensing and suppression (AFSS) system. The AFSS system shall meet or exceed the environmental requirements of SAE J1211. The purpose of the suppression system is to ensure bus and passenger safety and survivability in the event of a fire.

AFSS Operation

The AFSS system shall receive power from the batteries, be powered at all times and be activated automatically by the AFSS system sensors. The AFSS shall provide a signal to the engine shut down controls following detection of a fire. The AFSS initiated engine shutdown shall be integrated with the Engine Stop Over-Ride to permit the operator more time, if required, to slow and stop the bus (reference Operator Controls).

The AFSS sensors shall detect fires in monitored areas and immediately activate the fire alarm signal in the operator's compartment and fire warning light on the

operator's indicator panel. The AFSS system shall activate fast-acting extinguisher(s) that releases suppression agent to those monitored areas. After a system discharge, the bus shall be able to operate following a simple system reset.

AFSS Monitor Panel

The system shall have a monitoring panel located on the operators' side console subject to MAX approval. Monitor panel shall include visual indicators for a) Operational Status, for sensors, harness, and extinguishers, b) Fire or system discharged, and c) Power Failure. Panel must have manual activation for system discharge.

AFSS Sensor

A minimum of five automatic resetting sensors shall be located to monitor the critical areas described under Automatic Fire Sensing and Suppression System (AFSS). Sensors shall be located in the engine (3) and air conditioning attic compartments (2). Sensors shall be calibrated to sense fires or extreme temperatures that are sufficient to ignite combustible materials in the monitored areas. The AFSS control module shall provide a fault signal to the AFSS status indicator located in the operators' area in the event of a sensor failure.

AFSS Agent

The AFSS system shall use as its extinguishing agent an ammonium phosphate base, multipurpose dry chemical approved by Factory Mutual Research Corporation, or approved equal. The agent shall have no ozone depleting property.

AFSS Cylinder(s)

The AFSS agent cylinders shall use electric solenoid valves (squibs are prohibited) attached to DOT certified bottles which do not require hydrostatic retest for a minimum of twelve years. Cylinder(s) shall be compatible with dry chemical fire suppression agents. Each cylinder shall have a pressure gauge with easy to read "Go-NoGo" type indicator that is visible when the cylinder(s) is installed on the bus.

Gas Detection System (GDS)

GDS system shall be provided to monitor the engine compartment and each separate fuel storage area(s) and shall automatically activate audible and visible alarms in the operators' area at levels of the lower explosive limit (LEL), of natural gas (methane), subject to MAX approval.

GDS Operation

The system shall be capable of detecting gas in concentrations from 10 percent to 100 percent of LEL and shall continue to indicate the presence of gas at concentrations above 100 percent LEL. A control button shall be provided to silence the GDS audible alarm. The GDS shall provide an engine shut down signal after activation of the GDS. The GDS initiated engine shutdown shall be integrated with the Engine Stop Over-Ride to permit the operator more time, if required, to slow and stop the bus (reference System Control Definitions and Engine Protection Devices). The GDS shall be powered at all times from battery power and be in full time sampling mode at all times. When the master switch is in the "off" position the GDS shall automatically shutoff after a one hour delay. Warm up period if required shall be no more than 30 seconds maximum.

GDS Monitor Panel

The system shall have a monitoring panel located in the operators' side console area subject to MAX approval. Monitor panel shall indicate operational status of the sensors, harness, and calibration with visual indicators provided on the operators' indicator panel. Visual indicators shall include a) System OK (power on and calibrated), b) Gas Alarm, and c) Service Required

GDS Calibration

System shall not require calibration. System diagnostics shall not require more than ten minutes.

Vehicle Activity Monitoring and Health System

The contractor shall supply and install an Event Data Recorder (EDR), I/O Corporation, Model, G3-MFD, Tacholink Event Data Recorder or approved equal.

The EDR shall function independently from the Automated Transportation Management System (ATMS) and Master Display Terminal (MDT) systems. The entire EDR system shall operate from the CAN bus J1939 protocol using standard Gateway J1939 protocols. The EDR shall be capable of monitoring the following functions:

Vehicle Activity

- Date and Time
- Ignition Status Codes
- Vehicle Speed Codes
- Codes
- Engine RPM
- Diagnostics

Diagnostics/Trouble Shooting

Video Camera Inputs
Engine Diagnostic & Fault Codes
Transmission Diagnostic & Fault

Power Traction Unit

- Parking Brake Status
- Headlight Status
- Directional Light Status
- Hazard Light Status
- Door Position (Front and Rear)
- Multiplex Diagnostics and Fault Codes
- Engine Oil Temp. and Level Alarms
- Engine Coolant Temp. and Level Alarms
- Exhaust Temperature
- Fuel Pressure
- Air system Pressure

All data elements shall be stored in non-volatile” tamper resistant” flash memory or hard drive. Memory capacity shall be sufficient to store minimum 6 weeks of data under normal industry operating conditions before being overwritten.

All data shall be available for downloading manually at any time by authorized personnel using a standard laptop computer or similar means. After downloading, all original data shall remain stored in the EDR permanent memory until overwritten.

All data shall be the property of the vehicle owner. All software shall use industry standard “Windows” operating system. All software tools required for VAMHS configuration, data storage, downloading, analysis and presentation shall be provided by the VAMHS manufacturer and shall be an integral part of the Minimum Requirements of the VAMS.

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- The VAMHS shall include an Air Brake Monitoring System, Brake Insight®, from Geo-Developments or approved equal. The ABMS shall be an active system capable of monitoring and recording vehicle are brake activity, brake pad temperature and brake pad wear on a per wheel-end basis on a continuous basis.
- The ABMS shall have a minimum of two modes of software display operation, one for operator mode and for maintenance mode.
- Operator mode software shall display only critical fault conditions that are determined to be an immediate safety concern, such as “dragging, brake”; “ non-active braking system”; and “high pad temperature” Notification to the operator shall be warning light on the dash.

- The operator and Maintenance modes fault conditions shall be captured and displayed either through a Laptop Computer or from a Multi-Function Display located on or near the operators dash area.
- ABMS shall use SAE CAN J1939, SAE J1708, RS/495, USB or to a Data Terminal Device (DTE) such as a shop computer.
- All fault codes are to run in the background of the operator mode or maintenance mode and be stored in the ABMS data logger as an exception report. The event recorder/data logger shall output these faults codes on command to the EDR via the J1939 or J1708 or the display screen on the dash.

SECTION VII. MECHANICAL SUBSYSTEMS

Performance Requirements

The Contractor shall supply a Power Plant Assembly (PPA) and power train that provides adequate horsepower and gearing to enable the bus to meet minimum acceleration, top speed, and gradeability requirements loaded to GVW (Curb weight plus Gross load) with all sub-systems and accessories operating. For clarity, performance requirements shall be demonstrated on the road. Dynamometer or computer SCAAN simulations are not acceptable substitutes.

Top Speed

The bus shall be capable of reaching a top speed of 65 on a straight, level road at GVW with all sub-systems and accessories operating.

Gradeability

Gradeability requirements shall be met on grades with a minimum surface friction coefficient of 0.60 at GVW with all accessories operating. The PPA shall enable the bus to maintain a minimum speed of 55 mph on a 2.5 percent grade and 10 mph on a 16 percent grade.

Acceleration

An acceleration rate of 2.0 mph/sec (0.09g) shall be achieved at GVW from 0 and 20 mph. Acceleration measurement shall commence when the accelerator is depressed, from an idle start point. The minimum acceleration rates are as follows:

Speed (MPH)	Elapsed Time CNG (Sec)
0-10	5.6
0-20	11.0
0-30	20.0
0-40	31.0
0-50	60.0

Jerk

The rate of change of acceleration shall be minimized throughout the acceleration/deceleration range and shall not be greater than 15.5 mph/sec/sec (0.3g/sec).

Throttle & Brake Response

Throttle response times shall be measured from the activation or deactivation of the accelerator or brake pedal to the initial response of an on-board accelerometer measuring longitudinal Vehicle acceleration. Response times for power to brake, brake to power, coast to power and coast to brake shall be no greater than 0.20 seconds.

Power Plant Configuration

The PPA shall consist of an engine and transmission, and support equipment mounted in a compartment in the rear of the bus in T-drive configuration.

Prior to manufacturing the First Bus, the Contractor shall coordinate a technical review with MAX and engine and transmission suppliers covering integration and installation design. As part of the technical review, the Contractor shall advise MAX concerning engine and transmission features and control system options, and accessories, and shall conform, to the degree possible, to those already in use at MAX in an effort to increase component and system commonality.

Prior to start of production, the Contractor shall provide documentation from its sub-suppliers, which supports their approval, that the engine and transmission installation, support system design, and components used specifically for MAX's contract meet the OEM requirements and recommendations.

PPA Mounting

All PPA mounting points shall be mechanically isolated to minimize transfer of vibration to the body structure. PPA mounts shall be manufactured from high grade rubber or polyurethane material and shall last the life of the engine in MAX revenue service. PPA mounts shall not deteriorate from contact with oil, heat, and ozone present in the engine compartment.

All air, fuel, fluid, electrical, and other cabling connecting the cradle assembly to the bus, shall have "bulkhead" connections in the proximity of the firewall to facilitate the replacement of power train assemblies. Hoses, cables, and harnesses shall not require unclamping in order to remove the PPA.

PPA Service and Accessibility

The PPA shall be arranged to assure accessibility for all routine maintenance. No special tools, other than dollies and hoists, shall be required to remove the power plant. Two MAX mechanics shall be able to remove, replace, and prepare the complete PPA assembly for service within the MTTF specified under Maintainability Requirements. The MTTF does not include miscellaneous preparation such as placing the bus on stands and removing the bumper if

necessary. PPA components such as the muffler, catalytic reactor, exhaust system, air cleaner, air compressor, starter, alternator, radiator, all accessories, and any other component requiring service or replacement shall be easily removable, independent of engine and transmission removal.

Engine tune-up, PPA removal and replacement, cylinder heads, and accessories, including, but not limited to muffler, exhaust system, air compressor, alternator(s), starter, and A/C compressor, shall be serviceable from a flat floor and without the use of a pit or hoist.

The Contractor shall provide two suitable PPA dollies for each spare PPA purchased under this Contract. The Contractor shall mount and ship the spare PPAs purchased and delivered under this contract onto these dollies. The PPA dollies shall be designed, subject to MAX approval, for long term storage of spare PPAs and also aid MAX in PPA replacement to meet the specified MTTF. Use of the PPA dollies shall be included in the Service manual. The dolly wheels shall be heavy duty and solid steel, approximately 6 inch diameter. The Contractor shall provide MAX with sufficient fabrication drawings needed to manufacture additional dollies.

Accessory Drives

PPA driven accessories shall be unit mounted for quick removal and repair. Accessory drive systems including belts shall operate without failure or unscheduled adjustment for 50,000 miles in MAX service. Accessories shall be driven at speeds sufficient to assure adequate system performance during extended periods of idle and low route speed operation. Belt drive systems shall be self-adjusting after initial installation adjustment. Accessory drive belts shall be guarded in accordance with OSHA article 45, Belt and Pulley Drives, Section 4070 "Guarding".

Fluid Service Access

All fluid fill locations shall be color coded to ensure correct fluid is added: red for transmission fluid, yellow for engine oil. Fill points shall include easy to read labels prominently displayed at the fill point indicating the type and specification of fluid to be added. The radiator surge tank fill cap shall be hinged and shall close with spring pressure and a positive lock. The engine oil filler cap shall be a spring loaded with sufficient force to retain the cap in a closed position after servicing with no additional action by a service attendant.

All lubricant sumps, including engine, transmission, transmission cooler and hydraulic reservoir, shall be fitted with magnetic-type, external, dry break drain plugs of a standard size.

Fluid Lines

Unless otherwise specified, all hydraulic, fuel, oil, and airlines shall be made with steel tubing. When rigid lines are not practical, flexible fluid lines shall be kept as short as practical. Flexible lines shall be Teflon hoses with braided stainless steel jackets except in applications where premium hoses compatible with the fluid and fuel type are required. Standard SAE or JIC end fittings shall be used.

Rigid and flexible lines shall be individually supported, subject to MAX approval, and shall not touch one another or any part of the bus (reference Fluid Line Attachment). Each individual line shall be identified with a steel tag that includes a line number or OEM part number for easy identification. Fluid lines shall be routed or shielded so that failure of a line shall not allow fuel or oil to contact any component, which can reach the auto ignition temperature of the fluid.

Engine, Transmission, and Hydraulic System Oil Filtration

Oil filtration systems shall be approved by the engine and transmission OEM and be designed with by-pass circuits, as needed, in the event that a filter becomes plugged.

The hydraulic system (steering) shall be located within the engine compartment to accommodate easy service. The hydraulic system filter shall be located in the return, low pressure, circuit to the oil reservoir. Sufficient pump cleanable strainers shall be installed to keep the hydraulic pump and system free of contamination. The strainers shall be located within the engine compartment for easy access and service.

Cooling Systems

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 General Guidelines.

Engine cooling

A sight glass to determine satisfactory engine coolant level shall be provided and shall be accessible by opening one of the engine compartment's access doors. A spring-loaded, push-button type valve 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 in. above the ground. Both shall be accessible through the same access door.

The radiator and charge air cooler shall be of durable, corrosion-resistant construction with bolted-on removable tanks.

Radiators with a fin density greater than 12 fins per in. or a louvered slit design shall not be used.

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

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

The radiator and charge air cooler cores shall be easily cleaned (to include engine side core surface) with standard pressure-washing equipment.

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

Self-cleaning

Radiator and charge air cooler fan(s) shall be electrically driven and capable of automated reverse operations for periodic self-cleaning of the radiator and charge air cooler. As a result of the high amperage draw of this option manufacturers should take special care to ensure a properly sized alternator is provided.

Mounting location of radiator and charge air cooler shall be the contractor's standard design.

The cooling fan shall be temperature controlled, allowing the engine to reach operating temperature quickly.

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.

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.

Coolant

The cooling system shall be equipped with an ethylene glycol based coolant approved by the engine manufacturer and compatible with MAX's existing coolant product. Coolant shall be 50% ethylene glycol with de-ionized or distilled water. The coolant shall contain the proper proportion of NALCOOL 3000 corrosion inhibitor, or equal, and must meet all current manufacturer specifications.

The cooling system shall be self purging. Quarter-turn ball valves shall permit complete shutoff of both lines for the heating and defroster units. All low points in the cooling system shall be equipped with drain cocks. The radiator drain plug provided at the radiator shall be a minimum ½" dry break type. The drain plug shall be protected from damage and have a provision for attaching a drain adapter for directing the draining fluid into a container. This shall be accomplished without having the coolant drain onto or through any structure of body parts.

Surge Tank

A heavy-duty stainless steel radiator surge tank shall be located above the radiator. The surge tank shall provide sufficient draw down capacity as required by the engine manufacturer plus an additional capacity to compensate for a 10 percent loss of coolant. A full length heavy duty sight glass or dual high-low sight glasses (nonplastic) shall be provided to determine satisfactory engine coolant level accessible by opening the surge tank access door. A spring-loaded, push-button type valve shall be provided to safely release pressure or vacuum in the cooling system. This valve and the water filler shall be accessible through the same access door. Surge tank filler cap shall have a safety lock. A 1/4 inch NPT port shall be provided in a convenient location in the surge tank for MAX's pressure testing equipment, subject to MAX approval.

Radiator

The radiator shall be of durable corrosion-resistant construction with bolted on removable header tanks made of brass, or stainless steel. Piping between the engine and the radiator shall be stainless steel, copper or brass tubing. No heat producing components, such as intake charge-air-coolers, or climate control system components shall be mounted between the engine cooling air intake aperture and the radiator. Sensor port fittings (1/8" NPT) shall be provided in the upper and lower sections of the radiator to allow the use of thermocouple for diagnostics.

Radiator and Charge Air Cooler Mounting and Accessibility

The radiator and charge air cooler unit(s) shall be mounted in such a manner to be replaceable by one MAX mechanic within the MTTF specified under Maintainability Requirements. The units shall be easily accessible for cleaning and maintenance by one MAX mechanic in less than one hour. Mounting shall be designed so that a MAX mechanic can gain full access to the fan side of the units for cleaning without the use of tools. This may be accomplished by swing out design, removable fan shroud section, or suitable inspection door.

Radiator Design

Radiator cores shall be provided with side guards attached to the fins only, not to the headers. New solder shall be used for core construction and shall have a minimum content of 97% tin, 3% copper and contain no lead. Louvered fins are not acceptable.

Coolant Hoses

Water hoses shall be suitable 4-ply polyester fabric reinforcement silicone material. All hoses shall be protected from engine exhaust heat that may cause premature failure.

Coolant Hose Clamps

All hose clamps shall be stainless steel. All hoses shall have 0.625 inch wide, constant torque, hose clamps.

Engine

The engine shall be designed for city transit bus application. The engine shall be designed to operate without failure for 300,000 miles in MAX's revenue service without major failure or significant deterioration. The engine shall be capable of smooth and powerful performance at a Methane Number (MN) of 73 or higher. Electronic controls, supplied by the OEM engine manufacturer, such as throttle control, programmable control module(s), and engine protection system, shall be provided and integrated with other bus electronic systems. Components of the

fuel delivery and control system shall be designed to operate for 150,000 miles without replacement or major service.

Engine Air Filtration

The engine air inlet system shall be provided which meets the requirements of the OEM engine manufacturer. The air inlet system shall include a heavy duty, high dust capacity, dry paper air filter with outside-to-inside air flow with an initial efficiency of 99 percent when tested per SAE Standard J726C, latest edition. The air filter shall be positioned for easy access and service. Air inlet piping from the air filter to engine inlet shall use T-bolt type heavy duty, minimum 3/4" wide, band clamps at all joints. One 1/8" NPT test port, with brass plug, shall be provided near the air filter. The test port shall be positioned for easy accessibility with the engine door open.

Engine Protection Devices

The engine shall be equipped with, at a minimum; low oil pressure, hot engine coolant, and low coolant level sensing devices, which shall activate an engine protection system. The engine protection system shall reduce power if necessary and shut down the engine, including shutting off the fuel supply by following a programmable time period between 10 to 30 seconds when the engine oil pressure drops, or the engine temperature reaches or exceeds the maximum safe operating temperature, or prior to loss of coolant causing the cooling system to cavitate abnormally. The engine shall also shut down when a signal is received by another bus system such as the AFSS or GDS. An engine shutdown override feature shall be provided to recycle the shut down sequence to permit the operator more time to stop the bus.

Fast Idle

The engine shall be equipped with an operator-controlled fast idle device. The device shall activate only with the transmission in neutral. This device may be used to help meet the requirements of bus cool down under Pull Down Performance.

Starting System

The Contractor shall provide a heavy-duty 24-volt electric engine starting system. The starter will have a pre-engaged drive, which will engage into the ring-gear before the starter begins to turn. The starting system shall be inoperable whenever the master switch is in the OFF or NIGHT PARK positions, and whenever the emergency shut-off switch is activated, the fuel door is open, or the engine is running. An interlock system shall be provided to make the starter motor inoperative after the engine is started.

Engine Exhaust System

The exhaust system shall discharge vertically near the upper-left rear corner of the bus. Exhaust piping location shall preclude entrance of exhaust fumes into air intakes for the climate control system. No passenger discomfort or public hazard shall result from the exhaust location. This system shall be insulated and routed to preclude excess heat penetrating fluid lines and/or wiring harnesses. In addition, the exhaust system shall prevent excessive heat from causing a fire hazard. The placement of the exhaust outlet shall be located to prevent any discoloration to the bus exterior from exhaust. The exhaust outlet shall direct exhaust directly to the rear of the bus. Exhaust terminus may be at the bottom below the bumper and in accordance with all applicable codes.

Exhaust system shall incorporate joints as necessary to facilitate removal and replacement of individual components including exhaust muffler or, if required to meet emissions requirements, catalyst units. Mounting cushions, if provided, must last the life of the engine and shall not deteriorate when exposed to high exhaust system temperatures. Exhaust piping joints shall be reusable bolted flange or machined V-band clamp design. Flexible exhaust lines necessary to accommodate engine movement shall be constructed from stainless steel bellows. Exhaust piping in the engine enclosure shall include reusable insulation blanket(s) that are easy to replace.

Transmission

The transmission shall be designed for city transit bus application. Electronic controls, supplied by the OEM transmission manufacturer, shall be provided and integrated with other bus electronic systems. A warning light must be on the dash to indicate failure.

Transmission Retarder

The transmission shall include an integral hydraulic retarder and controls specifically designed for transit bus operation to maximize brake lining life. The retarder application shall be controlled by the throttle and brake pedals and shall be integrated with the ABS system controls. When applied, the retarder shall provide the most aggressive application provided by the transmission.

Transmission Fluid

The transmission shall be flushed of any non-synthetic transmission oil and filled with an OEM approved synthetic fluid, designed for extended drain intervals. Unless otherwise agreed to in writing, the synthetic transmission oil provided by the Contractor shall be compatible with MAX's existing synthetic transmission oil, **TranSynd Synthetic Transmission fluid, Castrol TES-295 or approved equal.**

Transmission Heat Exchanger

The transmission shall have an external, full flow, heat exchanger sized to handle the transmission heat loads, inclusive of the retarder system, which meets the transmission manufacturer's requirements. The heat exchanger shall be located within or near the engine compartment for easy replacement. The heat exchanger will have provisions to drain transmission oil during routine servicing.

Transmission Retarder Controls

The retarder shall be activated at all times and deactivated automatically when signaled by the anti-lock brake system. The retarder shall be modulated by throttle and brake position. The retarder shall apply: 1/3 when "off-throttle", 2/3 when light brake application, and 3/3 when full brake application.

Hydraulic System

Only Power Steering accessory may be driven hydraulically, subject to MAX approval. The hydraulic system shall be filled with premium approved fireproof, synthetic oil that will demonstrate a mean time between fluid replacements in excess of 50,000 miles. All elements of the hydraulic system shall be easily accessible for service or unit replacement. A full-length heavy-duty sight glass (non plastic) shall be provided to determine the level of hydraulic fluid in the reservoir. Critical points in the hydraulic system shall be fitted with pressure ports so that portable diagnostic equipment may be connected.

The system shall be configured and/or shielded so that failure of any line shall not allow hydraulic fluid to spray or drain onto any component operating above the auto ignition temperature of the fluid.

Compressed Natural Gas (CNG) Fuel System

A compressed natural gas fuel system consisting of fuel cylinders, filler provisions, fuel lines, pressure reduction, and auxiliary equipment necessary to safely operate under all operating conditions shall be provided. The Contractor shall provide sufficient fuel capacity to give a forty foot bus a 400-mile range before the low fuel warning light comes on. The 400-mile range shall be based on:

- A service cycle that utilizes only the CBD portion of the FTA, ADB heavy-duty transit bus cycle.
- The CBD portion shall be further modified to add 20 minutes of idle time.

Smaller sized buses should also have a minimum 400-mile range. The Contractor shall provide MAX with a technical analysis that supports the

proposed CNG fuel system design compliance to MAX's range of operation requirement including the proposed fuel capacity. The analysis shall contain at a minimum:

- Source of fuel economy information (pounds per mile or standard cubic feet per mile).
- Bus condition including weight.

The analysis shall use the natural gas data supplied below and shall be provided with the Proposal.

Lower Heating Value Btu/lb	Molecular Weight	Density @ 3614.7 psi	Density @ 14.7 psi	Specific Gravity
21904	16.734	12.49 lb/cu ft	0.044 lb/cu ft	0.580

The system shall be capable of refueling at a minimum rate of 4,100 scfm.

CNG Fuel Line Installation

Fuel lines shall be installed in accordance with NFPA 52, Title 13 and NGV2 requirements. Fuel lines shall be mounted using anchor blocks and routed to permit replacement of individual lines and fittings. Fittings used in the fuel system shall be approved for use in high pressure natural gas applications. Fuel lines shall be bent using computer numeric machines (CNC) to assure consistency, no hand bending will be permitted.

CNG Pressure Regulators

A primary fuel pressure regulator shall be supplied and mounted in an accessible location for servicing. Coolant lines shall be routed in a manner to prevent trapping air or draining coolant when the regulator is removed for service.

Pressure Relief Device (PRD)

PRDs shall be vented to the roof area of the bus with minimum protrusion above the roofline and shall be protected with a suitable cap that shall withstand daily bus wash activity.

CNG Fuel Cylinders

The fuel cylinders shall have a 3,600 psi working pressure. The fuel cylinders shall be mounted on the roof in such a manner that replacement of one cylinder shall not require the removal of additional cylinders. The fuel cylinders shall also

be clearly marked with serial numbers that shall be easily visible to mechanics when installed on the bus.

Fuel cylinder construction shall be in accordance with DOT Standard 304, ANSI NGV2, latest revision, design, and test criteria, or most current requirement. Cylinder shall be designed for the lightest weight possible that does not require a hydrostatic re-qualification. Cylinders shall be certified for refueling pressures to 125 percent of working pressure during temperature compensated fueling. One solenoid operated shut off valve shall be installed on each individual fuel cylinder. A control over-ride system shall be provided to sequentially operate (open or close) solenoid valves. The use of Hybrid fuel cylinders as an alternative to a composite cylinder is not acceptable.

CNG Fuel Cylinder Access

Roof top access cover(s), to shield the cylinders from the weather and impacts from trees and limbs, shall be attached to the bus structure hinged in a manner that permits one mechanic standing on the roof to unlatch and swing the cover(s) open for routine inspections. The cover(s) shall be hinged along the axis of the bus and open to either side providing complete access to the cylinders with mechanic(s) positioned standing on the roof. A safety latch system shall be provided so that the doors when opened cannot inadvertently close during servicing. The latching method shall utilize quick release captive hardware that can be demonstrated to last the life of the bus. Failure of the latch(es) shall not result in the cover opening while the bus is in operation. The bus roof shall be coated with "anti-slip" epoxy paint applied to areas that will accommodate safe access for routine inspections of the fuel cylinders. Attachment points for attaching safety belts hooks shall be provided at various locations needed to perform rooftop fuel cylinder inspections and replacements.

CNG Service Valves

A quarter turn valve, easily accessible through the fuel door shall isolate the high pressure manifold and fuel storage system from the rest of the engine fuel system. The valve function and open and closed positions shall be clearly marked. An additional 1/2" 3-way valve shall be provided for draining the high pressure manifold and any fuel cylinder(s) through a service port. Type and location of the service port shall be subject to MAX approval.

CNG Fuel Pressure Gauges

Glycerin filled gauges, which meet NFPA 52 requirements, or most current requirements, shall be located in the high and low pressure manifolds that shall indicate fuel system pressure. The high pressure fuel gauge shall have maximum 100 psi increments, 0-5,000 psi, and shall be visible during fueling operations be rated for the maximum system pressure, have welded (not soldered) fittings and

have a restrictive orifice. A pressure transducer shall be incorporated into the high pressure fuel manifold that shall provide the operators' low fuel warning light that shall activate at between 300 and 400 psi.

CNG Fuel Filler Assembly

A single fuel filler receptacle shall be located on the right side, rear corner, of the bus, 36 to 50 inches from the street surface. The fill receptacle shall accept a Sherex CC-5000, or approved equal, nozzle and shall incorporate a dust cap permanently affixed to the receptacle. The fuel fill access door shall incorporate a starter interlock system that prevents the bus from starting and going into gear, when the fuel door is open and the nozzle is connected.

CNG Fuel Filters

Filters, rated for the system working pressure, shall be provided that meet the engine manufacturer's requirements and are effective for use in MAX's CNG compressor environment. Primary and Secondary coalescing filters shall be equipped with a drain valve to periodically drain coalesced contaminants. The piping to the secondary coalescing filter (low pressure side) shall be no less than 90 inches away from the Primary fuel pressure regulator to prevent the coalescing filter from freezing up due to pressure drop during cold morning start ups.

Suspension System Features

The bus shall be equipped with an air suspension system using air springs (bellows) as a flexible connection between body and axle to absorb and cushion road shocks and provide a smooth and comfortable ride quality. Bellows shall be mounted to provide easy replacement under bus. With the bus loaded to GVWR, the suspension system shall be designed to prevent interference between the suspension and other components, not limited to the drive train, under all dynamic operating conditions including complete loss of air and the failure of elastomeric elements of the suspension and PPA mounting.

Level Control Valves

Heavy duty height control valves **or an electronic sensor controlled system** shall be provided to keep the bus body in relatively level position and shall contain a dampening or compensating feature to prevent excessive consumption of air resulting from high-frequency axle movements over rough streets. The height control valves will retain the height of the body in relation to the axles under all loading conditions. Regardless of load, the bus relative height to the centerline of the wheels shall not change more than ± 0.5 inches.

Axle Hubs

Axle hubs shall be HUB first wheel mounting. Hubs shall be painted semi-gloss (50%) black with no paint on mating surfaces. Hubs shall permit installation of polished aluminum wheels.

Front Axle

The front axle suspension shall be solid beam or an unequal control arm designed with a load rating sufficient for the bus loaded to maximum GVWR.

Drive Axle

The drive axle shall be a heavy-duty, full floating type, incorporating a spiral bevel drive. End tubes shall be removable and shall be threaded to allow for adjustment of wheel bearing nuts. The housing drain plug shall be magnetic type, standard size external hex head.

The differential carrier shall incorporate the differential assembly, drive pinion and pinion cage. Carrier shall be removable as a complete unit from the axle housing. Axle shafts shall be the floating type with all wheel bearing loads carried on the axle housing end sleeves. The drive flanges at the outer end shall be attached to wheel hubs by studs, nuts, and tapered dowels.

Wheels

Wheels shall be interchangeable at all positions. Front wheels and tires shall be dynamically balanced and counter weighted as an assembly. Balance weights shall be rim/lip mounted. Stick-on adhesive weights are not acceptable. Wheels shall be polished aluminum finish.

Wheel Bearings

Wheel bearing seals shall run on replaceable wear surfaces. Wheel bearings and hub seals shall be properly lubricated with grease prior to assembly and shall not leak oil or weep grease for 100,000 miles when operating in MAX revenue service.

Wheel Stud Nut(s)

Wheel stud nut(s) shall be finished with rust preventative in natural steel with black oxide finish, no paint, and be sized to accommodate polished aluminum wheels that are applicable to disc brake configurations.

Tires

Tires are to be furnished to the Contractor by MAX or authorized representative. Contractor shall provide MAX with a record listing tires installed for each bus delivered. The information shall include MAX brand serial number and mounting location on the bus. Contractor shall conform to tire manufacturer specifications for maximum road speed and duty cycle during bus delivery.

Hubodometer

A "million mile Hubodometer" (Fleetwatch Model 392), or approved equal, (no tenths), shall be installed with a protective bracket, on the curbside drive axle flange studs. Wheel assembly must be removable without removing the Hubodometer or bracket. Contractor shall install and assign and calibrate the Hubodometer prior to "final acceptance" at the factory.

Drive Shaft

The drive shaft shall be guarded to prevent it from striking the ground or damaging the floor, fluid lines, airlines, wire harnesses, or other equipment of the bus, in the event of a tube or universal joint failure.

Shock Absorbers

Damping of the suspension system shall be accomplished by gas charged 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 3 cycles or less after hitting road perturbations. Shock absorbers shall be replaceable by a MAX mechanic in less than 30 minutes. The shock absorber Bushing shall be made of elastomeric material that will last the life of the shock absorber.

Rebound travel may be limited by elastomeric bumpers or hydraulically within the shock absorbers.

Axle Stops

Elastomeric axle stops shall be provided between the axle and frame on each side of the axles or as an integral part of the air suspension bellows to prevent axle and/or frame damage at the limit of jounce travel.

Kneeling

The bus shall incorporate a system controlled by the operator that permits the bus to lower (kneel) 3 inches, measured from normal ride height at the center of the bottom front step regardless of passenger load. Brake and throttle interlock shall be activated to prevent movement when the bus is kneeled. The bus shall kneel at a maximum rate of 1.25 inches per second at essentially a constant rate. After kneeling the bus shall recover within 3.5 seconds to a ride height permitting the bus to resume service and shall fully recover to the correct operating ride height within 10 seconds regardless of load up to one and one half times GVWR. During the lowering operation, the maximum acceleration shall not exceed 0.2g and the jerk shall not exceed 0.3g/sec. measured on the front door step tread.

A kneel indicator light, visible to the operator, shall be illuminated until the bus has recovered to a height adequate for safe operation. The indicator lights shall be clearly labeled. Warning devices that operate with the kneeling system which are visible and audible to passengers near the curbside of the front door shall be provided.

Raising (High Curb)

The bus shall incorporate a system controlled by the operator that permits the bus to raise (to account for high curbs) 3 inches, measured from normal ride height at the center of the bottom front step regardless of passenger load up to one and one half times GVWR. Brake and throttle interlock shall be activated to prevent movement when the bus is raised. The bus shall rise at a maximum rate of 1.25 inches per second at essentially a constant rate. After rising the bus shall recover (lower) within 3.5 seconds to a ride height permitting the bus to resume service and shall fully recover to the correct operating ride height within 10 seconds. During the lowering operation, the maximum acceleration shall not exceed 0.2g and the jerk shall not exceed 0.3g/sec. measured on the front door step tread.

A high curb indicator light, visible to the operator, shall be illuminated until the bus has recovered to a height adequate for safe operation. The indicator lights shall be clearly labeled. Warning devices that operate with the high curb system which are visible and audible to passengers near the curbside of the front door shall be provided.

Lubrication Points

All elements of steering, suspension and drive systems requiring scheduled lubrication shall be provided with grease fittings conforming to SAE Standard J534 (Zerk Fitting). These fittings shall be accessible with a standard grease gun from a pit or with the bus on a hoist. Grease fitting locations requiring removal of

covers or panels for accessibility shall have a remote fill point. Each element requiring lubrication shall have its own grease fitting with a relief path.

Steering System

Hydraulically assisted power steering shall be provided. Steering torque applied by the operator shall not exceed 10 foot-pounds with the front wheels straight ahead. Steering torque may increase to 70 foot-pounds when the wheels are approaching the steering stops. Steering effort shall be measured with the bus at Seated Load Weight (SLW), stopped with the brakes released and the engine at normal idling speed on clean, dry, level, commercial asphalt pavement with the tires inflated to recommended pressure. Power steering failure shall not result in loss of steering control. While the bus is in operation, the steering effort shall not exceed 55 pounds 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.

Caster angle shall be selected to provide a tendency for the return of the front wheel to the straight position with minimal assistance from the operator. Contractor shall align, center, and adjust front axle wheel stops in accordance with the manufacturer's recommended procedures.

Steering Wheel

The steering wheel shall be at least 19 inches in diameter and shall be shaped for comfort with firm grip. Foam-covered steering wheel is not acceptable. The steering wheel shall be removable with a standard or universal puller.

Steering Column

Steering column shall be a tilt and telescopic model. Column shall be easily adjustable while operator is seated in the operator's seat and shall be capable of a minimum of 6 inches fore and aft and 2 inches vertical adjustment. The mechanism for adjustments shall be designed for ease of use, durability, utilize detents to position and lock the steering column and not require tightening by hand to apply a clamping force.

Turning Radius

Outside body corner turning radius shall not exceed the maximum stated in General Dimensions, at SLW. The front tires shall not rub or interfere in any manner with bus body parts when turned in either direction under all operating conditions.

Service Brakes

The entire service brake system, including ABS controls, friction material, shall meet applicable FMVSS standards. Self-adjusting Disc Brakes shall be provided.

Brake Actuation

Service brakes shall be air controlled and actuated. Force to activate the brake pedal control shall be an essentially linear function of the bus deceleration rate and shall not exceed 70 pounds at a point 7 inches above the heel point of the pedal to achieve maximum emergency braking.

Brake and Throttle Interlock

The bus shall incorporate a rear brake interlock and throttle interlock system. The interlock systems shall be controlled automatically in conjunction with specified subsystem operations including passenger doors. Once activated the brake interlock shall not release until the operator makes a light service brake application. The interlock system shall also energize the 4-way flasher system.

Brake Pads

Brake pads shall be asbestos-free friction material bonded to the backing plate. Pads shall be easy to inspect and measure from beneath the bus without removing any components. Disc pads meeting DOT and FMVSS standards shall be used. Stainless steel wear indicator pins shall be used at all wheel locations. Plastic wear indicators will not be accepted by MAX.

Brake Clearance

Brake system shall be self-adjusting. Disc Brakes shall include a means of maintaining the clearance between the pads and the rotors.

Parking Brake

The parking brake shall be actuated by a valve mounted convenient to the operator, subject to MAX approval. In the event of total loss of air pressure, spring brakes shall be applied automatically.

Air System

The bus air system shall operate all accessories and the braking system with reserve capacity. The engine driven air compressor shall be sized to charge the air system from 40 psi to the governor cutoff pressure in less than 3 minutes

while not exceeding the engine's rated speed. Provide tamper proof seals to prevent accidental adjustment on all critical pressure regulators.

Air Lines

Air lines, except necessary flexible lines, shall conform to the installation and material requirements of SAE Standard J844-Type 1 for copper tubing with standard, brass, flared or ball sleeve fittings, or SAE Standard J844-Type 3B for nylon tubing if not subject to temperatures over 200°F. Accessory and other non-critical lines may use Type 3A tubing. Nylon tubing shall be installed in accordance with the following color coding standards:

Green	Primary brakes and supply
Red	Secondary brakes
Brown	Parking brake
Yellow	Compressor governor signal
Black	Accessories

Air Lines, Installation

All airlines shall be sloped toward a reservoir and routed to prevent water from accumulating. Grommets shall protect the airlines at all points where they pass through understructure components. Line supports shall prevent movement, flexing, tension strain, and vibration. Copper lines shall be protected to prevent them from touching one another or any component of the bus. To the extent practical 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 least every 5 feet. Nylon lines may be grouped and shall be continuously supported.

Air Compressor

Air compressor shall be rigidly mounted and gear driven directly by the engine. The compressor discharge line between power plant and body mounted equipment shall be stainless steel, copper, or may be flexible Teflon hose with a braided stainless steel jacket. The intake line shall be heavy duty, and reinforced to prevent collapse and readily accessible. Other lines necessary to maintain system reliability shall be flexible Teflon hose with a braided stainless steel jacket. All lines connected to compressor shall be easily removed for cleaning/inspection.

End fittings shall be standard SAE or JIC brass or steel, flanged, reusable, swivel type fittings. Flexible hoses shall be as short as practical 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-foot intervals or less.

Air lines shall be cleaned and blown out before installation and shall not leak down more than 6 psi as indicated on the instrument panel mounted air gauges, within 15 minutes from the point of governor cut off.

Air Tanks

All air reservoirs shall meet the requirements of SAE Standard J10 and, regardless of mounting location, shall be equipped with hand operated drain valves which are accessible from outside under of the bus. These valves, and any automatic moisture ejector valves, shall be labeled to identify the associated tank and shall be protected from road hazards by major structural members. Reservoirs shall be sloped as necessary to direct fluid toward the drain valve. The air system shall be protected by a non adjustable pressure relief valve set at 150 psi and shall be equipped with check valves and pressure protection valves to assure partial operation in case of line failures. The pressure relief valve shall vent to the outside of passenger compartment. Air tanks shall be of adequate capacity to meet all operating and safety requirements. Air tanks shall meet SAE standard J10, or approved equal. All air tanks shall have check valves at the inlet side for isolation.

Air Auxiliary Tank

The auxiliary tank shall supply air to the suspension system and front air manifold that shall supply all air components in front of bus including door, wipers, and rear door controls when applicable. The tank shall be protected by a 90 psi pressure protection valve.

External Air Connections

Provision shall be made to supply external air connections for the bus air systems. Air connectors shall be standard air chucks shall be conveniently located in the engine compartment and female connector located at the front end of the bus. Airlines leading to the external air shall include hand shut-off valves.

Air Compressor Governor

Air governor shall be non-adjustable and preset to 120 psi cut-out pressure. Air governor shall be mounted in a suitable location which will be easily accessible for maintenance.

Air System Dryer

The air dryer system shall operate automatically and be sized to eliminate moisture and oil in the airlines and main air tank. The air dryer system shall

require minimum routine maintenance. The desiccant filter shall be replaceable by spin-on filter.

Bicycle Rack

A front mounted, 2-position, stainless steel fold-up black bicycle rack shall be provided. The installed bicycle rack shall be capable of removal for bus towing within 1 minute, using simple hand tools. MAX shall require the Contractor to have a light indicator for bike rack deployment. An indicator light located on the operator's dash area is preferred.

SECTION VIII. INTERIOR CLIMATE CONTROL (HVAC)

The Contractor shall supply an air conditioning modular package with the latest model Electric A/C compressor assemblies. MAX may consider an electric air conditioning compressor system. Interior noise generated from any A/C unit (s) shall be the lowest levels technologically achievable, and shall not exceed 72 dBA.

Interior Temperature

The interior climate control system shall maintain the interior of the bus at a level suitable for all climatic conditions found in MAX's service area. The heating, ventilating, and cooling systems shall maintain an average passenger compartment temperature between 65°F and 85°F with relative humidity from 5 to 50 percent while the bus is running in MAX's revenue service with a full load of passengers.

Continuous Performance

In ambient temperatures of 95°F to 115°F and with relative humidity lower than 50 percent, the system shall maintain a temperature gradient of 15°F while the bus is operating in MAX revenue service with a full standee load of passengers. The temperatures measured from a height of 6 inches below the ceiling shall be within $\pm 5^\circ\text{F}$ of the average temperature at the top surface of the seat cushions. Temperatures measured more than 3 inches above the floor shall be within $\pm 10^\circ\text{F}$ of the average temperature at the top surface of the seat cushions. The interior temperature from front to rear of the bus shall not vary more than $\pm 5^\circ\text{F}$ from the average.

Pull Down Performance

The cooling mode shall be capable of reducing the passenger compartment temperature from 110°F to 90°F in less than 20 minutes after engine startup under the following conditions:

- a) Engine temperature shall be within the normal operating range at the time of startup 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 400 psi and the condenser discharge air shall not exceed 145°F, measured 6 inches from the surface of the coil.
- b) The bus shall be parked in direct sunlight with the ambient temperature at 100°F and humidity less than 20 percent. There shall be no passengers onboard and the doors shall be closed.

A/C System Components

Manual shutoff valves in the refrigerant lines located near the compressor shall allow isolation of the compressor and receiver for service. To the extent practical, self-sealing couplings shall be used to break and seal the refrigerant lines during removal of major components such as the refrigerant compressor or condenser.

The condenser shall be located to efficiently transfer heat to the atmosphere, and shall not ingest air warmed by the bus mechanical equipment above the ambient temperature or discharge air into any other system of the bus. The condenser and evaporator fan motors shall be brushless and shall be easy to replace in a maximum of one man-hour using simple hand tools. Fan motor replacement shall not require removal of fan housing or air ducting.

HVAC Controls

Solid-state controls shall be provided in convenient location to the operator. The operator shall have limited control of the climate control system including setting interior temperature between 65°F and 75°F. Additional controls provided to the operator include ventilation fan speed, A/C-OFF-HEAT. The operator shall also control the defroster and operator's heater. The interior climate control system shall switch automatically to the ventilating mode if the A/C system fails.

Refrigerant Type

The system shall use HFC-134A or approved equal refrigerant. The bus air conditioning system shall consist of demountable modules.

Ventilation, Passenger Area

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 feet per minute per passenger based on the standard configuration bus with full standee load. Air flow shall be evenly distributed through the bus with air velocity not exceeding 60 feet per minute on any passenger. Ventilating motors shall slow to low speed when the desired cooling set point is achieved. Ventilating motors will return to high speed when the demand to cooling is required.

Air flow may be reduced to 15 cubic feet per minute per passenger when operating in the heating mode with full standee load. The fans shall not activate until the heating element has warmed sufficiently to assure at 70°F air outlet temperature. Heater re-circulating pump shall be brushless and seal-less.

Outside airflow may be cut off during initial warm up, provided no manual manipulation is required.

Ventilation, Operator's Area

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 ventilating and cooling modes. 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. The interior climate control system defroster shall maintain visibility through the operator's side window. The operator shall have control to divert and adjust the amount of defroster air directed to the operator's feet and legs.

Air Intakes

If provided, outside openings for air intake shall be located to ensure cleanliness of air entering the climate control system, particularly with respect to exhaust emissions from the bus and adjacent traffic. All intake openings shall be baffled to prevent entry of water.

Air return intake grill(s) shall be louvered, hinged at the top and meet the air conditioning manufacturer's recommended return airflow.

The filter shall meet the ASHRAE requirement for 5 percent or better atmospheric dust spot efficiency, 50 percent weight arrestants, and a minimum dust holding capacity of 120 gram per 1,000 cfm cell. More efficient air filtration may be provided to maintain efficient heater and/or evaporator operation. Air filters shall be easily removable for service. Moisture drains from air intake openings shall be located so that they will not be subject to clogging from road dirt.

Wheelchair Access System

A simple folding ramp system shall be provided at the front door to provide access to the bus from street or curb level. The ramp shall stow in the vestibule area and be constructed of corrosion resistant light weight material. The ramp shall deploy easily from the operators' area using a simple hydraulic or electromechanical system and be capable of manual operation if necessary.

The system shall meet all applicable ADA requirements. The total cycle time required to deploy, cycle, and stow shall not exceed 60 seconds.

Legal Requirements

The access system as installed shall comply with all applicable federal, state and local regulations. This includes applicable provisions of the American Disabilities Act. In the event of any conflict between the requirements of this specification and any applicable legal requirement, the legal requirement shall prevail.

Controls

The loading operation shall be under the surveillance and complete control of the operator. A dash mounted indicator light shall be provided and shall be illuminated when the loading system is activated. The bus shall be prevented from moving when the wheelchair loading system is activated.

An audible "warning" alarm will sound simultaneously with operation of the system to alert passengers and bystanders. Each operation shall require continuous manual pressure by the operator and shall not allow unintentional improper access system operation.

Platform

The wheelchair loading platform clear area shall be no less than 30 inches wide and 44 inches long and capable of accommodating a total load of 600 pounds. The platform shall be covered with a replaceable or renewable, nonskid material. The platform shall be fitted with barriers to prevent any powered or non-powered wheelchair with a total load of up to 600 pounds from rolling or being driven off the sides. A strap shall be provided on the forward edge of the ramp for emergency manual operation. The strap will not interfere with normal operation of the ramp, and not collect debris when the ramp is in the stowed position.

The access system platform shall not deploy when a passenger is on the platform. When the loading platform is stowed no tripping hazard shall exist between the platform and transition to the main floor.

Manual Over-Ride

A manual over-ride shall permit storing the access device in the event of a primary power failure.

SECTION IX. APPROVED COLORS, MATERIALS, AND PRODUCTS

Color

The bus color scheme shall be in conformance with the applicable CD provided by MAX. Final color and design of the bus finish is subject to MAX approval.

Exterior Finishes

All exterior surfaces shall be impervious to fuels, lubricants, and commercial cleaning agents. Exterior painted surfaces shall have a minimum of 0.5-mil thick primer coat and a minimum 2.5-mil thick finish coat. Mil thickness shall conform to paint manufacturer's specifications. The interior of both passenger doors shall be primed with suitable acid-resistant paint. All painted aluminum sheets shall be thoroughly cleaned and coated on the outside with appropriate corrosion inhibitive protective paint, or approved equal, prior to installation on bus.

Approved Exterior Paints and Colors

The manufacturer shall submit for MAX's approval, a drawing showing paint lines and breaks, prior to production. Drawing shall show location of bends as dimensioned from a convenient reference point. The first bus shall be painted and decaled according to the color scheme and layout provided by MAX and subject to MAX approval for remainder of the buses.

Wheels and Wheel Covers

Wheels shall be Alcoa Durabrite polished aluminum. Wheels must be sized to accommodate disc brakes at all wheel locations. Front and rear wheel covers shall be integrated with the style of the bus, subject to MAX approval.

Bumpers and Fender Skirts

All visible surfaces shall be semi-gloss black. Bumper material shall be corrosion resistant black polyurethane type material, or equal.

Glazing

Glazing shall be solar management glass (SMG) tinted blue. The hue shall be consistent throughout the procurement. Glazing for the Operator's windshield shall have a green tint.

Modesty Panels

Panels shall be constructed of 0.375-inch melamine colored to match the interior ceiling panels. The operators' side of modesty panels located behind the operator shall match the color of the front section panels.

Trim Panels

Laminated plastic (.10 melamine) shall be LASCO Class A, Enhanced Pebble Finish, 419 white, installed with grain running horizontal.

Side Panels

Interior side panels shall be embossed stainless steel with "leather grain" finish. Finish shall permit easy removal of paint, grease, fingerprints, and ink.

Ceiling Panels

Laminated plastic (.10 melamine) such as Formica Gemina, Consoweld Dura Beauty Glacier Gray, Antique White Arborite Panel, Pumice SG-203-1, or approved equal.

Rear Bulkhead Panels

LASCO Class A, Enhanced Pebble Finish, 419 white, installed with grain running horizontal, or approved equal.

Operators Barrier

Operator's barrier shall be opaque Lexan Resin 9038 sheet or melamine material finished to match the modesty panels, subject to MAX approval. Barriers shall have uniform thickness, 0.375-inch minimum. The operators' side of the barrier shall match the color of the front section panels.

Front Section Panels

All colored, painted, and plated parts including fasteners forward of the operator's barrier shall be finished with a flat black, (non reflective) surface. Colors shall match or coordinate with the balance of the bus interior.

Passenger Assists

In general, all areas of the passenger assists that are handled by passengers including functional components used as passenger assists shall be stainless steel (finished to 180 grit). The assists that are located on the rear interior step (if so equipped) shall be yellow. In addition, the assists and connectors that are located adjacent to the rear door shall be yellow. All assists and connectors located forward of the yellow standee line shall be yellow PVC coated, or yellow

nylon coated. PVC coating shall be yellow and 3-mil minimum. PVC covering is available from Tube Craft, 1311 West 80th Street, Cleveland, Ohio, or approved equal.

Passenger Seats

Vandal resistant seat inserts shall be covered with Multiplcity, HoldsWorth BBNR24978, BusTex FGV913 or approved equal. MAX reserves the right to substitute any other stock fabric at no additional cost. The final decision on fabric shall be made by the time of the Pre-Production Meeting. Seat inserts shall have a minimum 1" padding, bottom and back, and shall not affect the hip to knee requirements throughout the bus. Padding material used shall comply with Docket 90 regulations.

Floor Covering

All floor material shall be smooth ALTRO vinyl, or approved equal. Floor color shall be dark gray subject to MAX approval. Color shall be consistent throughout the floor covering.

Decals

Contractor shall furnish and apply all decals. Final sizes and locations shall be approved by MAX. All "screened" markings shall be coated with a protective abrasion resistant film that resists damage from cleaning chemicals, graffiti, and sunlight. MAX shall furnish the Contractor with a CD showing the location requirements of all exterior and interior decals at the 1st pre-production meeting or upon request. Contractor shall furnish any other markings necessary for identification of windows, hatches, etc., in both English and Spanish. Roof decals shall be applied so that the bottom of the numbers point toward the street side.

SECTION X. SYSTEM CONTROL DEFINITIONS

The following definitions are added detail of MAX's standard Controls, Operational Conditions, and System Interfaces.

Control	Description	Operational Conditions
LEFT & RIGHT TURN LIGHTS (flashing)	<ul style="list-style-type: none"> • Master switch in any position (off, day, night and park) • Turn on by floor mounted turn signal switch • Turn on by hazard lights switch 	<ul style="list-style-type: none"> • Activates when ramp is deployed
HAZARD LIGHTS (flashing)	<ul style="list-style-type: none"> • Master switch in any position (off, day, night and park) • Turn on by hazard lights switch on side console 	<ul style="list-style-type: none"> • When hazard switch is on, prevents multiplex from entering sleep mode
LOW BEAM HEADLIGHTS	<ul style="list-style-type: none"> • Master switch in night position only and high beams off 	
HIGH BEAM HEADLIGHTS	<ul style="list-style-type: none"> • Turn on by floor mounted high beam headlights switch • Master switch in night run position only and low beams off 	
MARKER/CLEARANCE LIGHTS	<ul style="list-style-type: none"> • Master switch in night or park position 	<ul style="list-style-type: none"> • Flash when panic (SAS) switch is activated.
TAIL LIGHTS	<ul style="list-style-type: none"> • Master switch in night or park position 	

Control	Description	Operational Conditions
STOP LIGHTS	<ul style="list-style-type: none"> • Master switch in day, night or park position • Service brake applied • Park brake set 	<ul style="list-style-type: none"> • On with brake interlock
HIGH MOUNTED STOP LIGHTS	<ul style="list-style-type: none"> • Master switch in day, night or park position • Service brake applied • Park brake set 	<ul style="list-style-type: none"> • On with brake interlock
DOOR LIGHT (GREEN)	<ul style="list-style-type: none"> • On when driver opens rear door 	
ADA LIGHT	<ul style="list-style-type: none"> • On only when the ramp is deployed 	
KNEELING/RAMP LIGHT	<ul style="list-style-type: none"> • Flashes while ramp is deployed • Flashes when bus is kneeling or raising 	<ul style="list-style-type: none"> • Audible alarm (exterior)
UNDER ENGINE DOOR LIGHTS	<ul style="list-style-type: none"> • Connect to turn signal circuit • Flash with hazard lights (visible with the engine door open) 	
ENGINE COMPARTMENT LIGHTS	<ul style="list-style-type: none"> • Turn on by a switch on the engine control box • Turn off by main battery disconnect switch 	<ul style="list-style-type: none"> • Controlled by multiplex system and goes to sleep with bus
BATTERY COMPARTMENT LIGHTS	<ul style="list-style-type: none"> • Turn on by a switch in the battery compartment • Turn off by main battery disconnect switch 	<ul style="list-style-type: none"> • Controlled by multiplex system and goes to sleep with bus

Control	Description	Operational Conditions
MAIN ELECTRICAL PANEL LIGHT (if installed)	<ul style="list-style-type: none"> • Turn on by a switch in the main electrical compartment • Turn off by main battery disconnect switch 	<ul style="list-style-type: none"> • Controlled by multiplex system and goes to sleep with bus
ZONE PANEL LIGHTING	<ul style="list-style-type: none"> • Turn on by a switch in the zone • Turn off by main battery disconnect switch 	<ul style="list-style-type: none"> • Controlled by multiplex system and goes to sleep with bus
PASSENGER DOOR-DRIVE LIGHTING	<ul style="list-style-type: none"> • Turn on by a switch behind access panel above the door • Turn off by main battery disconnect switch 	<ul style="list-style-type: none"> • Controlled by multiplex system and goes to sleep with bus
DASH BACK LIGHTING	<ul style="list-style-type: none"> • Turn on by master switch in night or park position • Adjust intensity by rheostat on the dash 	
DRIVER'S LIGHT	<ul style="list-style-type: none"> • Master switch in day, night or park position • Turns on by a switch on side console 	
FARE BOX LIGHT	<ul style="list-style-type: none"> • Turns on when entrance door opens • Turns on by a switch on side console 	<ul style="list-style-type: none"> • Additional switch on light fixture
FRONT DOOR HEADER LIGHTS (Curb Lights)	<ul style="list-style-type: none"> • Master switch in night or park position • Turn on when door is enabled or opened 	

Control	Description	Operational Conditions
REAR DOOR HEADER LIGHTS (Curb Lights)	<ul style="list-style-type: none"> • Master switch in night or park position • Turn on when door is enabled or opened 	
STEPWELL LIGHTS	<ul style="list-style-type: none"> • Master switch in night or park position 	
INTERIOR LIGHTS (fluorescent)	<ul style="list-style-type: none"> • Master switch in any position (off, day, night and park) • Turns on by a switch on side console 	<ul style="list-style-type: none"> • Remains on with Transmission in reverse • Curb side lights only on with doors closed and master switch in park position
VESTIBULE INTERIOR LIGHTS	<ul style="list-style-type: none"> • Master switch in night or park position • Turn on when front door is open 	<ul style="list-style-type: none"> • Remains on with Transmission in reverse
KNEEL/RAMP ALARM	<ul style="list-style-type: none"> • Master switch in day or night position • Activates continuously while ramp is deployed • Activates when bus is kneeling (raising or lowering) 	<ul style="list-style-type: none"> • Alarm remains on during kneeling cycle. • Alarm remains on until ramp is stowed
BACK-UP ALARM	<ul style="list-style-type: none"> • Turns on when Transmission is in reverse 	
RAMP DEPLOY/STOW	<ul style="list-style-type: none"> • Engine running • Passenger door at ramp location fully open • Transmission in neutral • Park brake set 	<ul style="list-style-type: none"> • Activates throttle interlock system • Alarm remains on during ramp deploy/stow cycles

Control	Description	Operational Conditions
KNEELING (Lowering/raising)	<ul style="list-style-type: none"> • Engine running • Front door fully open • Transmission in neutral • Park brake set 	<ul style="list-style-type: none"> • Activate throttle interlock system • Alarm remains on during kneeling cycle • Bus returns to “ride height” when momentary “up” switch is activated • Bus can be raised above “ride height”. Requires two activations of the toggle switch if starting from below “ride height”
FRONT PASSENGER DOOR	<ul style="list-style-type: none"> • Master switch in any position (off, day, night and park) • Door master switch on • Door remains open when the ramp is deployed • Front door position of five-position switch active • Door remains open during kneeling cycle 	<ul style="list-style-type: none"> • Door open at any bus speed • Door opens and remains open when the system fails

Control	Description	Operational Conditions
<p>REAR PASSENGER DOOR</p>	<ul style="list-style-type: none"> • Master switch in day, night or park position • Door master switch on • Rear door position of five-position switch active 	<ul style="list-style-type: none"> • Door opens and holds for 2 seconds if sensitive edge is activated before door closes completely. • Door will not open above approximately 3 MPH • Upon activation of emergency switch, door remains close until buses reaches about 3 MHP, at that point door open • Door is controlled by the driver

Control	Description	Operational Conditions
<p>BRAKE /THROTTLE INTERLOCK</p>	<ul style="list-style-type: none"> • Master switch in day, night or park position • bus speed approximately 3 MPH or less • Engine run switch in “rear start” position with master run switch on • Kneeling system active with master run switch on • Ramp deployed with master run switch on • Rear door open • Rear door emergency switch activated and bus speed 3 MPH or less • Brake pedal must be depressed 10 - 15 psi to disengage interlock • Fuel Door Open 	<ul style="list-style-type: none"> • Brake/Throttle interlock over ride switch in MAX approved location

Control	Description	Operational Conditions
ENGINE STARTER	<ul style="list-style-type: none"> • Master switch in day or night position • Parking Brake set • Transmission in neutral • Engine run switch in front position and master switch in day or night position • Engine run switch in rear position and master switch in day or night position • Fuel door closed 	<ul style="list-style-type: none"> • Allow five (5) seconds delay for “Stop Engine” and “Check Engine” indicators to illuminate and then go out before pushing the “Engine Start” button
SHIFT FROM NEUTRAL INHIBITOR	<ul style="list-style-type: none"> • Master switch in day or night position • Engine run switch in the front position • Engine already running • Depress brake pedal 15 psi or more 	
FIRE SYSTEM ENGINE SHUTDOWN	<ul style="list-style-type: none"> • Engine shuts down in approximately 10 seconds after fire detection system is activated 	
FIRE DETECTOR LIGHT & ALARM	<ul style="list-style-type: none"> • Red indicator light alarm located in suspension system control box activates 	<ul style="list-style-type: none"> • Dash buzzer activates
WATER BOOSTER PUMP	<ul style="list-style-type: none"> • Activates with the engine running and front heater/defroster on 	

Control	Description	Operational Conditions
DRIVER'S HEATER	<ul style="list-style-type: none"> • Master switch in day, night or park position • Driver's heater switch on 	
STOP REQUEST SIGN	<ul style="list-style-type: none"> • Master switch in day or night position • Front and rear doors closed • Stop request switch activated • Sign remains on until either front or rear door is opened 	
STOP REQUEST CHIME	<ul style="list-style-type: none"> • Master switch in day or night position • Front and rear doors closed • Stop request switch activated • Chime dings once and will not ding again until either front or rear door is opened 	
HANDICAP STOP REQUEST CHIME	<ul style="list-style-type: none"> • Master switch in day or night position • Front and rear doors closed • Stop request switch activated • Chime dings twice and will not ding again until either front or rear door is opened 	

Control	Description	Operational Conditions
ENGINE FAST IDLE	<ul style="list-style-type: none"> • Engine run switch in “front start” position • Engine must be running • Transmission in neutral • Park brake set • Turn on fast idle switch on side console 	
ENGINE INDICATOR LIGHTS	<ul style="list-style-type: none"> • Check Engine • Stop Engine (<i>shutdown controlled by engine</i>) 	
TRANSMISSION INDICATOR LIGHTS	<ul style="list-style-type: none"> • Check Transmission 	<ul style="list-style-type: none"> • Hot Transmission
DESTINATION SIGN	<ul style="list-style-type: none"> • Turn on by master switch in day, night or park position 	

SECTION XI. TECHNICAL SUPPORT REQUIREMENTS

Service Representative(s)

The Contractor shall submit with the Submittal a list containing the name, address, and telephone number of the representatives responsible for assisting MAX, as well as the location for off-site repair and maintenance of the buses to be supplied. The Contractor shall, at its own expense, provide a full-time dedicated MAX service representative. MAX shall provide office space and telephone at only one location.

Unless previous arrangements are made with MAX, the individual must be available and respond to electronic pager within a maximum 8 hours on a 24-hour a day basis. This individual's principal point of contact at MAX shall be MAX's designated Project Manager.

Training and Instruction

The Contractor shall have one or more qualified instructors who shall be available at MAX between the hours of 7:00 a.m. and 5:00 p.m. during the period immediately after acceptance of the First Bus. Contractor provided Instructor(s) shall conduct regular and "train the trainer" type classes, for various size groups, to advise MAX trainers and mechanics on the proper operation and maintenance of equipment. The Contractor shall provide 80 Instructor classroom hours with the 20 Base bus order. MAX shall approve the proposed trainers and their qualifications, proposed subjects and scheduling of the classes conducted by the Contractor. Training shall be provided throughout the Contract period up to the conclusion of the initial Warranty period, one year following receipt of the final bus. MAX shall have the ability to assign whatever portion of the 80 training hours to any of the curriculums noted in the section under "Training Curriculum."

For each Option order, Contractor shall also be required to provide Instructor training. The quantity of training hours shall be determined by the quantity of Option Buses ordered and shall be equal to 4 hours of training per Option bus up to a maximum of 120 instructor class-room hours for each training package and for each Option order. MAX may elect to reduce the amount of training required for the Option orders. MAX shall approve the proposed trainers and their qualifications, proposed subjects and scheduling of the classes conducted by the Contractor. Training shall be provided throughout the Contract period up to the conclusion of the initial Warranty period for the Option Buses, one year following receipt of the final bus.

Training Curriculum

The Contractor shall develop and submit a training curriculum using Microsoft Office Word and/or Power Point, subject to MAX approval. The curriculum will be discussed during Pre-Production meetings and submitted to MAX no later than 30 days prior to delivery of the First Bus. The curriculum shall be designed specifically for MAX bus order and shall incorporate drawings and or illustrations of all special equipment ordered on the buses such as:

- Engine
- Transmission
- HVAC System
- Electronic Controls and Sub-systems
- Electronic Controls and Sub-systems
- Special Equipment (Fire and Gas Detection, Operators seats etc.)
- ABS Brake System
- Steering and Suspension
- Pneumatic System
- Passenger Door/Wheelchair ramp system
- Fuel system and delivery
- Maintenance bus Orientation
- Operator bus Orientation
- Security Camera System
- Composite Body Structure

Teaching Materials

The Contractor shall provide to MAX Maintenance Instruction Department visual and other teaching materials as needed during classroom instruction. Teaching materials shall be subject to MAX approval. Typical teaching materials include items such as; printed technical literature, service training and operating manuals, slides, CD-ROM presentations, overhead presentations, etc.

Service Manuals

Service manuals shall be divided into separate sections. The manuals must include:

- a) Preventative Maintenance Procedures by section- (PMP) specifically for use at MAX Operating Divisions. Procedures must identify what inspection criteria procedures are at interval by time or mileage. Daily inspection is not acceptable criteria for preventative maintenance.
- b) Diagnostic Procedures- Include trouble-shooting guides for all air, fluid, and electrical systems with schematics correlated to each trouble shooting section. All schematics provided must be listed under a comprehensive index for each type that is to include location diagrams for connectors and harnesses. Sub-system schematics such as the transmission assembly are to include only information that pertains to the particular bus configuration delivered to MAX.

- c) Parts Manuals - Must be specific and referenced by exact exploded view diagrams.
- d) Component Repair Manuals- Ten (10) complete sets of manuals. The manuals must show every rebuildable component used on the bus. For example, the steering box, air compressor, power steering pump, differential, transmission and engine must be included.

Ten (10) Hardcopy sets of manuals shall be provided for the Base Order Buses. For any Option buses, four (4) hardcopy sets of manuals shall be provided for each 10 Option Buses. All manuals, excluding OEM Component Repair Manuals, shall also be provided in CD ROM versions. The CD ROM versions shall be provided with licenses, which permit MAX to load the manuals on an unlimited number of MAX computers and/or server units. Twenty (20) final edition PMP, Diagnostics, and Parts manuals shall be provided on CD-ROM. Neither generic nor poor quality reproductions shall be acceptable. Manuals must be in English. The CD-ROM version may consist of multiple CDs.

Service Manual Review and Approval

MAX will assemble a technical review committee to critique service and parts manuals. The Contractor will be required to participate in this process and attend one service manual review meeting held at MAX shortly following MAX Notice to Proceed. The draft manuals shall be shipped simultaneously with the first First bus. The final meeting will be scheduled after receipt of draft manuals but prior to the ship date of the first Production bus.

The Contractor shall provide MAX with (5) draft hardcopies each of the PMP, Diagnostic, and Parts manuals plus a list of all proposed OEM Component Repair manuals, simultaneously to the shipping of the first First bus. Hard copy manuals shall be provided in suitable 3-post binders clearly identified with the bus manufacturer and model number, MAX bus series number, revision date, and title of contents. Draft Parts manuals are further defined to include a minimum of 95 percent of all part numbers with an error rate of less than 5 percent. It will be the responsibility of the Contractor to ensure the accuracy of part numbers. A part number accuracy failure rate exceeding 5 percent will be cause for MAX to reject the Draft Service manuals.

Final CD ROM edition PMP, Diagnostic, and Parts repair manuals must be delivered within 90 days after MAX written acceptance of the manuals. Following the 90-day period after acceptance of the manuals, MAX may withhold \$2,500 per bus delivered until all maintenance and parts manuals are received.

Manuals on CD ROM

Final edition Service (PMP), Diagnostic, and Parts manuals shall be provided on CD-ROM. CD-ROM shall include an index and search function to locate items by

subject, part name, or system. Updates shall be delivered to the Maintenance Instruction Department as they occur. Updates must be identified with effected system and with update revision dates. All subsystems such as Engine, transmission and Air Conditioning Service and Parts manuals shall also be included on CD-ROM. The final type of required electronic format for the manuals shall be provided by MAX at the Pre-Production meeting.

Preventative Maintenance Program Service Manual - Updates

Updates shall be coordinated with MAX's Safety & Training Department. Bulletin updates may be transmitted as needed. Updates to the manuals shall be grouped and released to MAX as needed, not to exceed 3 times per year for 12 years.

PMP Manual

PMP manuals shall be specific for MAX's bus order and shall include the manufactures inspection and maintenance and lubrication requirements for buses covered by this procurement and shall not contain any unrelated or unnecessary requirements. All routine maintenance schedule requirements, including maintenance of major subsystems, shall be provided in one master PMP matrix. The master PMP matrix shall include; specific service task, service mileage, and PMP service manual section reference. The PMP manual shall also include remove-and replace instructions for all sub-system components including: PPA, Transmission, starter, alternator, A/C compressor, air compressor, etc.

Diagnostic Manuals

Diagnostic manuals which may be integrated with the maintenance manual shall include isometric, phantom, and schematic illustrations as necessary to completely describe each system including but not limited to location and routing of air, hydraulic, water, lines and electrical harnesses including all anchor and attachment points. Diagnostic manuals shall also include trouble shooting guides necessary to complete running repairs for all supplied bus equipment.

Contractor shall supply one diagnostic code card for each bus provided that covers trouble shooting fault codes related to the engine, transmission, ABS system, etc.

Component Repair Manuals

Ten (10) sets of Component Repair Manuals necessary to rebuild all Contractor supplied Units including: engine, transmission, A/C system, starter, alternator, air compressor, etc., shall be provided. Each copy shall be the latest hardcopy edition issued by the OEM component manufacturer. Repair manuals shall be

comprehensive and shall cover all aspects of repair from teardown through final test as recommended by the OEM. Repair manuals shall be grouped in sets and with a table of contents. If available from the OEM, MAX requests, five (5) sets of wall posters with repair manuals showing subsystem, component and part assembly, parts numbers, torque values, installation notes, etc.

Parts Manuals

Parts manuals shall be specific to the MAX bus order including edited OEM engine and transmission parts listing. Parts manuals provided shall include illustrations and data arranged so that part numbers can be readily found and identified in the illustration for each system and subsystem component, assembly, subassembly or piece part, from an orderly breakdown of the complete bus. An assembly or subassembly is an identifiable portion of a component of a system or subsystem.

Parts manuals shall contain a reference part number index, listed in numerical order with descriptions, and page numbers. The comprehensive number index shall include major subsystem parts numbers, which includes the engine, transmission, and air conditioning. A part number index shall be submitted for review at least 60 days prior to the scheduled ship date of the first bus.

The parts list index shall also be provided to MAX in a PC spreadsheet file on CD compatible with Microsoft Excel and other format to be indicated by MAX at the Pre-Production Meeting. The final index shall include Contractor part numbers, part description, and price. OEM supplier part numbers are optional, however, if any part(s) ordered by MAX are not shipped within 24 hours and a bus is out-of-service due to the lack of the part(s), then the Contractor shall provide MAX with the OEM part number, name, address, and phone number as necessary within eight hours following MAX's request. OEM part number(s), name, address, phone number, and manufacturing documentation, if requested, shall also be provided to MAX within seven days following MAX's request if any repair part(s) is not received within thirty days of the agreed upon delivery date.

Recommended Spare Parts List

The Contractor shall attend at least one Parts Provisioning Meeting with MAX's Inventory Planning staff to discuss recommended spare parts. The Parts Provisioning meeting shall occur at least 60 days prior to the first production bus being delivered. At the meeting, the Contractor shall provide a bill of material and a list of recommended spare parts for the buses ordered. The recommended spare parts list shall include the quantity of each item per bus, the estimated normal lead-time, and recommended minimum/maximum quantities. As changes are implemented and corrections are made, the recommended spare parts list shall be updated throughout the Contract period and life of the bus. The Contractor Parts subsequently ordered by MAX must be delivered within 30 days

after initial bus delivery or within 30 days of placement of the order, whichever is later.

Price List

Three (3) copies of the current price list shall be provided separately as a supplement to the final parts manuals. Price lists shall be updated at least annually and provided for the life of the bus as they are updated.

Operator's Manuals

The Contractor shall supply one (1) standard operator's manual per bus. Ten draft operator's manuals shall be delivered to the Maintenance Instruction Department with the First bus, or a minimum of 90 days prior to start of production. MAX will review the draft manual for a maximum of thirty days at which time MAX reserves the right to accept or return the manuals with required changes." Unless accepted without comment by MAX, the Contractor shall have a maximum of 15 days to make corrections and provide three copies of the final draft manual for final sign-off by MAX. Following MAX signoff, the Contractor shall have 30 days to produce the final manuals. If the draft manuals have not been received at the end of the 15-day period, MAX may withhold \$2,500 per bus per manual until the manuals are received.

In Process and As-Built Drawings

The Contractor shall, no later than 30 days after the last bus is completed and released for shipment, supply MAX with scale drawings which illustrate interior and exterior body assembly features such as; passenger assist layouts, seat placement, wheelchair access and movement to parking spaces, passenger door and window dimensions, and operator's area controls and seat placement. Electrical and air schematics shall also be provided. In addition, the Contractor shall provide a description of the electronic functionality of the bus.

Drawings shall also be supplied in electronic format on CD-ROM compatible with "AutoCAD" software. Contractor shall update these specific drawing to conform to "as-built". Conforming drawings shall be delivered to MAX within 60 days after final bus delivery.

Without exception, all technical information, drawings, nameplates, etc. shall be written in the English language. For all means of communications, i.e., letters, cables, telephone conversations, meetings, etc., the English language shall be used. The English System of units shall be used in connection with this Contract.

Sample – Optional Special Diagnostic Equipment and Software

MAX is aware that special diagnostic equipment and/or software has been developed or is being developed by many of the OEMs to assist in the maintenance of the buses. Depending on the type of available equipment and/or software, MAX may wish to obtain ten or more complete sets of such Special Service Equipment and/or software, plus any additional tools identified by the OEM manufacturer required to diagnose, calibrate, or remove-and-replace, all equipment provided with this bus order. The purchase of any such Special Equipment and/or software is at the sole option of MAX. Should MAX purchase such equipment and/or software, the Contractor shall also be required to provide all diagnostic software revisions and/or updates at no additional cost to MAX for a period of six (6) years from the date of acceptance of the buses. Because of technological changes which may occur prior to and during the actual production of the buses, MAX reserves the right to issue "Modifications" for updated diagnostic equipment, tools and software, and other Special Service Equipment at any time prior to Contract closeout.

For each bus in either the Base bus Order or any Option order that is exercised, the Contractor shall be required to provide pricing for Diagnostic Tools and Equipment. To provide guidance in this area, the following is a list of sample Diagnostic Equipment and Software that is typically required for MAX bus Procurements. At a minimum, Proposer is required to submit a complete listing of such currently available diagnostic equipment and/or software with their proposal. (See Submittal Requirements.)

Engine / Transmission:

- 1 ea. Complete Engine Diagnostic Reader Kits, incl. Necessary cables, connectors and cartridges if required.
- 1 ea. Communicator/Data link Box (Engine Translator)
- 1 ea. Infra Red Heat detectors
- 1 ea. Transmission Diagnostic reader kits, including all necessary cables, connectors and cartridges if required 1 ea. Engine diagnostic software kit, includes cables and connectors
- 1 ea. Transmission diagnostic software kits
- DVD Laptop computers, with carry case
- Air Fuel Ratio (AFR) Meter, used to check O2 sensor

Electrical System:

- 1 ea. Dinex MULTIPLEX software for I/O. Control and connection kit to include applicable cables, connectors and translator boxes, no registration or upgrade fees attached.
- 1 ea. Handheld Palm Digital Assistance (PDA) diagnostic organizers for MULTIPLEX system (if applicable)
- 1 ea. I/O MULTIPLEX Module programmers, (if applicable)

Chassis - Undercarriage

- 1 ea. sets, Air ride height gauge blocks (if applicable)

- 1 ea. Towing Equipment - Bus manufacturer to provide customer list of what is needed to tow bus from front or rear hookup.

Heating Ventilation Air Conditioning (HVAC)

- 1 ea. A/C system diagnostic controller
- Bus manufacturer to provide list of special equipment
- Smart Pac Intellegaire Software & Cables

Sample - Diagnostic PCs Specifications

If Diagnostic software is available, MAX may require the Proposer to also provide diagnostic NOTEBOOK (LAPTOP) PCs. The requirement for diagnostic PCs will depend on the level of diagnostic capabilities build into the bus.

Required diagnostic laptop(s) shall have pre-installed diagnostic software for bus diagnostics and or maintenance functions. The Provider shall provide a complete listing of all proposed software, hardware, cables etc. to the MAX Project Manager prior to install and purchasing. All diagnostic software shall be the most current when delivered to MAX.

Because of the time delay between the procurement process and receipt of required computer/laptop equipment, Proposers agree the final laptop computer configuration will be subject to approval by MAX to ensure it has all the appropriate and necessary software and is compatible with MAX's other existing laptops/computers. All laptops shall include a suitable protective carrying case "soft" case and a Microsoft external mouse.

Option Consideration

MAX would consider and discuss prior to finalizing the contract the possible inclusion of the following items. MAX believes that new technologies to the transit industry are a benefit in equipment enhancement, safety and performance.

- Electric Air Conditioning Compressor System
- Larger DVR capacity for additional cameras inputs, min. 12.
- Audible Turn Signals and voice annunciation for right turns
- Drive-Cam like monitoring system.
- Electric Front and Rear Doors.
- Electric Windshield Wipers

OPTIONAL EQUIPMENT

ITS Provisions, Power Supply

Conduits, in conjunction with existing bus wire ways, shall permit interconnection of ITS sub-systems and devices as follows:

From	Termination
Antenna, Wireless LAN	ITS Enclosure
Antenna, GPS Receiver	ITS Enclosure
Antenna, Voice Radio Transceiver	ITS Enclosure
Antenna, Data Radio Transceiver	ITS Enclosure
Antenna, Cellular Modem	ITS Enclosure
Security System Processor	ITS Enclosure
Operator Control Unit, Operator Dash	ITS Enclosure
APC Door Sensors, Front Door	ITS Enclosure
APC Door Sensors, Front Door	ITS Enclosure
Farebox	ITS Enclosure, 1" ID
Headsign Compartment	Front Dash
Front Dash	ITS Enclosure
MULTIPLEX Compartment	ITS Enclosure
Engine Control Processor	ITS Enclosure
Transmission Control Processor	ITS Enclosure
Interior Information Sign, Front	ITS Enclosure
Interior Information Sign, Rear	ITS Enclosure
Radio Control Head	ITS Enclosure,
Interior Speakers	ITS Enclosure
Exterior Speaker	ITS Enclosure

Exterior Surveillance Cameras

An exterior camera system shall be powered to operate at all times when the Master Control Switch is in any position except "Off" or when the batteries are disconnected. The system shall interface with the interior surveillance cameras and include (4) exterior cameras.

Each camera shall be able to take minimum 720 X 243 pixel color images at minimum one-second intervals or faster, compressing these images, and storing those images until the system can download them to the central processor.

Images from all exterior cameras shall be color and shall be displayed on a sunlight readable monitor screen located to the right relative to the operator's field of view, subject to MAX approval. The installation of the monitor shall not appear as an "add on" item and shall be integrated with the operator's dash and controls. This may include installation into the dash or on a suitable remote mount (gooseneck or adjustable arm), subject to MAX approval. Fasteners used for monitor installation shall be tamper proof.

Cameras shall be housed in impact resistant, weather proof, low profile housings which do not protrude more than 2½ inches from the bus body. If used, a cover placed over the camera lens shall be glass. The camera circuitry and lens shall be easily replaceable from inside the bus or by removing the housing from outside the bus using common hand tools. Camera positions and adjustment are subject to MAX approval. Reusable waterproof seals to prevent water damage to the camera and circuitry shall be provided which will not require the use of additional sealant such as silicon after servicing the camera.

One curbside camera shall be positioned forward and above the front door facing rearward down the curbside. The curbside camera shall be aimed to view the curbside area of the bus and passengers exiting from the rear door. Camera positioning shall be such that lights over the rear door shall not interfere with the displayed image during nighttime operations.

One rear camera shall be positioned above the centerline of the engine door, as high as practical near the roof of the bus, positioned to view the area directly behind the bus. The rear camera shall be positioned to aid in backing the bus and shall be activated when the transmission is placed in reverse. The camera shall view the ground behind the bus from the bumper to approximately 25 feet back. The rear camera will be installed such that removal will require only one mechanic using simple hand tools.

One street side camera shall be mounted above the operator's side window facing to the rear of the vehicle. The street side camera shall be aimed for the maximum view along the street side of the bus.

One camera shall be embedded in the front centerline of the vehicle, either the headsign compartment or in the operator's compartment viewing through the front windshield. This camera shall be mounted forward and downward to get the maximum visibility forward into traffic lanes ahead, as well as immediately in front of the vehicle and front bumper.

Curbside images shall be automatically displayed on the monitor unless the transmission is placed in reverse.

No advantage shall be taken by the proposer in the omission of any part or detail which goes to make the execution complete even though such part or detail is not listed in the Scope of Services.

1.3 Competition

The technical portion of this RFP is based upon accurate descriptions of the work to be performed and is not intended to contain features that unduly restrict competition.

1.4 Third Party Contracting Guidance

This document is intended to be, and shall be interpreted to be, consistent with FTA Circular 4220.1F, Third Party Contracting Guidance.

1.5 Best Practices Procurement Manual

This document is intended to be, and shall be interpreted to be, consistent with the Best Practices Procurement Manual published by the FTA.

Article II. PROPOSAL

2.1 Definition of Terms

The term "proposer" means the business organization or its duly authorized representatives submitting a proposal to provide the goods or services listed in the Scope of Services. The term "Contractor" refers to a proposer whose proposal is accepted and who enters into a Contract with the BJCTA.

The term "BJCTA" means the Birmingham-Jefferson County Transit Authority or its duly authorized representative involved in the transaction.

The term "FTA" means the Federal Transit Administration.

The term "DOT" means the United States Department of Transportation.

2.2 **Information Required from the Proposer**

Proposals must be submitted in the format and order outlined below:

- a. **Business Organization.** State the full name, address, and phone number of the proposer and, if applicable, the branch office or division that will perform or assist in performing the work. The capacity of the person submitting the proposal should also be provided. Indicate whether the proposer is licensed to operate in the State of Alabama, Jefferson County, Alabama, and the City of Birmingham, Alabama.

If the proposer is a partnership, limited liability company, limited partnership, or joint venture, the proposal should state the full names and addresses of all partners, members, or joint venturers who own at least a ten percent interest in the proposer.

The person signing the proposal must initial any erasures, corrections, or other changes appearing on the proposal form.

- b. **Purpose of Proposal.** State in precise terms the means by which the Scope of Services will be fulfilled.
- c. **Management Summary.** Include a description of the proposed effort.
- d. **Additional Information and Comments.** Include any other information that is believed to be pertinent but is not specifically requested elsewhere.
- e. **Statement of Qualifications.** Provide a statement of qualifications for the purpose of demonstrating the proposer's ability to satisfactorily perform the Contract.
- f. **Years of Experience.** State the number of years of experience the proposer has in the fields relevant to the Scope of Services.
- g. **Financial Ability.** Include a balance sheet and financial statement, both as of the end of the most recent fiscal year.
- h. **Willingness to Contract.** State that the proposer is willing to enter into a Contract consistent with the terms herein.
- i. **Warranties.** State any warranties that apply to any goods or services to be delivered.
- j. **Criminal Background.** For all persons and entities mentioned in any of the foregoing responses, indicate whether they (1) have ever been convicted of, (2) have an indictment pending for, or (3) have during the last five years been investigated for a criminal offense that is not related to the operation of an automobile. Convictions, indictments, or investigations

for the crime of driving while intoxicated shall be disclosed. Convictions, indictments, or investigations shall be disclosed regardless of whether for a violation of federal, state, local, or non-U.S. laws.

- k. **References.** Include contact information for three references familiar with the proposer's past work.
- l. **Cost.** Complete Attachment A and submit it under separate cover.

2.3 **Eligibility**

The proposer should demonstrate that it:

- a. Agrees to comply with all requirements set forth in this RFP.
- b. Has adequate financial resources or ability to obtain resources as required for performance of the Contract.
- c. Has a satisfactory record of past performance.
- d. Has necessary management and technical capability to perform the proposal.
- e. Will perform the work called for by the proposal in a good and workmanlike manner.
- f. Is not on the United States General Services Administration's "List of Parties Excluded from Federal Procurement Programs."
- g. Is not included on the U.S. Comptroller General's Consolidated "List of Persons or Firms Currently Debarred for Violations of Various Contracts Incorporating Labor Standards Provisions."
- h. Is qualified as an established firm regularly engaged in the type of business necessary to fulfill the proposal's requirements.
- i. Is otherwise qualified and eligible to receive an award under applicable federal, state and local laws and regulations.

2.4 **Equipment**

The proposer shall at its own expense furnish all labor, supplies, equipment and machinery necessary to fulfill the Scope of Services.

2.5 **Personnel**

The proposer shall represent that it has, or will secure at its own expense, all personnel required in performing this proposal. Such personnel shall not be employees of or have any contractual relationship with the BJCTA. All the

services required hereunder will be performed by or on behalf of the proposer. All personnel engaged in performing this proposal shall be fully qualified and shall be authorized, if applicable, under state and local law to perform such services. All personnel should be hired in compliance with Alabama's law on illegal immigration, Alabama Act 2011-535, as amended.

2.6 **Tax Exempt**

The proposer recognizes that the BJCTA is exempt from the payment of certain Federal, State and local taxes, and that such taxes are not to be included in the proposal price. The BJCTA will furnish a Contractor with the necessary tax-exempt certificates.

2.7 **Proposal Familiarity**

The submission of a proposal shall constitute an acknowledgement that the proposer has thoroughly examined and is familiar with the RFP in every detail, agrees with all the conditions in this Article II and, if selected, will execute a Contract containing all the terms found in Article III.

Article III. CONTRACT TERMS

The following terms shall be included in any Contract for the performance of the Scope of Services:

3.1 **Best Practices Procurement Manual**

The following federally-required clauses are included in any Contract, to the extent applicable:

Fly America. This provision shall apply to the transportation of persons or property, by air, between a place in the U.S. and a place outside the U.S., or between places outside the U.S., when the FTA will participate in the costs of such air transportation. 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 subrecipients of Federal funds and their contractors are required to use U.S. Flag air carriers for U.S. Government-financed international air travel and transportation of their personal effects or property, to the extent such service is available, unless travel by foreign air carrier is a matter of necessity, as defined by the Fly America Act. The Contractor shall submit, if a foreign air carrier was used, an appropriate certification or memorandum adequately 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.

Buy America. This provision shall apply to construction contracts and contracts for the acquisition of goods or rolling stock (valued at more than \$100,000). The 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 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, and include final assembly in the United States for 15 passenger vans and 15 passenger wagons produced by Chrysler Corporation, and microcomputer equipment and software. Separate requirements for rolling stock are set out at 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11. Rolling stock must be assembled in the United States and have a 60 percent domestic content.

Charter Bus. This provision shall apply to operational service contracts. The Contractor agrees to comply with 49 U.S.C. 5323(d) and 49 CFR Part 604, which provides that recipients and sub recipients 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 under one of the exceptions at 49 CFR 604.9. Any charter service provided under one of the exceptions must be "incidental," i.e., it must not interfere with or detract from the provision of mass transportation.

School Bus. This provision shall apply to operational service contracts. Pursuant to 49 U.S.C. 5323(f) and 49 CFR Part 605, recipients and sub recipients of FTA assistance may not engage in school bus operations exclusively for the transportation of students and school personnel in competition with private school bus operators unless qualified under specified exemptions. When operating exclusive school bus service under an allowable exemption, recipients and subrecipients may not use federally funded equipment, vehicles, or facilities.

Cargo Preference. This provision shall apply to all contracts involving equipment, materials, or commodities which may be transported by ocean vessels. The Contractor agrees: (1) 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; (2) 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 (3) to include these requirements in all subcontracts issued pursuant to this Contract when the subcontract may involve the transport of equipment, material, or commodities by ocean vessel.

Seismic Safety. This provision shall apply to contracts for the construction of new buildings or additions to existing buildings. 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.

Energy Conservation. This provision shall apply to all contracts. The Contractor agrees to comply with mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

Clean Water. This provision shall apply to all contracts which exceed \$100,000. 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 et seq. The Contractor agrees to report each violation to the Purchaser and understands and agrees that the BJCTA will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office. The Contractor also agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance provided by FTA.

Bus Testing. This provision shall apply to the acquisition of rolling stock/turnkey. The Contractor agrees to comply with 49 U.S.C. A 5323(c) and FTA's implementing regulation at 49 CFR Part 665 and shall perform the following: (1) A manufacturer of a new bus model or a bus produced with a major change in components or configuration shall provide a copy of the final test report to the recipient at a point in the procurement process specified by the recipient which will be prior to the recipient's final acceptance of the first vehicle; (2) A manufacturer who releases a report under paragraph 1 above shall provide notice to the operator of the testing facility that the report is available to the public; (3) If the manufacturer represents that the vehicle was previously tested, the vehicle being sold should have the identical configuration and major components as the vehicle in the test report, which must be provided to the recipient prior to recipient's final acceptance of the first vehicle. If the configuration or components are not identical, the manufacturer shall provide a description of the change and the manufacturer's basis for concluding that it is not a major change requiring additional testing; and (4) If the manufacturer

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

Pre-Award and Post-Delivery Audits. This provision shall apply to the acquisition of rolling stock/turnkey. The Contractor agrees to comply with 49 U.S.C. § 5323(l) and FTA's implementing regulation at 49 C.F.R. Part 663 and to submit the following certifications: (1) Buy America Requirements. The Contractor shall complete and submit a declaration certifying either compliance or noncompliance with Buy America. If the proposer certifies compliance with Buy America, it shall submit documentation which lists a. component and subcomponent parts of the rolling stock to be purchased identified by manufacturer of the parts, their country of origin and costs; and b. the location of the final assembly point for the rolling stock, including a description of the activities that will take place at the final assembly point and the cost of final assembly; (2) Solicitation Specification Requirements. The Contractor shall submit evidence that it will be capable of meeting the proposal specifications; and (3) Federal Motor Vehicle Safety Standards (FMVSS). The Contractor shall submit a. manufacturer's FMVSS self-certification sticker information that the vehicle complies with relevant FMVSS or b. manufacturer's certified statement that the contracted buses will not be subject to FMVSS regulations.

Lobbying. This provision shall apply to contracts for construction, architectural and engineering services, the acquisition of rolling stock, professional services contracts, operational services contracts, and turnkey contracts. Contractors who apply or make a proposal for an award of \$100,000 or more shall file the certification required by 49 CFR part 20, "New Restrictions on Lobbying." Each tier certifies to the tier above that it will not and has not used federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall also disclose the name of any registrant under the Lobbying Disclosure Act of 1995 who has made lobbying contacts on its behalf with non-Federal funds with respect to that Federal contract, grant or award covered by 31 U.S.C. 1352. Such disclosures are forwarded from tier to tier up to the recipient.

Access to Records. This provision shall apply as provided in Appendix A. Appendix A is incorporated herein as if stated in full.

Federal Changes. This provision shall apply to all contracts. 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 Purchaser and FTA, as they may be amended or

promulgated from time to time during the term of this Contract. Contractor's failure to so comply shall constitute a material breach of this Contract.

Bonding. This provision shall apply to construction or facility improvement contracts or subcontracts exceeding \$100,000. Appendix B is incorporated herein as if stated in full.

Clean Air. This provision shall apply to contracts exceeding \$100,000, including indefinite quantities where the amount is expected to exceed \$100,000 in any year. 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 et seq. The Contractor agrees to report each violation to the BJCTA and understands and agrees that the BJCTA will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office. The Contractor also agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance provided by FTA.

Recycled Products. This provision shall apply to all contracts for items designated by the EPA, when the purchaser or contractor procures \$10,000 or more of one of these items during the fiscal year, or has procured \$10,000 or more of such items in the previous fiscal year, using Federal funds. The Contractor agrees to comply with all the requirements of Section 6002 of the Resource Conservation and Recovery Act (RCRA), as amended (42 U.S.C. 6962), including but not limited to the regulatory provisions of 40 CFR Part 247, and Executive Order 12873, as they apply to the procurement of the items designated in Subpart B of 40 CFR Part 247.

Anti-Kick Back. This provision shall apply to construction contracts and subcontracts for more than \$2000 that at least partly are financed by a loan or grant from the Federal Government. Appendix C is incorporated herein as if stated in full.

Contract Work Hours and Safety Standards. This provision shall apply to contracts and subcontracts for at least \$100,000 financed at least in part by loans or grants from the Federal Government. (1) Overtime requirements - No Contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek. (2) Violation; liability for unpaid wages; liquidated damages - In the event of any violation of the clause set forth in subparagraph (1) the Contractor and any subcontractor responsible therefor 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 subparagraph (1), in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in subparagraph (1). (3) Withholding for unpaid wages and liquidated damages - The BJCTA shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the Contractor or subcontractor under any such Contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2). (4) Subcontracts - The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (1) through (4) of 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 paragraphs (1) through (4) of this section.

Government Obligations to Third Parties. This provision shall apply to all contracts. The BJCTA and Contractor acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying Contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this Contract and shall not be subject to any obligations or liabilities to the BJCTA, 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.

Program Fraud and False or Fraudulent Statements. This provision shall apply to all contracts. (1) 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. (2) 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. (3) 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.

Debarment and Suspension. This provision shall apply to all contracts expected to equal or exceed \$25,000 as well as any contract for Federally required auditing services. This Contract is a covered transaction for purposes of 49 CFR Part 29. As such, the Contractor is required to verify that none of the Contractor, its principals, as defined at 49 CFR 29.995, or affiliates, as defined at 49 CFR 29.905, are excluded or disqualified as defined at 49 CFR 29.940 and 29.945. The Contractor is required to comply with 49 CFR 29, Subpart C and must include the requirement to comply with 49 CFR 29, Subpart C in any lower tier covered transaction it enters into. By signing and submitting its proposal, the proposer certifies as follows: The certification in this clause is a material representation of fact relied upon by the BJCTA. If it is later determined that the proposer knowingly rendered an erroneous certification, in addition to remedies available to the BJCTA, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The proposer agrees to comply with the requirements of 49 CFR 29, Subpart C while this offer is valid and throughout the period of any Contract that may arise from this offer. The proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

Privacy Act. This provision shall apply to all contracts when the BJCTA maintains files on drug and alcohol enforcement activities for FTA, and those files are organized so that information could be retrieved by personal identifier, if the Contractor and its employees administer any system of records on behalf of the Federal government: The Contractor agrees to comply with, and assures the compliance of its employees with, the information restrictions and other applicable requirements of the Privacy Act of 1974, 5 U.S.C. § 552a. Among other things, the Contractor agrees to obtain the express consent of the Federal Government before the Contractor or its employees operate a system of records on behalf of the Federal government. The Contractor understands that the requirements of the Privacy Act, including the civil and criminal penalties for violation of that Act, apply to those individuals involved, and that failure to comply with the terms of the Privacy Act may result in termination of the underlying Contract. The Contractor also agrees to include these requirements in each

subcontract to administer any system of records on behalf of the Federal government financed in whole or in part with Federal assistance provided by FTA.

Civil Rights. This provision shall apply to all contracts. Appendix D is incorporated herein as if stated in full.

Patent and Rights in Data. This provision shall apply to research projects in which FTA finances the purpose of the grant is to finance the development of a product or information. Appendix E is incorporated herein as if stated in full.

Transit Employee Protections. This provision shall apply to a contract for transit operations performed by employees of a contractor recognized by FTA to be a transit operator. Appendix F is incorporated herein as if stated in full.

Disadvantaged Business Enterprises. This provision shall apply to all contracts. Appendix G is incorporated herein as if stated in full.

FTA Terms. This provision shall apply to all contracts. The preceding provisions include, in part, certain Standard Terms and Conditions required by DOT, whether or not expressly set forth in the preceding contract provisions. All contractual provisions required by DOT, as set forth in FTA Circular 4220.1E, are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Contract. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any (name of grantee) requests which would cause (name of grantee) to be in violation of the FTA terms and conditions.

Drug and Alcohol Testing. This provision shall apply to operational services contracts. The Contractor agrees to establish and implement a drug and alcohol testing program that complies with 49 CFR Parts 653 and 654, produce any documentation necessary to establish its compliance with Parts 653 and 654, and permit any authorized representative of the United States Department of Transportation or its operating administrations, the State Oversight Agency of Alabama, or the BJCTA, to inspect the facilities and records associated with the implementation of the drug and alcohol testing program as required under 49 CFR Parts 653 and 654 and review the testing process. The Contractor agrees further to certify annually its compliance with Parts 653 and 654 before each October 1 and to submit the Management Information System (MIS) reports before March 1 to the Executive Director of the BJCTA. 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.

No Implication of Subcontracting. None of the foregoing provisions should be construed to permit subcontracting.

3.2 **Inspection**

All supplies, equipment, and machinery furnished in performance of the Scope of Services shall be subject to inspection at any time by the BJCTA.

3.3 **Work Hours**

Any work to be performed on the premises of the BJCTA shall be performed within the work hours of the BJCTA. The Contractor shall observe all federal and state holidays. The Contractor will make arrangements with the BJCTA for a proper level of security.

3.4 **Maintenance of Records**

The Contractor agrees to maintain records acceptable to the BJCTA to show the actual time involved and the costs incurred in fulfilling a Contract. The Contractor shall maintain all documents, financial records and supportive documents for a period of three years after final payment is made by the BJCTA and all other matters under the Contract are closed.

3.5 **Contract Changes**

No order for alteration, modification, or extra work shall be valid unless agreed upon in a writing signed by the BJCTA and the Contractor.

3.6 **Dispute Resolution Process**

In the event a controversy, dispute, disagreement or claim (together, a "Dispute") arises between the Parties regarding this Contract, the aggrieved Party will notify the other Party in writing of the nature of the Dispute, and the Parties' normal operational personnel shall attempt to resolve the Dispute informally. If the Dispute cannot be resolved informally within thirty calendar days of the initial written notice, the Parties will refer the Dispute to a meeting between each Party's management with responsibility over the Dispute. This management-level meeting will occur within ten business days of such referral, or such other time as the Parties mutually agree in writing.

If the Parties cannot resolve the Dispute within thirty calendar days after the management-level meeting has occurred, or if the management-level meeting does not occur, then each Party will have the right to pursue non-binding mediation in Birmingham, Alabama by one Party notifying the other Party in writing of the request for mediation. The mediation shall be administered by a mutually agreeable mediator. If the Parties are unable to agree upon a mediator within ten days of the request for mediation by either Party, the Dispute shall be mediated by a mediator assigned by the office of the American Arbitration Association which is nearest the BJCTA. Such mediation shall occur within thirty days after written demand by any Party, subject to the mediator's schedule.

All conferences and discussions occurring in connection with the above dispute resolution processes shall be deemed settlement discussions. Nothing said or disclosed, nor any document produced, which is not otherwise independently admissible or discoverable, shall be offered or received as evidence or used for impeachment or for any other purpose in any current or future litigation. Each Party shall bear its own costs for such dispute resolution processes and shall share equally with the other Party the costs thereof, including the costs of the mediator and the site of mediation. If the Dispute cannot be settled at such mediation session or at any mutually agreed continuation thereof, either Party may give the other and the mediator notice declaring the mediation process at an end, in which event then the Dispute shall be resolved by litigation.

Except as provided in Section 3.7, compliance with such dispute resolution processes shall be deemed a condition precedent to seeking relief through any judicial or administrative proceeding. Nothing in this section prevents either Party from seeking injunctive relief to preserve the status quo pending the conclusion of the dispute resolution process set forth in this section.

3.7 **Termination**

Termination for Convenience. The BJCTA may terminate this Contract, in whole or in part, at any time by written notice to the Contractor when it is in the BJCTA's best interest, including when it does not have adequate funding to fulfill its requirements under the Contract. Such terminations may occur without compliance with Section 3.6. The BJCTA shall terminate by delivering to the Contractor a notice of termination specifying the nature, extent, and effective date of the termination. The Contractor shall be paid its costs, including Contract close-out costs, and profit on work performed up to the time of termination; provided, however, that if the Contract is for services then the BJCTA shall be liable only for services rendered before the effective date of termination. The Contractor shall promptly submit its termination claim to the BJCTA to be paid the Contractor. If the Contractor has any property in its possession belonging to the BJCTA, the Contractor will account for the same, and dispose of it in the manner the BJCTA directs.

Termination for Default. If the Contractor does not deliver supplies in accordance with the Contract delivery schedule, refuses or fails to prosecute the work or any separable part with the diligence that will insure its completion within the time specified in this Contract, fails to perform in the manner called for in the Contract, or fails to comply with any other provisions of this Contract, the BJCTA may terminate this Contract for default. Termination shall be effected by first complying with Section 3.6, then serving a notice of termination on the Contractor setting forth the manner in which the Contractor is in default. The Contractor will only be paid the Contract price for supplies delivered and accepted, or services performed in accordance with the manner of performance set forth in the Contract, less any damages to the BJCTA resulting from the default (including any increases in costs incurred by the BJCTA in completing the work). If this

Contract is terminated while the Contractor has possession of the BJCTA's property, the Contractor shall, upon direction of the BJCTA, protect and preserve the goods until surrendered to the BJCTA or its agent.

If it is later determined by the BJCTA that the Contractor had an excusable reason for not performing, such as acts of God (including, fire, flood, earthquake, hurricane, or other natural disaster), government restrictions (including the denial or cancellation of any export or other necessary license), wars, insurrections and any other cause beyond the reasonable control of the Contractor, the BJCTA, after setting up a new delivery of performance schedule, may allow the Contractor to continue work, or may treat the termination as a termination for convenience.

Waiver of Remedies for any Breach. In the event the BJCTA elects to waive its remedies for any breach by Contractor of any covenant, term or condition of this Contract, such waiver by the BJCTA shall not limit the BJCTA's remedies for any succeeding breach of that or of any other term, covenant, or condition of this Contract.

Damages. In the event of a breach of the Contract by the Contractor, the BJCTA shall have all remedies provided by or permitted under Alabama law.

3.8 **Notice**

In any clause or provision in the Contract that calls for notice to a Party to the Contract, such notice shall be in writing.

Notices to the BJCTA shall be addressed as follows:

Birmingham-Jefferson County Transit Authority
1735 Morris Avenue
Birmingham, Alabama 35203

Notices to the Contractor shall be sent to the name and address specified in the proposal.

3.9 **Assignments**

The Contractor shall not assign or otherwise transfer (including by novation) any interest in the Contract without the prior written consent of the BJCTA. No such transfer shall relieve the Contractor of any obligation under the Contract. No subcontracting is permitted.

3.10 **News Release**

The Contractor shall issue no news release pertaining to the Contract without the prior written consent of the BJCTA.

3.11 **Confidentiality**

The terms and conditions set forth in this Contract are considered by the Parties to be confidential and proprietary information. Neither Party shall disclose any such information to any third party without the other Party's prior written consent, which consent shall not be unreasonably withheld; provided, however, that no such consent shall be needed where such disclosure (i) is required by law, regulation, or regulatory agencies having jurisdiction over one of the Parties or (ii) is necessary in connection with a Party's assertion of a claim or defense in a judicial or administrative proceeding and that in either of these events, the Party intending to make such disclosure shall advise the other Party in advance and cooperate to the extent practicable to minimize the disclosure of any such information.

3.12 **Indemnification**

The Contractor shall expressly agree and covenant that it will defend, hold and save harmless, and indemnify the officers, directors, servants, agents, and employees of the BJCTA from liability of any nature or kind in connection with the work to be performed under the Contract, whether arising out of any act or omission of the Contractor or any employee, agent, or independent contractor of the Contractor.

3.13 **Insurance**

The Contractor shall maintain insurance during the performance of the Contract from one or more insurance companies licensed in the State of Alabama to provide the following forms of insurance, said insurance companies to be reasonably satisfactory to the BJCTA. Upon the execution of a Contract, the Contractor shall furnish the BJCTA with certificates of insurance showing that the BJCTA has been listed as an additional insured. All insurance is to remain in full force and effect until all work under the Contract has been satisfactorily completed and accepted by the BJCTA.

a. Workers' Compensation

Employers' Liability	\$500,000
All States Endorsement	Statutory
Voluntary Compensation	Statutory

b. Public Liability and Property Damage

1. \$100,000 for bodily injuries to or death of one person in any one occurrence.

2. \$500,000 for bodily injuries to or death of two or more persons in any one occurrence.
3. \$100,000 for damage to or destruction of property in any one occurrence.

c. Errors and Omissions Insurance

3.14 **Documentation of Project Costs**

All costs charged to the project, including any approved services contributed by the BJCTA or others shall be supported by properly executed payrolls, time records, invoices, contracts, or vouchers evidencing in detail the nature and propriety of the charges.

3.15 **Audit and Inspection**

The Contractor shall permit the Secretary of Transportation and the Comptroller General of the United States, or any of their duly authorized representatives, to inspect all work, materials, payrolls, and other data and records with regard to the Contract, and to audit the books, records, and accounts pertaining to such Contract.

3.16 **Immigration**

By signing this Contract, the contracting parties affirm, for the duration of the agreement, that they will not violate federal immigration law or knowingly employ, hire for employment, or continue to employ an unauthorized alien within the state of Alabama. Furthermore, a contracting party found to be in violation of this provision shall be deemed in breach of the agreement and shall be responsible for all damages resulting therefrom. The Contractor shall comply with the provisions of Alabama Code § 31-13-9 as to subcontractors.

APPENDIX A

ACCESS TO RECORDS

1. The Contractor agrees to provide the BJCTA, the FTA Administrator, the Comptroller General of the United States or any of their authorized representatives access to any books, documents, papers and records of the Contractor which are directly pertinent to this Contract for the purposes of making audits, examinations, excerpts and transcriptions. Contractor also agrees, pursuant to 49 C.F.R. 633.17 to provide the FTA Administrator or his authorized representatives including any PMO Contractor access to Contractor's records and construction sites pertaining to a major capital project, defined at 49 U.S.C. 5302(a)1, which is receiving federal financial assistance through the programs described at 49 U.S.C. 5307, 5309 or 5311.
2. Where the BJCTA enters into a negotiated contract for other than a small purchase or under the simplified acquisition threshold and is an institution of higher education, a hospital or other non-profit organization and is the FTA Recipient or a subgrantee of the FTA Recipient in accordance with 49 C.F.R. 19.48, Contractor agrees to provide the BJCTA, FTA Administrator, the Comptroller General of the United States or any of their duly authorized representatives with access to any books, documents, papers and record of the Contractor which are directly pertinent to this Contract for the purposes of making audits, examinations, excerpts and transcriptions.
3. Where the BJCTA, as the FTA Recipient or a subgrantee of the FTA Recipient in accordance with 49 U.S.C. 5325(a), enters into a Contract for a capital project or improvement (defined at 49 U.S.C. 5302(a)1) through other than competitive bidding, the Contractor shall make available records related to the Contract to the BJCTA, the Secretary of Transportation and the Comptroller General or any authorized officer or employee of any of them for the purposes of conducting an audit and inspection.
4. The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.
5. The Contractor agrees to maintain all books, records, accounts and reports required under this Contract for a period of not less than three years after the date of termination or expiration of this Contract, except in the event of litigation or settlement of claims arising from the performance of this Contract, in which case Contractor agrees to maintain same until the BJCTA, the FTA Administrator, the Comptroller General, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims or exceptions related thereto. Reference 49 CFR 18.39(i)(11).

APPENDIX B

BONDING REQUIREMENTS

Bid Bond Requirements (Construction)

(a) Bid Security

A Bid Bond must be issued by a fully qualified surety company acceptable to the BJCTA and listed as a company currently authorized under 31 CFR, Part 223 as possessing a Certificate of Authority as described thereunder.

(b) Rights Reserved

In submitting this Bid, it is understood and agreed by the proposer that the right is reserved by the BJCTA 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 120 days subsequent to the opening of bids, without the written consent of the BJCTA.

It is also understood and agreed that if the undersigned bidder should withdraw any part or all of his bid within 120 days after the bid opening without the written consent of the BJCTA, shall refuse or be unable to enter into this Contract, as provided above, or refuse or be unable to furnish adequate and acceptable Performance Bonds and Labor and Material Payments Bonds, as provided above, or refuse or be unable to furnish adequate and acceptable insurance, as provided above, the proposer shall forfeit its bid security to the extent of the BJCTA's damages occasioned by such withdrawal, or refusal, or inability to enter into an agreement, or provide adequate security therefor.

It is further understood and agreed that to the extent the defaulting bidder's Bid Bond, Certified Check, Cashier's Check, Treasurer's Check, and/or Official Bank Check (excluding any income generated thereby which has been retained by the BJCTA as provided in shall prove inadequate to fully recompense the BJCTA for the damages occasioned by default, then the undersigned bidder agrees to indemnify the BJCTA and pay over to the BJCTA the difference between the bid security and the BJCTA's total damages, so as to make the BJCTA whole.

The undersigned understands that any material alteration of any of the above or any of the material contained on this form, other than that requested, will render the bid unresponsive.

Performance and Payment Bonding Requirements (Construction)

The Contractor shall be required to obtain performance and payment bonds as follows:

(a) Performance bonds

1. The penal amount of performance bonds shall be 100 percent of the original Contract price, unless the BJCTA determines that a lesser amount would be adequate for the protection of the BJCTA.
2. The BJCTA 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. The BJCTA may secure additional protection by directing the Contractor to increase the penal amount of the existing bond or to obtain an additional bond.

(b) Payment bonds

1. The penal amount of the payment bonds shall equal:
 - (i) Fifty percent of the Contract price if the Contract price is not more than \$1 million.
 - (ii) Forty percent of the Contract price if the Contract price is more than \$1 million but not more than \$5 million; or
 - (iii) Two and one half million if the Contract price is more than \$5 million.
2. If the original Contract price is \$5 million or less, the BJCTA may require additional protection as required by subparagraph 1 if the Contract price is increased.

Performance and Payment Bonding Requirements (Non-Construction)

The Contractor is required to obtain performance and payment bonds when necessary to protect the BJCTA's interest.

(a) The following situations warrant a performance bond:

1. BJCTA property or funds are to be provided to the Contractor for use in performing the Contract or as partial compensation (as in retention of salvaged material).
2. A Contractor sells assets to or merges with another concern, and the BJCTA, after recognizing the latter concern as the successor in interest, desires assurance that it is financially capable.
3. Substantial progress payments are made before delivery of end items starts.

4. Contracts are for dismantling, demolition, or removal of improvements.

(b) When it is determined that a performance bond is required, the Contractor shall be required to obtain performance bonds as follows:

1. The penal amount of performance bonds shall be 100 percent of the original Contract price, unless the BJCTA determines that a lesser amount would be adequate for the protection of the BJCTA.

2. The BJCTA 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. The BJCTA may secure additional protection by directing the Contractor to increase the penal amount of the existing bond or to obtain an additional bond.

(c) A payment bond is required only when a performance bond is required, and if the use of payment bond is in the BJCTA's interest.

(d) When it is determined that a payment bond is required, the Contractor shall be required to obtain payment bonds as follows:

1. The penal amount of payment bonds shall equal:

(i) Fifty percent of the Contract price if the Contract price is not more than \$1 million;

(ii) Forty percent of the Contract price if the Contract price is more than \$1 million but not more than \$5 million; or

(iii) Two and one half million if the Contract price is increased.

Advance Payment Bonding Requirements

The Contractor is required to obtain an advance payment bond if the Contract contains an advance payment provision and a performance bond is not furnished. The BJCTA shall determine the amount of the advance payment bond necessary to protect the BJCTA.

Patent Infringement Bonding Requirements (Patent Indemnity)

The Contractor is required to obtain a patent indemnity bond if a performance bond is not furnished and the financial responsibility of the Contractor is unknown or doubtful. The BJCTA shall determine the amount of the patent indemnity to protect the BJCTA.

Warranty of the Work and Maintenance Bonds

1. The Contractor warrants to the BJCTA, the Architect and/or Engineer that all materials and equipment furnished under this Contract will be of highest quality and new unless otherwise specified by the BJCTA, free from faults and defects and in conformance with the Contract Documents. All work not so conforming to these standards shall be considered defective. If required by the project manager, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

2. The Work furnished must be of first quality and the workmanship must be the best obtainable in the various trades. The Work must be of safe, substantial and durable construction in all respects. The Contractor hereby guarantees the Work against defective materials or faulty workmanship for a minimum period of one year after Final Payment by the BJCTA and shall replace or repair any defective materials or equipment or faulty workmanship during the period of the guarantee at no cost to the BJCTA. As additional security for these guarantees, the Contractor shall, prior to the release of Final Payment, furnish separate Maintenance (or Guarantee) Bonds in form acceptable to the BJCTA written by the same corporate surety that provides the Performance Bond and Labor and Material Payment Bond for this Contract. These bonds shall secure the Contractor's obligation to replace or repair defective materials and faulty workmanship for a minimum period of one year after Final Payment and shall be written in an amount equal to ONE HUNDRED PERCENT of the CONTRACT SUM.

APPENDIX C

DAVIS-BACON AND COPELAND ANTI-KICKBACK ACT REQUIREMENTS

(1) **Minimum wages** - (i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph (1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the Contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) Except with respect to helpers as defined as 29 CFR 5.2(n)(4), the work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and

(4) With respect to helpers as defined in 29 CFR 5.2(n)(4), such a classification prevails in the area in which the work is performed.

(B) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the Contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this Contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the Contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(v)(A) The contracting officer shall require that any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the Contract

shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the Contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(v) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this Contract from the first day on which work is performed in the classification.

(2) **Withholding** - The BJCTA 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 the Contractor under this Contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the Contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or

helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the Contract, the BJCTA may, after written notice to the Contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) **Payrolls and basic records** - (i) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The Contractor shall submit weekly for each week in which any Contract work is performed a copy of all payrolls to the BJCTA for transmission to the Federal Transit Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under section 5.5(a)(3)(i) of Regulations, 29 CFR part 5. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, DC 20402. The prime Contractor is responsible for the submission of copies of payrolls by all subcontractors.

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the Contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be maintained under section 5.5(a)(3)(i) of Regulations, 29 CFR part 5 and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the Contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the Contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The Contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the Federal Transit Administration or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the Contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) **Apprentices and trainees** - (i) Apprentices - Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the

ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a Contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator of the Wage and Hour Division of the U.S. Department of Labor determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees - Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity - The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) **Compliance with Copeland Act requirements** - The Contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this Contract.

(6) **Subcontracts** - The Contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the Federal Transit Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) **Contract termination: debarment** - A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the Contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) **Compliance with Davis-Bacon and Related Act requirements** - All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this Contract.

(9) **Disputes concerning labor standards** - Disputes arising out of the labor standards provisions of this Contract shall not be subject to the general disputes clause of this Contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and the BJCTA, the U.S. Department of Labor, or the employees or their representatives.

(10) **Certification of eligibility** - (i) By entering into this Contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this Contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

APPENDIX D

CIVIL RIGHTS REQUIREMENTS

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

(2) **Equal Employment Opportunity** - The following equal employment opportunity requirements apply to the Contract:

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

(b) Age - In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. §§ 623 and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

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

(3) Subcontracts - 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.

APPENDIX E
CONTRACTS INVOLVING EXPERIMENTAL, DEVELOPMENTAL,
OR RESEARCH WORK

A. Rights in Data - The following requirements apply to each Contract involving experimental, developmental or research work:

(1) The term "subject data" used in this Appendix means recorded information, whether or not copyrighted, that is delivered or specified to be delivered under the Contract. The term includes graphic or pictorial delineation in media such as drawings or photographs; text in specifications or related performance or design-type documents; machine forms such as punched cards, magnetic tape, or computer memory printouts; and information retained in computer memory. Examples include, but are not limited to: computer software, engineering drawings and associated lists, specifications, standards, process sheets, manuals, technical reports, catalog item identifications, and related information. The term "subject data" does not include financial reports, cost analyses, and similar information incidental to Contract administration.

(2) The following restrictions apply to all subject data first produced in the performance of the Contract to which this Appendix has been added:

(a) Except for its own internal use, the BJCTA or Contractor may not publish or reproduce subject data in whole or in part, or in any manner or form, nor may the BJCTA or Contractor authorize others to do so, without the written consent of the Federal government, until such time as the Federal government 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.

(b) In accordance with 49 C.F.R. § 18.34 and 49 C.F.R. § 19.36, 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 in subsections (2)(b)1 and (2)(b)2 of this clause below. As used in the previous sentence, "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.

1. Any subject data developed under that Contract, whether or not a copyright has been obtained; and

2. Any rights of copyright purchased by the BJCTA or Contractor using Federal assistance in whole or in part provided by FTA.

(c) When FTA awards Federal assistance for experimental, developmental, or research work, it is FTA's general intention to increase transportation knowledge available to the public, rather than to restrict the benefits resulting from the work to participants in that

work. Therefore, unless FTA determines otherwise, the BJCTA and the Contractor performing experimental, developmental, or research work required by the underlying Contract to which this Appendix is added agree 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 that 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 the underlying Contract, is not completed for any reason whatsoever, all data developed under that Contract shall become subject data as defined in subsection (a) of this Appendix and shall be delivered as the Federal government may direct. This subsection (c) , however, does not apply to adaptations of automatic data processing equipment or programs for the BJCTA or Contractor's use whose costs are financed in whole or in part with Federal assistance provided by FTA for transportation capital projects.

(d) Unless prohibited by state law, upon request by the Federal government, the BJCTA and the Contractor agree 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 BJCTA or 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. Neither the BJCTA nor 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.

(e) Nothing contained in this Appendix 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.

(f) Data developed by the BJCTA or Contractor and financed entirely without using Federal assistance provided by the Federal government that has been incorporated into work required by the underlying Contract to which this Appendix has been added is exempt from the requirements of subsections (b), (c), and (d) of this Appendix, provided that the BJCTA or Contractor identifies that data in writing at the time of delivery of the Contract work.

(g) Unless FTA determines otherwise, 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 provided by FTA.

(3) Unless the Federal government later makes a contrary determination in writing, irrespective of the Contractor's status (i.e., a large business, small business, state government or state instrumentality, local government, nonprofit organization, institution of higher education, individual, etc.), the BJCTA and the Contractor agree to take the necessary actions to provide, through FTA, those rights in that invention due the Federal government as described in U.S. Department of Commerce regulations, "Rights

to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," 37 C.F.R. Part 401.

(4) The Contractor also agrees to include these requirements in each subcontract for experimental, developmental, or research work financed in whole or in part with Federal assistance provided by FTA.

B. Patent Rights - The following requirements apply to each Contract involving experimental, developmental, or research work:

(1) General - If any invention, improvement, or discovery is conceived or first actually reduced to practice in the course of or under the Contract to which this Appendix has been added, and that invention, improvement, or discovery is patentable under the laws of the United States of America or any foreign country, the BJCTA and Contractor agree to take actions necessary to provide immediate notice and a detailed report to the party at a higher tier until FTA is ultimately notified.

(2) Unless the Federal government later makes a contrary determination in writing, irrespective of the Contractor's status (a large business, small business, state government or state instrumentality, local government, nonprofit organization, institution of higher education, individual), the BJCTA and the Contractor agree to take the necessary actions to provide, through FTA, those rights in that invention due the Federal government as described in U.S. Department of Commerce regulations, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," 37 C.F.R. Part 401.

(3) The Contractor also agrees to include the requirements of this clause in each subcontract for experimental, developmental, or research work financed in whole or in part with Federal assistance provided by FTA.

APPENDIX F

TRANSIT EMPLOYEE PROTECTIVE PROVISIONS

(a) **General Transit Employee Protective Requirements** - To the extent that FTA determines that transit operations are involved, the Contractor agrees to carry out the transit operations work on the underlying Contract in compliance with terms and conditions determined by the U.S. Secretary of Labor to be fair and equitable to protect the interests of employees employed under this Contract and to meet the employee protective requirements of 49 U.S.C. A 5333(b), and U.S. DOL guidelines at 29 C.F.R. Part 215, and any amendments thereto. These terms and conditions are identified in the letter of certification from the U.S. DOL to FTA applicable to the BJCTA's project from which Federal assistance is provided to support work on the underlying Contract. The Contractor agrees to carry out that work in compliance with the conditions stated in that U.S. DOL letter. The requirements of this subsection (a), however, do not apply to any Contract financed with Federal assistance provided by FTA either for projects for elderly individuals and individuals with disabilities authorized by 49 U.S.C. § 5310(a)(2), or for projects for nonurbanized areas authorized by 49 U.S.C. § 5311. Alternate provisions for those projects are set forth in subsections (b) and (c) of this clause.

(b) **Transit Employee Protective Requirements for Projects Authorized by 49 U.S.C. § 5310(a)(2) for Elderly Individuals and Individuals with Disabilities** - If the Contract involves transit operations financed in whole or in part with Federal assistance authorized by 49 U.S.C. § 5310(a)(2), and if the U.S. Secretary of Transportation has determined or determines in the future that the employee protective requirements of 49 U.S.C. § 5333(b) are necessary or appropriate for the state and the public body subrecipient for which work is performed on the underlying Contract, the Contractor agrees to carry out the project in compliance with the terms and conditions determined by the U.S. Secretary of Labor to meet the requirements of 49 U.S.C. § 5333(b), U.S. DOL guidelines at 29 C.F.R. Part 215, and any amendments thereto. These terms and conditions are identified in the U.S. DOL's letter of certification to FTA, the date of which is set forth Grant Agreement or Cooperative Agreement with the State. The Contractor agrees to perform transit operations in connection with the underlying Contract in compliance with the conditions stated in that U.S. DOL letter.

(c) **Transit Employee Protective Requirements for Projects Authorized by 49 U.S.C. § 5311 in Nonurbanized Areas** - If the Contract involves transit operations financed in whole or in part with Federal assistance authorized by 49 U.S.C. § 5311, the Contractor agrees to comply with the terms and conditions of the Special Warranty for the Nonurbanized Area Program agreed to by the U.S. Secretaries of Transportation and Labor, dated May 31, 1979, and the procedures implemented by U.S. DOL or any revision thereto.

(2) The Contractor also agrees to include the any applicable requirements in each subcontract involving transit operations financed in whole or in part with Federal assistance provided by FTA.

APPENDIX G

DISADVANTAGED BUSINESS ENTERPRISES

- 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. The national goal for participation of Disadvantaged Business Enterprises (DBE) is 10%. The agency's overall goal for DBE participation is 18.5%.
- b. The Contractor 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 this DOT-assisted Contract. 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 the BJCTA deems appropriate. Each subcontract the Contractor signs with a subcontractor must include the assurance in this paragraph (see 49 CFR 26.13(b)).
- c. Proposers are required to document sufficient DBE participation to meet these goals or, alternatively, document adequate good faith efforts to do so, as provided for in 49 CFR 26.53. Award of this Contract is conditioned on submission of Attachments I-1, I-2, and I-3 prior to award.
- d. The Contractor is required to pay its subcontractors performing work related to this Contract for satisfactory performance of that work no later than 30 days after the Contractor's receipt of payment for that work from the BJCTA. In addition, the Contractor may not hold retainage from its subcontractors.
- e. The Contractor must promptly notify the BJCTA 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 the BJCTA.

ATTACHMENT A
PRICE PROPOSAL FORM

THIS ATTACHMENT MUST BE UNDER SEPARATE COVER FROM PROPOSAL

TO: Birmingham-Jefferson County Transit Authority

The proposer listed below hereby submits its offer in accordance with the terms of the Request for Proposals Number 17-20 (the "RFP").

The offer is made in accordance with the Scope of Services and subject to the approved equals as described in the documents identified herein. The proposer has carefully examined the RFP and has informed itself thoroughly regarding any and all conditions and requirements of the RFP. Any additional information that is requested in the RFP is attached hereto.

BASE ORDER:

<u>DESCRIPTION</u>	<u>UNIT PRICE</u>	<u>EXTENSION</u>
Base order three (3) CNG 35 Feet Buses	_____	_____
Delivery Charges	_____	_____
Extended Warranty	_____	_____
Training	_____	_____
TOTAL PROPOSED PRICE		_____

OPTIONS:

Pricing Index (or source that will be utilized at time of order)

Company

Authorized Signature

Street Address

Typed Name of Signer

City / State / ZIP

Title of Signer

Phone

Date

Company Employer Identification Number

ATTACHMENT B
REQUEST FOR CHANGE OR APPROVED EQUAL

Submission Number:		Proposer:
RFP Number:	Page:	Section:
Questions/Clarification or Approved Equal:		
BJCTA:		

 Company

 Authorized Signature

 Street Address

 Typed Name of Signer

 City / State / ZIP

 Title of Signer

 Phone

 Date

ATTACHMENT C
ACKNOWLEDGMENT OF ADDENDA

The undersigned acknowledges receipt of the following addenda to the Request for Proposal Number 17-20:

Addendum No.	_____	Dated	_____
Addendum No.	_____	Dated	_____
Addendum No.	_____	Dated	_____
Addendum No.	_____	Dated	_____

Company

Authorized Signature

Typed Name of Signer

Title of Signer

Date

ATTACHMENT D
BUY AMERICA COMPLIANCE

Certificate of Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it will meet the requirements of 49 U.S.C. 5323(j)(1) and the applicable regulations in 49 C.F.R. Part 661.5.

Company

Authorized Signature

Typed Name of Signer

Title of Signer

Date

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(1) and 49 C.F.R. 661.5, but it may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Company

Authorized Signature

Typed Name of Signer

Title of Signer

Date

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 661.11.

Company

Authorized Signature

Typed Name of Signer

Title of Signer

Date

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) and 49 C.F.R. 661.11, but may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 CFR 661.7.

Company

Authorized Signature

Typed Name of Signer

Title of Signer

Date

ATTACHMENT E
BUS TESTING COMPLIANCE

The undersigned Contractor certifies that the vehicle offered in this procurement complies with 49 U.S.C. A 5323(c) and FTA's implementing regulation at 49 CFR 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 CFR Part 31. In addition, the undersigned understands that FTA may suspend or debar a manufacturer under the procedures in 49 CFR Part 29.

Company

Authorized Signature

Typed Name of Signer

Title of Signer

Date

ATTACHMENT F
BUY AMERICA CERTIFICATE OF COMPLIANCE WITH FTA REQUIREMENTS
FOR BUSES, OTHER ROLLING STOCK, OR ASSOCIATED EQUIPMENT

(To be submitted with a bid or offer exceeding the small purchase threshold for Federal assistance programs, currently set at \$100,000.)

Certificate of Compliance

The proposer hereby certifies that it will comply with the requirements of 49 U.S.C. Section 5323(j)(2)(C), Section 165(b)(3) of the Surface Transportation Assistance Act of 1982, as amended, and the regulations of 49 C.F.R. 661.11:

Company

Authorized Signature

Typed Name of Signer

Title of Signer

Date

Certificate of Non-Compliance

The proposer hereby certifies that it cannot comply with the requirements of 49 U.S.C. Section 5323(j)(2)(C) and Section 165(b)(3) of the Surface Transportation Assistance Act of 1982, as amended, but may qualify for an exception to the requirements consistent with 49 U.S.C. Sections 5323(j)(2)(B) or (j)(2)(D), Sections 165(b)(2) or (b)(4) of the Surface Transportation Assistance Act, as amended, and regulations in 49 C.F.R. 661.7.

Company

Authorized Signature

Typed Name of Signer

Title of Signer

Date

ATTACHMENT G

APPENDIX A, 49 CFR PART 20--CERTIFICATION REGARDING LOBBYING

(To be submitted with each bid or offer exceeding \$100,000)

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 undersigned 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. A 3801, et seq., apply to this certification and disclosure, if any.

Company

Authorized Signature

Typed Name of Signer

Title of Signer

Date

ATTACHMENT H
AFFIDAVIT OF NON-COLLUSION

State of _____ }
County of _____ }

Before me, a notary public, personally appeared _____, who, being duly sworn, says as follows:

1. I serve as _____ for _____ (the "Proposer"), a proposer with the Birmingham-Jefferson County Transit Authority.
2. The enclosed bid or bids have been arrived at by the Proposer independently, and have been submitted without collusion with, and without any agreement, understanding or planned common course of action with any other vendor of materials, supplies, equipment or services described in the request for proposals, designed to limit independent bidding or competition;
3. The contents of the bid or bids have not been communicated by the Proposer or its employees or agents to any person not an employee or agent of the Proposer or its surety on any bond furnished with the proposal or proposals, and will not be communicated to any such person prior to the official opening of the proposal or proposals; and
4. No person or selling agency has been employed or retained to solicit or secure such Contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, except bona fide employees or bona fide established commercial or selling agencies maintained by _____; and
5. I have fully informed myself regarding the accuracy of the statements made in this affidavit.
6. The Proposer is not included on the United States Comptroller General's consolidated list of persons or firms currently debarred for violations of various public contracts incorporated labor standards provisions.

7. The foregoing items are true and accurate.

Signature of Affiant

Date

I certify that the affiant is known or made known to me to be the identical party s/he claims to be. Subscribed and sworn to before me this _____ day of _____, 20 ____.

[SEAL]

Notary Public
My Commission expires _____, 20__.

ATTACHMENT I-1
DBE Letter of Intent

To: _____
Name of Prime Proposer

The undersigned intends to perform work in connection with the above project as a DBE in the following capacity (check one):

- | | |
|--------------------------------------|--|
| <input type="checkbox"/> Individual | <input type="checkbox"/> Corporation |
| <input type="checkbox"/> Partnership | <input type="checkbox"/> Joint Venture |

The disadvantaged business status of the undersigned is confirmed:

- (a) On the reference list of Disadvantaged Business Enterprises dated _____, 20____ or
- (b) On the attached Disadvantaged Business Enterprise Identification Statement.

The undersigned is prepared to perform the following work in connection with the above project *(specify in detail the particular work items or parts thereof to be performed)*:

At the following price: \$_____

You have projected the following commencement date for such work, and the undersigned is projecting completion of such work as follows:

Items	Projected Date of Commencement	Projected Date of Completion

The foregoing work will not be sublet to a non-Disadvantaged Business Enterprise at any tier. The undersigned will enter into a formal agreement for the above work with you, conditioned upon your execution of an agreement with the Birmingham-Jefferson County Transit Authority.

Company

Authorized Signature

Typed Name of Signer

Title of Signer

Date

ATTACHMENT I-2
DBE AFFIDAVIT

State of _____ }
County of _____ }

Before me, a notary public, personally appeared _____, who, being duly sworn, says as follows:

1. I serve as _____ for _____ (the "DBE").
2. The DBE has been certified as a Disadvantaged Business Enterprise by ALDOT, BAA, UCP or DOT.
3. Such certification has not been revoked and has not expired.
4. There has been no change in the minority status of the DBE.
5. Attached hereto is the DBE's most recent DBE certification letter.
6. The foregoing items are true and accurate.

Signature of Affiant

Date

I certify that the affiant is known or made known to me to be the identical party s/he claims to be. Subscribed and sworn to before me this _____ day of _____, 20 ____.

[SEAL]

Notary Public
My Commission expires _____, 20__.

ATTACHMENT I-3
DBE UNAVAILABLE CERTIFICATION

The undersigned proposer with the Birmingham-Jefferson County Transit Authority (the "Proposer") certifies that, on _____, _____, 20____, a representative of the Proposer contacted the following Disadvantaged Business Enterprise ("DBE") to obtain a proposal/bid for the following work items.

DBE	Work Items Sought	Form of Proposal or Bid Sought (i.e., unit price, materials & labor, labor only, etc.)

Said DBE was unavailable for work on this project, or unable to prepare a proposal/bid for the following reason:

Company

Authorized Signature

Typed Name of Signer

Title of Signer

Date

The foregoing statement is a true and correct account of why the undersigned DBE did not prepare a proposal/bid on this project.

Disadvantaged Business Enterprise

Authorized Signature

Typed Name of Signer

Title of Signer

Date

ATTACHMENT J

CONFLICT OF INTEREST STATEMENT

Proposers shall provide a list of all entities/individual(s) with which it has relationships that create, or would appear to create, a conflict of interest with the work that is contemplated by this RFP. The list should indicate the name of the entity/individual, the relationship to the proposer, and a discussion of the conflict.

Because award of a Contract about this RFP will be decided upon by the Birmingham-Jefferson County Transit Authority's Board of Directors, a listing of its members has been included below. Please also provide a description of relationships with any or all Board Members that would create, or would appear to create, a conflict of interest.

MEMBER ENTITY	BOARD MEMBER
Jefferson County	Rev. Patrick Sellers, Chairman
City of Birmingham	Bacarra Mauldin
City of Birmingham	Frank Topping
City of Vestavia Hills	Donald Harwell
City of Hoover	Martin Weinberg
City of Bessemer	Johnnye P. Lassiter
City of Birmingham	Patricia Henderson
City of Birmingham	Adam Snyder
City of Birmingham	Emma Tolbert

The undersigned proposer discloses the following actual or potential, direct or indirect conflicts of interest:

[illegible]

Company

Authorized Signature

Typed Name of Signer

Title of Signer

Date

ATTACHMENT K
VENDOR REGISTRATION FORM

RFP Number: _____

RFP or RFP Description: _____

Company Name/Vendor: _____

Address: _____

City / State / ZIP: _____

Contact Person: _____

Title: _____

Office Number: _____

Fax Number: _____

Cell Number: _____

Email Address: _____

Website: _____

DUNS NUMBER _____

Send to:

Darryl Grayson – Procurement Manager
Birmingham-Jefferson County Transit Authority
2121 Rev Abraham Woods Jr. Blvd
Birmingham, Alabama 35203
Direct: (205) 521-0144
Fax: (205) 252-7633
Email: dgrayson@bjcta.org

