

PART 2

TECHNICAL SPECIFICATIONS



Contract # TRIPS-MD-17-RFP

MEDIUM DUTY CHASSIS TYPE TRANSIT VEHICLES

Florida Department of Transportation
Office of Freight, Logistics and Passenger Operations

TECHNICAL SPECIFICATIONS

MEDIUM DUTY PUBLIC TRANSIT BUS

2.0.0 SCOPE AND PURPOSE

The Transit Research Inspection and Procurement Services (TRIPS) seeks to purchase the most modern medium duty transit buses available that will provide maximum passenger appeal in appearance, comfort and safety, combined with excellence in reliability, operating characteristics and economy of operation. This Request for Proposal (RFP) is for the procurement of a purpose-built medium duty bus up to 31' in length. This proposed-built bus must have a minimum Altoona Test Certification of 7 years and 250,000 miles to 10 years and 350,000 miles. This proposal will describe general technical specifications desired for the manufacture of a vehicle to provide public transportation in fixed route and paratransit service by public transit systems in the State of Florida. The standard proposed seating capacity of this vehicle shall be maximum allowed and should include a minimum of two wheel chair securement stations. The vehicle proposed shall be designed for standees in excess of seated capacity.

Proposal shall include a summary of crashworthiness testing performed. Additionally, proposal shall include test reports verifying that the vehicle offered complies with all applicable regulations described in this RFP.

In submitting a proposal, an original, eight (8) hard copies and an electronic copy must be submitted. Please note after each numbered section whether your proposal Exceeds, Meets or Does Not Meet and all related comments, as per the following format:

On above specifications, this Proposal (circle one below)
EXCEEDS MEETS DOES NOT MEET
COMMENT:

2.1.0 GENERAL DIMENSIONS

2.1.1	Overall body length - Max.	31'
2.1.2	Overall body width – Max.	102"
2.1.3	Wheelbase	_____"
2.1.4	Seated Knee Room- Min.	26"
2.1.5	Cushion Depth - Min.	16"
2.1.6	Seat Width per Person - Min.	17"
2.1.7	Cushion Height Above Floor-Min. (Max.)	17.5" (18")

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| 2.1.8 | Aisle Width - Min. (In 102" wide body) | 20" |
| 2.1.9 | Headroom - Min. | 80" |
| 2.1.10 | Door Width - Min. (clear) | 34" |
| 2.1.11 | Door Height - Min | 77" |
| 2.1.12 | Overall Height @ highest point - Max | 128" |
| 2.1.13 | Floor Height @ level | 13.5" |
| 2.1.14 | Floor Height Kneeling | 10.5" |
| 2.1.15 | GVWR | _____ pounds |
| 2.1.16 | Turning Radius Curb-to-curb | _____ feet & inches |
| 2.1.17 | <p>The proposed bus shall conform in all respects, to State of Florida Motor Vehicle Laws (including, but not limited to, Chapter 316, Florida Statutes, Safety rules of the Department of Transportation, Chapter 14-90, promulgated under the Requirements of Chapter 341, Florida Statutes), the American with Disabilities Act, Title 49 Code of Federal Regulations (CFR), part 38, and Accessibility Specifications for Transportation Vehicles, Subpart B-Buses, Vans and Systems. This vehicle shall also comply with 40 CFR Parts 85 & 86, Air Pollution and Emission Standards for New Vehicles. Compliance with all Applicable Federal Motor Vehicle Safety Standards shall also be required. Proposal shall include all results of testing accomplished under the final rules issued by the Federal Transit Administration, 49 CFR Part 655, Bus Testing Program. Buses that have not met the minimum performance standards (passing score) established by the final rule effective October 31, 2016, will not be eligible for sale from this contract. The tests include the evaluation of structural integrity and durability, safety, maintainability, reliability, fuel economy, emissions, noise and performance (including brakes). Altoona Test shall be based on 7 year / 250,000 to 10 years and 350,000 miles.</p> | |
| 2.1.18 | <p>Upon award, the first bus produced shall be considered the "prototype" bus. After inspection of this vehicle, TRIPS reserves the right to clarify production build methods that are not specifically addressed in the technical specifications. Contract language will be revised to reflect these changes and subsequent manufactured vehicles shall include all changes as standard in production.</p> | |

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2.2.0 MATERIALS GENERAL SPECIFICATIONS

- 2.2.1 Workmanship throughout the vehicles shall conform to the highest standards of accepted commercial practice and shall result in a neat and finished appearance. The complete vehicles furnished must be of substantial and durable construction in all respects.
- 2.2.2 Welding procedures and materials shall be in accordance with standards of the American Society of Testing Materials and the American Welding Society. Welds not meeting these standards will be rejected and result in the total replacement of affected assemblies. All exterior skin side welded surfaces shall be ground smooth and free of unfriendly surfaces as a standard production process. All welding shall be performed using MIG wire welding machines utilizing shielding gas. All steel body/floor structure shall be coated with primer to prevent rust. **Proposal shall include manufacturer and description of primer.**
- 2.2.3 All parts, components and accessories shall be new. All exposed surfaces and edges shall be smooth, free from burrs and other projections and shall be neatly finished. All bare metal shall be primed. The exhaust system, drive line and subcomponents that incorporate corrosion protection shall be free from primer. The proposal shall include certification that it has the equipment necessary to accomplish this task.
- 2.2.4 Any subcomponent installed such as but not limited to wheelchair ramps, restraint systems, event data recorders, alternators and any other subcomponent installed by the bus manufacturer shall be installed per the subcomponent manufacturer's instructions. Manufacturer must certify that said components, have been installed, per the instructions provided and a copy of all installation instructions shall be provided to TRIPS. Any changes and/or updates to installation instructions shall be provided immediately to the TRIPS manager. Additionally, requests for updates will occur on a quarterly basis.
- 2.2.5 All fasteners used in the vehicles shall be backed by a Certificate of Quality by the manufacturer and adhere to all SAE and ANSI specifications. All steel bolts, nuts, screws and washers shall be zinc, cadmium or phosphate coated. The thickness and method of cadmium coating shall conform to ASTM specifications #A165, latest revision for Type TS coating.
- 2.2.6 All cap screws, nuts and bolts shall be of SAE grade 5 material unless the application requires a higher grade material.
- 2.2.7 All sheet metal screws shall comply with ASTM and SAE recommendations relative to quality and installation.
- 2.2.8 All copper tubing and fittings shall be industry standard. Fitting types, sizes, locations and tubing routing must remain uniform on all buses through the life on the contract. Long tubing nuts shall be applied where space conditions permit.

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- 2.2.9 All piping, tubing, cables and wiring shall be properly secured and bracketed. Types, sizes, locations and routing must remain uniform on all buses through the life on the contract. Air lines shall be color-coded according to industry standards. Deviation of routing due to minor manufacturing changes and/or reported defects must be approved in writing by both parties.
- 2.2.10 All assemblies and components shall be protected from vibration where applicable. The power plant and accessories shall be mechanically isolated to minimize the transmission of vibration to the frame and body structure.
- 2.2.11 All pipe fittings shall be heavy-duty and shall be designed to withstand the maximum pressure that could be generated under overload conditions within the applicable air or fluid systems.
- 2.2.12 All burrs and sharp edges shall be dressed so as to prevent injury to passengers, operators and maintenance personnel.
- 2.2.13 All clevises shall be removable and not welded to the rods. Exceptions require approval from the TRIPS.
- 2.2.14 Drain and filler plugs on rear axle, transmission and engine shall be magnetic with hexagon heads.
- 2.2.15 Air conditioning hosing shall not be spliced.
- 2.2.16 All plastics and synthetic material shall meet the requirements of FMVSS 302.
- 2.2.17 All grease and oil fittings shall be readily accessible for lubrication.
- 2.2.18 Bosses with threaded sections in which fittings or pipes are connected shall have hexagon or square shoulders which can be held with a wrench so as to eliminate damage to the unit.
- 2.2.19 Left blank intentionally
- 2.2.20 Installation of major assemblies including engine (including hybrid drive system if proposed), transmission, axles, power steering and suspension components shall be such that removal shall be easily carried out by conventional and standard shop methods.
- 2.2.21 Tee fittings shall be installed in each individual air system for testing purposes.
- 2.2.22 All components, assemblies, and sub-assemblies shall be readily accessible for service, repair, removal and replacement. Components and systems shall have the maximum access available.

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- 2.2.23 Bus maintenance and comprehensive service manuals (including R&I of major components), parts manuals, “as built” wiring schematics, “as built” ladder charts (for multiplex equipped buses), “as built” air system schematics and bus operations manuals shall be provided to the purchaser via paper, CD or web application upon delivery.
Proposal shall include a complete set of all required manuals.
- 2.2.24 All vehicles shall be weighed “as built” before release and manufacturer’s engineering department shall perform a four corner weight analysis on each vehicle that indicates the weight of the vehicle and any attachments, the maximum weight of the occupants and the weight of a full tank of fuel for GAWR and GVWR evaluation. A copy of the “as built” weight certification four corner weight analysis and an “as built” floor plan shall be with each vehicle shipped to Florida.. The “as built” weight certification shall provide the following information:
- Bus VIN
 - Manufacturer Identification
 - Body Serial Number
 - A description (type) of the bus
 - Date of manufacture
 - Maximum number of ambulatory passengers including driver
 - Maximum number of wheelchairs and remaining capacity for ambulatory seating
 - Four wheel weight distribution including ambulatory passengers and driver
 - Four wheel weight distribution of the weight of the wheelchairs
 - Four wheel weight distribution of the weight of the fuel
 - Four wheel weight distribution of the total weight of the vehicle.
 - Weight analysis must have signature and title of person submitting it.
- 2.2.25 In addition to the manufacturer’s weight calculations and documents the TRIPS will require that the manufacturer’s complete and submit weight calculations on TRIPS Form #TRIPS-17-MD. TRIPS will perform four wheel weight analysis at the Springhill Inspection, Testing & Research Facility in Tallahassee.
- 2.2.26 The total loaded weight at each wheel must not exceed 50% of the GAWR for that axle and GVWR must not be exceeded. Any bus that exceeds either condition will be rejected.
- 2.2.27 Manufacturer shall supply a copy of their detailed quality control program. The program shall address how quality assurance is provided through each phase of construction. Manufacturer will be required to submit weekly reports tracking the progress of vehicles through the procurement/production process from receipt of order through delivery and acceptance of the vehicle. This report shall be coordinated with the local dealer’s report and must be submitted on a timely basis.

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2.2.28 The Dealer shall submit weekly reports which track the progress of vehicles through the procurement/production process from receipt of order through delivery and acceptance of the vehicle by TRIPS.

2.2.29 Dealer shall be responsible for delivering vehicles that are properly serviced, clean and in first class operating condition. Pre-delivery service, at a minimum, shall include the following:

1. Complete lubrication of chassis, engine and operating mechanisms with manufacturer's recommended grades of lubricants.
2. All fluid levels filled to proper capacities.
3. Adjustment of drive-train for expected operating condition.
4. Inflate tires to proper pressure.
5. Check to insure proper operation of all accessories, gauges, lights and mechanical and hydraulic features.
6. Cleaning of vehicle and removal of all unnecessary stickers.
7. Full front-end alignment conducted by a professional with the appropriate equipment and experience to perform proper alignment. All wheels including spare tire shall be balanced. This alignment is to be performed only after vehicle is built complete and is at full curb weight. Vehicle shall be delivered with fully adjustable front end components installed to allow alignment in the field without replacing any components.
8. Focusing of headlights utilizing a machine certified and designed for this purpose.
9. Correct and repair all deficiencies noted in the Post-Delivery Inspection of each vehicle.

2.2.30 Manufacturer certifies that it:

1. Has in operation or has the capacity to have in operation a manufacturing plant.
2. Has adequate engineering personnel, or has the capability to have such personnel to satisfy any engineering or service problem that may arise during the warranty period. Bidder must supply in proposal the number of engineers along with their designated areas of responsibilities.
3. Has the necessary facilities and financial resources, or has the capability to obtain such facilities and resources, to complete the contract in a satisfactory manner within the required time.

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2.3.0 ENGINE

- 2.3.1 All engines proposed must be in compliance with current EPA emission standards.
- 2.3.2 The rear engine and transmission shall be cradle mounted to facilitate maintenance service to power train. Proposal shall include a detailed description of engine and transmission mount design and time required to replace major components by skilled mechanic. Each proposer's design will be evaluated by the Proposal Committee.
- 2.3.3 Engine shall be manufacturer's standard diesel engine for this size bus considering components and accessories proposed. The specified engine must give satisfactory performance over terrain encountered in Florida with maximum passenger load. Manufacturer shall propose engine horsepower and torque.
- 2.3.4 An optional alternative fueled engine, including a hybrid-electric propulsion system shall be offered for this size bus considering components and accessories proposed. The specified engine must give satisfactory performance over terrain encountered in Florida with maximum passenger load. Manufacturer shall propose engine horsepower and torque. TRIPS reserves the right to accept any other alternative fuel engines when offered by the manufacturer during the term of this contract.
- 2.3.4.a Proposals for an all-electric propulsion system (including supporting equipment such as: chargers, tools, etc.) will be considered. The specified all-electric system must give satisfactory performance over terrain encountered in Florida with maximum passenger load and must meet applicable industry standards.
- 2.3.5 A liquid tight control/junction box containing an engine start/kill switch, SAE J1587 and J1939 ports and an hour meter shall be located in the rear engine compartment within easy view and reach of maintenance staff.
- 2.3.6 All fluid fill locations shall be properly labeled and easily accessible for funnels, pour spouts, automated equipment and feature spring loaded caps and function labeling.
- 2.3.7 All metal lines shall be pre-formed to the extent practical prior to installation, using a fixture that prevents local strain or tube flattening and shall not be bent more than once at the same point. Rigid lines shall be supported at no more than 5-foot intervals, and shall make contact with only their support bracket. Nylon lines may be grouped and supported at 2-foot intervals or less. The air compressor discharge line shall be designed to eliminate stress between the compressor and stationary terminal point and shall meet compressor manufacturer and system requirements. Such lines shall be individually supported and as short as practical and shall not touch one another or any other part of the vehicle except their supporting clamps and/or grommets. All Teflon

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hoses with braided stainless steel jackets shall be further protected by flex guard loom. Insulated clamps or grommets shall protect all lines where they pass through structural members. All compressed air lines shall slope downward toward a reservoir and routed to prevent water traps.

- 2.3.8 The fuel filtration system shall meet OEM engine manufacturer's guidelines. The flexible fuel lines within the engine compartment shall be high temperature Teflon core with a stainless steel braided jacket and sleeved with flex guard loom. The supply and return fuel lines outside the engine compartment may be color-coded nylon approved for diesel fuel usage.
- 2.3.9 Engine-driven accessories shall be unit mounted for quick removal and repair. Accessory drive systems shall operate without adjustment for not less than 50,000 miles. These accessories shall be driven at speeds sufficient to assure adequate system performance during extended periods of idle operation and at low route speeds. In order to keep drive belts to a minimum number the air compressor and the hydraulic pump shall be gear driven. The alternator and water pump shall be driven with a single serpentine belt. The air conditioning compressor shall be driven by a separate belt drive. All belts shall be equipped with an automatic belt tension device. Serpentine belts will be considered for all applications.
- 2.3.10 Left blank intentionally.
- 2.3.11 The engine control system shall protect the engine against progressive damage. The system shall monitor conditions critical for safe operation and automatically de-rate power and/or speed and initiate engine shutdown as needed. The on-board diagnostic system as described shall trigger a visual and audible alarm to the operator when the engine control unit detects a malfunction and the engine protection system is activated. Automatic shutdown shall only occur when parameters established for the functions below are exceeded:
- > Engine Coolant Temperature
 - > Engine Oil Pressure
- 2.3.12 A control shall be available to the operator, to allow temporary override (30-45 seconds) of the engine protection/shutdown system if engine power is required to move the bus in emergency conditions.
- 2.3.13 An electronic throttle control system shall be used for accelerator control. The accelerator system shall also be interlocked with doors opened by means of the engine electronics holding the accelerator control to the idle position.
Proposal shall include information on system offered.
- 2.3.14 The engine shall be equipped with an operator-controlled fast idle device. The fast idle control shall be mounted on the dash or side console and shall activate only with the transmission in neutral and the parking brake applied. If the operator shifts to a forward or reverse gear without returning the fast idle to the off position the system shall

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automatically return the throttle to the idle position and shall automatically return it to fast idle when the next time the operator selects the neutral position.

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2.4.0 COOLING SYSTEM

- 2.4.1 The cooling system shall be of sufficient size to maintain all engine and transmission fluids, including retarder and engine intake air at safe, continuous operating temperatures during the most severe operations possible for Florida's environment and in accordance with engine and transmission manufacturers' cooling system requirements. Proposer may provide an electric fan option.
- 2.4.2 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 valve to safely release pressure or vacuum in the cooling system shall be provided with both it and the water filler no more than 60 inches above the ground and both shall be accessible through the same access door.
- 2.4.3 Coolant provided shall meet OEM engine requirements.
- 2.4.4 All coolant hoses shall be Silicone hose with constant torque clamps. All heater hose shall be routed below floor level to ensure passenger safety. Auxiliary heater coolant fluid shut-off valves shall be included as standard equipment.
- 2.4.5 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.
- 2.4.6 The transmission shall be cooled by a separate heat exchanger sized to maintain operating fluid within the transmission manufacturer's recommended parameters of flow, pressure and temperature.

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2.5.0 ENGINE AIR CLEANER

- 2.5.1 Engine air filter shall be dry filter type. The air cleaner element shall be capable of being changed without the use of tools. The system will utilize a self-aligning and self-sealing technology to insure proper installation and shall have a restriction gauge located in an

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

2.6.0 ENGINE OIL SYSTEM

2.6.1 Engine oil system shall meet or exceed all OEM engine manufacturer's requirements.

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2.7.0 EXHAUST SYSTEM

2.7.1 The exhaust system from the turbo charger through the muffler/diesel oxidation catalyst and a catalyzed soot filter shall be stainless steel. From the muffler to the roof exhaust tip, the exhaust pipe shall be aluminized steel. The exhaust tip shall be chrome and curved to the rear of the bus roof and designed to prevent rain, snow or water generated from high-pressure washing systems from entering into the exhaust pipe and causing damage to the system. Exhaust gases and waste heat shall be discharged from the roadside rear corner of the roof. The exhaust pipe shall be of sufficient height to prevent exhaust gases and waste heat from discoloring or causing heat deformation to the bus roof. The entire exhaust system shall be adequately shielded to prevent heat damage to any bus component. The exhaust pipe and muffler/diesel oxidation catalyst and a catalyzed soot filter will be encapsulated with an exhaust blanket.

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2.8.0 TRANSMISSION

2.8.1 The transmission shall be multiple speed, automatic shift with torque converter, retarder and electronic controls and must give satisfactory performance with maximum passenger load on terrain encountered in Florida. Gross input power, gross input torque and rated input speed shall be compatible with the engine. A skilled mechanic, with optional assistance, shall be able to remove and replace the transmission assembly for service in less than 20 total combined man-hours. The transmission shall be designed to operate for not less than 300,000 miles on the design operating profile without replacement or major service.

Proposal shall include information on transmission offered.

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2.9.0 RETARDER

2.9.1 An electronic retarder shall be provided that meets the requirements of a fully loaded coach.

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2.10.0 DRIVE SHAFT

2.10.1 The drive shaft rated capacity shall be capable of transmitting the torque multiplication of the power units to the drive wheels.

2.10.2 Protective metal guards (as needed) for the shaft shall be provided within 3" of the shaft to prevent a broken shaft from touching the ground, contacting any brake line, or whipping through the floor. The drive shaft guards shall conform to 49 CFR.

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COMMENT:

2.11.0 FRONT AXLE

2.11.1 Front Axle shall be manufacturer's standard. Axle must be load rated for the GVWR of the size bus involved. This axle shall provide maximum maneuverability.

Proposal shall include manufacturer and GAWR for bus type submitted.

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COMMENT:

2.12.0 REAR AXLE

2.12.1 Rear Axle shall be manufacturer's standard. Axle must be load rated for the GVWR of the size bus involved. Transfer of gear noise to the bus interior shall be minimized. The rear axle shall be designed to operate for not less than 300,000 miles on the design operating profile without major failure.

Proposal shall include manufacturer and GAWR for bus type submitted.

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2.13.0 BRAKES

- 2.13.1 Braking systems shall comply with all Federal Motor Vehicle Safety Standards 121 or 105 as applicable.
- 2.13.2 Brakes should be capable of stopping a fully loaded or unloaded vehicle according to FMVSS standards.
- 2.13.3 A drum or disc microprocessor controlled Anti-lock Braking System (ABS) with Automatic Traction Control shall be provided. The microprocessor for the ABS system shall be protected yet in an accessible location to allow for ease of service. Actuation of ABS shall override the operation of the brake retarder.
- 2.13.4 The parking/emergency brake shall be capable of holding the bus according to FMVSS standards.
Proposal shall include description/information on parking brake systems.
- 2.13.5 The controls for a wheelchair ramp shall be interlocked with the vehicles parking brake and transmission to ensure the vehicle cannot be moved when the ramp is not stowed and so the ramp cannot be deployed unless the interlocks are engaged. The interlock must meet ADA Title 49 Lift Interlock requirements and be FMVSS 403 and 404 compliant.
- 2.13.6 The rear brake system shall be interlocked with the passenger door, front and rear, if rear door offered. The system shall use a zero motion detector connected to the door(s), which will not allow the door(s) to open until the coach is brought to a complete stop. When the door(s) is open, the rear brakes shall apply and stay applied until the door(s) is closed.
Proposal shall include a description of the braking system.

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2.14.0 STEERING

- 2.14.1 All friction points on the front axle shall be equipped with replaceable bushings or inserts and lubrication fittings easily accessible from a pit or hoist.

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- 2.14.2 Fatigue life of all steering components shall exceed 1,000,000 miles. No element of the steering system shall sustain a Class I failure when one of the tires hits a curb or strikes a severe road hazard. Damages to steering as a result of striking road hazards shall not result in steering failures.
- 2.14.3 Outside body corner turning radius including the bumper for a standard configuration bus shall not exceed the length of the bus.
- 2.14.4 Power steering shall be provided. The steering gear shall be an integral type with flexible lines. With the bus on dry, level, commercial asphalt pavement, and tires inflated to recommended pressure and the front wheels positioned straight ahead, the torque required to turn the steering wheel 10 degrees shall be no less than 5 foot pounds and no more than 10 foot pounds. Steering torque may increase to 70 foot pounds when the wheels are approaching the steering stops, as the relief valve activates. Steering effort shall be measured with the bus at GVWR, stopped with the brakes released and the engine at normal idling speed.. Power steering failure shall not result in loss of steering control. With the bus in operation the steering effort shall not exceed 55 pounds at the steering wheel rim. Free play in the steering system shall not increase as a result of power steering 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 wheels to the straight position with minimal assistance from the driver.
- 2.14.5 The steering wheel diameter shall be no less than 20". The rim diameter shall be 7/8" to 1 1/4" and shaped for a firm comfortable grip for long periods of time. The steering wheel shall be removable with a standard or universal puller. Steering wheel spokes and wheel thickness should be such as to insure that visibility is within the range of a 95-percentile range as described in SAE 1050a, section 4.2.2 and 4.2.3. Placement of steering column must be as far forward as possible, but either in-line or behind the instrument cluster.
- 2.14.6 The steering wheel shall have a rearward tilt adjustment range of no less than 40 degrees as measured from the horizontal and upright position. The steering wheel shall also include a telescoping capability.

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2.15.0 TIRES AND WHEELS

- 2.15.1 Buses shall be equipped with single front and dual rear wheels. Wheels shall be hub-piloted steel with a white powder coat finish. ALCOA Aluminum wheels with a machine finished on both sides will be offered as an option and be priced separately. Option shall include all six wheels.

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- 2.15.2 All wheels shall be interchangeable and shall be removable without a puller. Wheels shall be compatible with tires in size and load-carrying capacity; minimum 19.5" x 7.5". Front wheels and tires shall be balanced as an assembly per SAE J1986.
Proposal shall include size being offered.
- 2.15.3 Tires shall be suitable for the conditions of transit service and sustained operation at the maximum speed capability of the bus. Load on any tire at GVWR shall not exceed the tire supplier's rating.
Proposal shall include size being offered.
- 2.15.4 All tires front and rear shall be equipped with a tire pressure monitoring system to warn the driver if a specific tire has low air pressure.
Proposal shall include information on system offered.
- 2.15.5 Proposer shall provide a hub-o-meter as a separately priced option. This hub- o-meter must be calibrated for the tire size and mounted on the right rear (curb-side) wheel hub.
Proposal shall include description of hub-o-meter offered.
- 2.15.6 A matching mounted and balanced spare tire and wheel assembly shall be provided and shipped loose with each vehicle. Spare tire shall be secured inside the bus to protect floor covering and other components.

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2.16.0 ELECTRICAL SYSTEM

- 2.16.1 A Multiplex Electrical System meeting applicable sections of CFR 49 respectively shall be proposed. **Proposal shall include a detailed description of the multiplex system.**
- 2.16.2 The system shall supply 12 and/or 24 volts of direct current (DC) power by a minimum of two batteries based on **exhibit 6, Charging System Performance Test**. Design shall minimize hazards to service personnel. The alternator shall be rated sufficiently higher than the total possible electrical load to maintain the charge on the batteries at all operating conditions including engine idle. All branch circuits, except battery-to-starting motor and battery-to-generator/alternator circuits, shall be protected by current-limiting devices such as circuit breakers, fuses or solid-state devices sized to the requirements of the circuit. Electronic circuit protection for the cranking motor shall be provided to prevent engaging of the motor for more than 30 seconds at a time to prevent overheating. The circuit breakers or fuses shall be easily accessible for authorized personnel. Fuses shall be used only where it can be demonstrated that circuit breakers are not practicable. This applies to manufacturers and component suppliers. 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 technicians with visible indication of

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open circuits. Any additional wiring or circuit protection devices apart from the standard systems shall be included in the final electrical system drawings. Circuit breakers and fuses shall be sized to a minimum of 15 percent larger than the total circuit load. The current rating for the wire used for each circuit must exceed the size of the circuit protection being used. All wiring routing and securement shall eliminate chafing and pinch points.

- 2.16.3 Redundant grounds shall be used for all electrical equipment except where it can be demonstrated that redundant grounds are not practical. Grounds shall not be carried through hinges, bolted joints (except those specifically designed as electrical connectors) or power plant mountings. Electrical equipment shall not be located in an environment that will reduce the performance or shorten the life of the component or system. To the extent practical, electrical wiring and equipment shall not be located under the bus. When located under the bus, wiring and electrical equipment shall be protected from water, heat, corrosion and damage.
- 2.16.4 The design of electrical systems shall be modular so that each major component, apparatus, panel or wiring bundle is easily separable with standard hand tools or by means of connectors. Each module except the main body wiring harness shall be removable and replaceable in less than 1 hour by a skilled mechanic. Power plant wiring shall be an independent wiring harness. Replacement of the engine compartment wiring harness(s) shall not require pulling wires through any bulkhead or removing any terminals from the wires. All wiring routing and securement shall eliminate chafing and pinch points.
- 2.16.5 All wiring between electrical components and terminations shall have double electrical insulation, be waterproof and conform to specification requirements of SAE Recommended Practice J1127 and J1128. All wiring routing and securement shall eliminate chafing and pinch points. Positive and negative battery cables shall remain separated, be flexible and shall be sufficiently long to reach the batteries with the tray in the extended position without stretching or pulling on any connection and shall not lie directly on top of the batteries. Except as interrupted by the master battery disconnect switch, battery and starter wiring shall be continuous cables, grouped, numbered and/or color-coded 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. Installation shall permit ease of replacement. All wiring harnesses over 5' in length and containing at least five wires shall include 5% excess for spares that are the same size, exclusive of battery cables and modular harnesses, as the largest wire in the harness.
- 2.16.6 Wiring harnesses shall not contain wires of different voltages unless all wires within the harness are sized to carry the current and insulated for the highest voltage wire in the harness. Double insulation shall be maintained and secured as close to the terminals as possible. The requirement for double insulation shall be met by sheathing all wires and harnesses with non-conductive, rigid or flexible conduit. Strain-relief fittings shall be provided at points where wiring enters all electrical components. Grommets of flexible and non-conductive material shall be provided at points where wiring penetrates metal structures outside of electrical enclosures. Wiring supports shall be protective and non-

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conductive at areas of wire contact and shall not be damaged by heat, water, solvents or chafing. Wiring length shall allow end terminals to be replaced twice without pulling, stretching or replacing the wire. Large terminals such as battery cable ends shall be soldered at the connection and protected with heat shrink. Other terminals shall be crimped to the wiring and may be soldered if the wire is not stiffened outside of the crimp area. Residual flux material must be removed from all soldered connections. Terminals shall be corrosion-resistant and full ring type or interlocking lugs with insulating ferrules. All wiring shall be numbered and/or color-coded identically between all buses and coding used shall be identified on all schematics.

- 2.16.7 All relays, controllers, flashers, circuit breakers and other electrical components shall be grouped according to voltage and mounted in easily accessible junction boxes. The boxes shall be sealed to prevent moisture from normal sources including engine compartment cleaning from reaching the electrical components and shall prevent fire that may occur inside the box from propagating outside the box. The components and circuits in each box shall be identified and their location permanently recorded on a schematic drawing attached to or printed on the inside of the box cover or door. The drawing shall be protected from oil, grease, fuel and abrasion. The front junction box shall be completely serviceable from the vestibule. A rear start and run control box shall be mounted in an accessible location in the engine compartment.
- 2.16.8 The manufacturer shall provide training on programming of components and report formatting and usage of the multiplex system.
- 2.16.9 All electrical components including switches, relays, flashers and circuit breakers shall be heavy-duty designs with either a successful history of application to heavy-duty vehicles, or design specifications for an equivalent environment. All relays, controllers, flashers, circuit breakers and other electrical components exposed to the outside environment shall be corrosion resistant and sealed.
- 2.16.10 All electric motors shall be heavy-duty permanent magnet motors and have a continuous duty rating of no less than 40,000 hours (except cranking motors). All electric motors shall be easily accessible for servicing.
- 2.16.11 Charging system must comply with exhibit 6, Charging System Performance Test.
- 2.16.12 The battery compartment shall prevent accumulation of contaminants and debris on top of the batteries and shall be vented and self-draining. It shall be accessible only from the outside of the vehicle. The battery compartment and the components within shall be protected from damage or corrosion from the electrolyte. The batteries shall be securely mounted on a stainless steel or equivalent tray that can accommodate the size and weight of the batteries. Each battery cell shall be easily accessible for service. The battery hold-down bracket shall be constructed of a rigid, **nonconductive** and corrosion-resistant material. The battery tray, if a slide out type, shall pull out easily and properly support the batteries while they are being serviced. A locking device shall retain the slide out battery tray to the stowed position. The inside surface of the battery compartment's access door shall be electrically insulated, as required, to prevent the battery terminals

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from shorting on the door if the door is damaged in an accident or if a battery comes loose. The battery compartment temperature shall not exceed battery manufacturers' specifications. The vehicle shall be equipped with a master disconnect switch in the battery compartment near the batteries for complete disconnecting from all bus electrical systems except for safety devices such as fire suppression system and other systems as specified. The battery master disconnect access door shall be conveniently located on the battery compartment door to accommodate operation of the master disconnect switch. This access door shall not require any special locking devices to gain access to the switch and shall be accessible without removing or opening the battery compartment door. The battery master disconnect access door shall contain a decal not less than 3.5 x 5 inches in size. If batteries are not located in the engine compartment, the construction shall preclude or retard propagation of a battery compartment fire into the passenger compartment. No sparking devices should be located within the battery compartment.

- 2.16.13 All electrical compartments exposed to the outside environment shall be corrosion resistant and sealed. The components and circuits in each electrical compartment shall be identified and their location permanently recorded on a drawing attached to the inside of the access panel or door. The drawing shall be protected from oil, grease, fuel and abrasion.
- 2.16.14 The bus shall be equipped with a built-in diagnostic system to monitor critical systems and/or components. This diagnostic system shall have visual and audible indicators. The diagnostic indicator light panel shall be located in clear sight of the operator. The intensity of indicator lamps shall permit easy determination of on/off status in bright sunlight but shall not cause a distraction or visibility problem at night. All indicators shall have a method of momentarily testing the operation of the lamp. Whenever possible, sensors shall be of the closed circuit type so that failure of the circuit and/or sensor shall activate the malfunction indicator. The audible alarm shall be tamper resistant and shall have an output level between 80 and 83 dBA when measured at the location of the operator's ear. Malfunction and other indicators listed in the following table shall be supplied on all buses.

STANDARD ONBOARD DIAGONSTIC INDICATORS:

<i>VISIBLE INDICATOR</i>	<i>GAUGE</i>	<i>AUDIBLE ALARM</i>	<i>FUNCTION</i>
Low oil	YES	YES	Low engine oil pressure
Hot engine	YES	YES	Engine coolant temperature high
Low air pressure	YES	YES	Low air pressure system in primary or secondary reservoirs
Low engine coolant	NO	YES	Radiator water level low
Alternator(s) stop	NO	YES	Alternator(s) not charging
Kneel activated	NO	YES	Kneeling system activated
A/C stopped	NO	YES	Compressor off at high/low switch

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Fuel capacity YES YES Low fuel warning

2.16.15 Space shall be provided on the panel for future installation of not less than 3 additional indicators as the capability of on board diagnostic systems improves.

2.16.16 Proposal shall include copies of all electrical system design calculations.

On above specifications, this Proposal (circle one below)
EXCEEDS MEETS DOES NOT MEET
COMMENT:

2.17.0 LIGHTING AND OPERATOR CONTROLS

2.17.1 All exterior lights shall be LED type and be designed to prevent entry and accumulation of moisture or dust, and each light shall be replaceable in less than 5 minutes by a skilled mechanic helper. Lights mounted on the engine compartment doors shall be protected from the impact shock of door opening and closing. Lights, lenses and fixtures shall be interchangeable to the extent practical. Two hazard lights at the rear of the bus shall be visible from behind when the engine service doors are opened. Light lenses shall be designed and located to prevent damage when running the vehicle through an automatic bus washer. Lights located on the roof and sides of the bus shall have protective shields or be of the flush mount type to protect the lens against minor impacts.

2.17.2 Lighting at the front passenger door shall comply with ADA requirements and shall activate only when the doors open. These lights shall illuminate the street surface to a level of no less than 1 foot-candle for a distance of 3 feet outward from the outboard edge of the door threshold equipped with the loading system. The lights shall be shielded to protect passengers' eyes from glare.

2.17.3 Front headlights are to be 12 volt sealed beam type, four (4) in total and located horizontally. The outboard headlight shall be dual type with low beam and high beam capacity. The adjacent or inboard headlight shall be capable of high beam only. High beam, low beam functions shall be controlled by a sealed and moisture protected driver's foot switch. Sealed beam units shall be of latest type and low beam rating of 320-hour rack life, at 12 volts. Headlights shall be wired to operate on reduced voltage in the "Run" position.

2.17.4 Directional signal lights shall be 12 or 24 volt and provided on front, rear, and both sides of the bus. All directional lights shall be LED. Front lights to be amber reflective lenses, and rear lenses to be amber also.

2.17.5 Separate stop and tail lights will be 7 inch LED type mounted on outside corner of body to be visible even when engine compartment door is open, and to maximize access when door is open. The top lights on each side shall be one red stop/tail light and the bottom

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on each side shall be one amber turn. One 4 inch LED back up light shall be mounted between the stop and turn lights on each side.

2.17.6 LED type marker lights shall be provided:

- Two amber near front side roof line
- Two amber near center side roof line
- Two red near rear side roof line

2.17.7 LED type individual I.D. lights to be mounted:

- Three amber at front center roof crown
- Three red at rear center roof crown

2.17.8 One amber LED light to be mounted mid ship on both sides and shall operate in conjunction with directional signals when activated. These lights shall be visible 180 degrees and in protective fixtures.

2.17.9 Reflectors LED lighting shall be size, type, color and location required to comply with the requirements of both FMVSS - 108 and the regulations established by the State of Florida.

2.17.10 A switch shall be provided for operator control that will enable all directional light to flash in unison to indicate a hazard condition.

2.17.11 A 2-candlepower LED light shall be provided to illuminate the rear license plate.

2.17.12 Lights shall be provided in the engine compartment and all other compartments where service may be required to generally illuminate the area for service or repairs. A sealed light assembly will be provided in the engine compartment, The light will be on a reel with 18' of cord to allow the light to be placed where needed and has a magnetic back and shall be controlled by a switch located on the light housing near the rear start controls in the engine compartment. Necessary lights located in other service compartments shall be provided with switches on the light fixture or convenient to the light.

2.17.13 Interior lighting shall be LED type and designed to minimize reflections on the interior glass surfaces. The level of illumination and control shall be U.S. standard. Lighting fixtures shall be designed to present a smooth interface to the other components of the bus interior. Entire interior shall be finished in an aesthetically pleasing manner with no exposed open tracks or access areas.

2.17.14 A switch, independent of the "RUN" switch shall be provided. When this switch is in "ON" position and the door is open, all LED lighting shall turn on. When door is closed the two forward most LED light fixtures on the curbside and the forward-most light fixtures on the roadside shall be extinguished. When the master switch is in the "RUN" or "NITE/RUN" mode, these same light modules on each side of the coach shall slowly fade to darkness

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when the front door is in the closed position, and light output shall gradually illuminate to reach maximum light level when the door is opened. Solid state LED lighting shall have unlimited on-off cycles. When switch is in "OFF" position all lights are off, when in "Normal" position, with door closed, all lights are on.

- 2.17.15 The operator's area shall have a swivel-mounted ceiling light to provide general illumination and it shall be capable of illuminating the area between the lower half of the steering wheel nearest the operator and the operators seat to a level of 10 to 15 foot-candles. This light shall be controlled by the operator through a switch on the front or side console.
- 2.17.16 All switches and controls necessary for the operation of the bus shall be conveniently located in the operator's area and shall provide for ease of operation. Switches and controls shall be essentially within the hand reach envelope described in SAE Recommended Practice, J287, and Driver Hand Control Reach. Controls shall be located so that boarding passengers may not easily tamper with control settings. All switches are illuminated for night vision. The four-way light hazard switch shall be a toggle switch extended in length and located next to the passenger door operator switch, convenient in location and touch to the driver's left hand.
- 2.17.17 Accelerator and brake pedals shall be designed for ankle motion. Foot surfaces of the pedals shall be faced with wear-resistant, nonskid, replaceable material. Driver's foot operated switches shall be protected and sealed from moisture and dirt. The installation of all switches and other controls shall be environmentally sealed. A heel wear plate shall be mounted at the base of the throttle and brake pedals. Controls for engine operation shall be closely grouped within the operator's compartment. These controls shall include separate master run switch and start switch or button. The run switch shall be a four-position rotary switch with the following functions:
- OFF:** All electrical systems off except power available for the passenger interior lighting, stoplights, turn lights, hazard lights, silent alarm, horn, farebox, transfer machine, two-radio and other ITS accessories.
 - CL/ID:** All electrical systems off except those listed in engine stop and parking lights.
 - RUN:** All electrical systems and engine on except headlights, parking lights and marker and taillights.
 - NITE/RUN** - All electrical systems and engine on.
- 2.17.18 Adjustable brake and accelerator pedal shall be offered as an option and priced separately.
- 2.17.19 The door control, kneel control, windshield wiper/washer controls and run switch shall be identifiable by shape, touch and permanent markings. Doors shall be operated by a

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single control conveniently located and operable in a horizontal plane by the operator's left hand. The setting of this control shall be easily determined by position and touch.

- 2.17.20 The wiring at these controls shall be serviceable from the vestibule or the operator's seat. Switches, controls and instruments shall be dust- and water-resistant.
- 2.17.21 The speedometer, air pressure gauge(s) and certain indicator lights shall be located on the front cowl immediately ahead of the steering wheel. Illumination of the instruments shall be simultaneous with the marker lights. Glare or reflection in the windshield, side window or front door windows from the instruments, indicators or other controls shall be minimized. Instruments and indicators shall be easily readable in direct sunlight.
- 2.17.22 The operator's area shall be of modern ergonomic design and provide for ease of operation, comfort and efficiency, and minimize glare to the extent possible. All control functions shall be within easy reach of the 95th percentile operator when steering and seat positions are optimally adjusted.
- 2.17.23 Indicator lights and/or switches immediately in front of the operator or in the side console shall include:

INDICATOR/WARNING LIGHTS:

- High beam headlight
- Right turn
- Left turn
- Hazard warning (may be common with turn indicators)
- Parking brake applied
- Service brake applied (may be common with parking brake indicator)

SWITCHES:

- Master run switch
- Start switch or button
- Kneel switch
- Turn signal switches
- Interior lighting switch
- Instrument lighting intensity control
- Passenger chime switch
- Driver's area light switch
- Hazard warning lights switch
- Horn button, center of steering column - debris deflecting
- Headlight dimmer switch
- Fast idle switch
- Master door switch

CONTROLS:

- Accelerator pedal
- Brake pedal

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- Door control
- Windshield wiper control
- Windshield washer control
- Interior climate control
- Driver's heater control
- Defroster control
- Parking/emergency brake control (indicates brake application)
- Transmission control
- Front door dump valve
- Public address system controls
- Destination sign controls

- 2.17.24 The instrument panel shall include an electronic speedometer indicating no more than 80 mph and calibrated in maximum increments of 5 mph. The instrument panel shall be mounted forward of the driver and in full view while in the seated position. The instruments listed in Exhibit 2 shall be considered as the minimum required.
- 2.17.25 The instrument panel shall also include air brake reservoir pressure gauge(s) with indicators for primary and secondary air tanks. A voltmeter(s) to indicate the operating voltage across the bus batteries shall be included. The instrument panel and wiring shall be easily accessible for service from the operator's seat or top of the panel. Wiring shall have sufficient length and be routed to permit service without stretching or chafing the wires.
- 2.17.26 A lockable "driver's box" shall be installed in a location convenient to the driver. The box shall be approximately six (6) inches wide, fourteen inches in height and sixteen inches in depth. The box shall be constructed from minimum -.080 steel and primed and painted to match adjacent interior.
- 2.17.27 Visible and audible warning that conforms to SAE Standard J593 and 994 shall alert traffic and pedestrians of reverse operation
- 2.17.28 One each high and low tone horns shall be installed and positioned to minimize wheel wash spray.
- 2.17.29 Proposers shall separately price an optional fare box including pre-wiring, mounting structure and ceiling light in accordance with the following technical specification.
- 2.17.30 If selected, a fare box shall be installed in a space as far forward as practical and/or structural provisions shall be made for installation of a fare box (if not installed by component manufacturer). Location of this fare collection device shall not restrict traffic in the vestibule and shall allow the driver to easily reach the coin levers and view the change platform. The fare box shall not restrict access to the driver's area and shall not restrict operation of driver controls. Fare box location shall permit accessibility to the vault for easy manual removal or attachment of suction devices. Meters and counters on the fare box shall be readable on a daily basis. A LED type light fixture must be mounted to illuminate the fare box when applicable. This light is to be activated in conjunction with

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the front passenger lights/door/lights operation. The floor under the fare box shall be reinforced by eighteen gauge steel plate, to provide a sturdy mounting platform and to prevent shaking of the fare box. Manufacturer shall furnish and install electrical wiring for the fare box. The fare box electrical system shall be a 12 volt DC with a ground wire running from the main electrical panel. Necessary holes for the mounting of the fare box shall be drilled by manufacturer. **Proposal shall include name and information on fair box equipment offered.**

On above specifications, this Proposal (circle one below)

EXCEEDS MEETS DOES NOT MEET

COMMENT:

2.18.0 LEFT BLANK INTENTIONALLY

2.19.0 MIRRORS

2.19.1 The bus shall be equipped with remote controlled outside mirrors with heated glass and turn signal on each side of the bus. Mirrors shall permit the operator to view the highway along both sides of the bus including the rear wheels. Each mirror shall have a minimum 85 square inches of flat glass and 45 square inches of convex glass. The curbside mirror shall be mounted as required by FAC 14-90. Mirrors shall be mounted to minimize vibration, but to yield without damage to bus or its structure if mirror contacts an object.

Proposal shall include information on mirrors offered.

2.19.2 Interior mirrors shall be provided for the operator to observe passengers throughout the bus without leaving driver's seat and without shoulder movement. With a full standee load the driver shall be able to observe passengers in the front entrance and rear exit areas anywhere in the aisle and in the rear seats. Inside mirrors shall not be in the line of sight to the right outside mirror. A center-mounted 4 inch by 16 inch mirror shall be installed above the windshield.

On above specifications, this Proposal (circle one below)

EXCEEDS MEETS DOES NOT MEET

COMMENT:

2.20.0 DESTINATION SIGNS - OPTIONAL

2.20.1 A manually operated destination sign for limited readings shall be offered as an option. Front destination sign shall be a single roller curtain type installed above the windshield with a glass exposure of 8 inches x 60 inches. The side destination sign for a front door only bus will be a single roller type installed in the upper curbside window immediately behind the entrance door with a glass exposure of 5-3/4" x 28". The side destination sign for a front and rear door bus shall be installed in the upper curbside window immediately in front of the rear door. Destination signs will be electrically operated, LED, fluorescent or incandescent backlit display, single curtain, .003 mil. thick Mylar anti-glare material,

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with provisions for a minimum of 25 readings and a maximum of 175 readings of 5 inch high Helvetica medium font letters for the front sign and Helvetica medium font letters 4" high characters for the side sign. Control switch is to be located on the left hand of the driver's console. Curtain destination signs will conform to the Americans With Disabilities Act Part 38. Characters on these signs will have a width-to-height ratio between 3:5 and 1:1 and a stroke width-to-height ratio between 1:5 and 1:10. Generally, the space between letters will be 1/16 the height of upper case letters and will contrast with the background using either yellow letters on green or black background; or white letters on red, green, blue or black background per the purchaser's choice, for route and destination identification. The following readings will be standard on all destination signs ordered under this contract, individual sign reading colors noted:

Bus Garage (yellow letters on black background)
Not In Service (yellow letters on black background)
Special Service (yellow letters on black background)
Shuttle Service (yellow letters on black background)
Downtown (yellow letters on black background)
BLANK SIGN (all black background, no lettering)
Emergency Service (white letters on red background)
Emergency Shelter (white letters on red background)
Evacuation Route (white letters on red background)
Express (white letters on red background)

- 2.20.2 An option for an Electronic Destination system, full front and side signs; and a separate rear number only sign shall be provided. The system shall be compatible with Windows 2000 or Windows XP software, using IBM 486 or higher PC/AT capacity, PCMCIA memory download technology or later versions. Electronic destination signs will conform to the Americans With Disabilities Act Part 38. The electronic destination sign shall utilize Helvetica yellow medium lettering on black background. The readings listed in 2.20.1 above, shall also be standard in all electronic signs ordered under this contract.
Proposal shall include information on system offered.

On above specifications, this Proposal (circle one below)
EXCEEDS MEETS DOES NOT MEET
COMMENT:

2.21.0 BLOCK/RUN NUMBER BOX - OPTIONAL

- 2.21.1 An dash mounted Block/Run Number Box shall also be provided as an option. White, red or yellow LED letters/numbers on a black background, displayed in a plastic or metal frame, to operate on a 12 or 24 volt system.
Proposal shall include information on system offered.

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On above specifications, this Proposal (circle one below)
EXCEEDS MEETS DOES NOT MEET
COMMENT:

2.22.0 STOP REQUEST SIGN

2.22.1 Bus shall be equipped with an interior stop request system. The activation device for the sign, chime and driver signal shall be mounted on each side wall even with the bottom of the tip-in-transom portion of the windows. Signal touch buttons mounted in an ADA mandated wheelchair accessible area shall be no higher than 4' above the floor with no exposed wiring. A single "stop request" chime shall sound when the system is activated at the side walls. A double chime shall sound when the system is activated from wheelchair passenger areas. A tell-tale light indicator on the driver console will stay lit continuously until the passenger door is opened.
Proposal shall include information on system offered.

2.22.2 A "Stop Requested" message in Helvetica medium yellow letters on a green background shall be illuminated when the passenger "Stop Requested" system is activated. The "Stop Requested" message shall remain visible until doors are opened. The sign unit shall be flush mounted on the front destination compartment door and the message shall be visible to the seated operator and all seated passengers. The operator shall be able to deactivate the system from the operator's area. The system shall reset each time the passenger door is opened.
Proposal shall include information on system offered.

On above specifications, this Proposal (circle one below)
EXCEEDS MEETS DOES NOT MEET
COMMENT:

2.23.0 PUBLIC ADDRESS SYSTEM - OPTIONAL

2.23.1 An option shall be provided for a public address system that complies with the ADA requirements of 49 CFR, Part 38.35 and enables the operator to address passengers either inside or outside the bus shall be provided. Inside speakers shall broadcast, in a clear tone, announcements that are clearly perceived from all seat positions at approximately the same volume level. An operator-controlled switch shall select inside only, outside only, or both announcements. The system shall be muted when not in use, but activated with either a microphone switch or floor mounted foot activated switch.
Proposal shall include information on system offered.

2.23.2 The microphone shall be mounted on a heavy-duty flexible gooseneck secured with tamper-proof fasteners and will allow the operator to comfortably speak into it without using their hands. A provision shall be made to secure the microphone in a stored position when not in use.
Proposal shall include information on system offered.

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On above specifications, this Proposal (circle one below)

EXCEEDS MEETS DOES NOT MEET

COMMENT:

2.24.0 WINDSHIELD WIPERS AND WASHERS

- 2.24.1 The bus shall be equipped with a two speed electrically operated windshield wiper system that meets SAE Standard J198. A variable intermittent feature shall be provided to allow adjustment of wiper speed between approximately 5 to 25 cycles per minute. Windshield wiper motors and mechanisms shall be easily accessible for repairs or service and shall be removable as complete units. The fastener that secures the wiper arm to the drive mechanism shall be corrosion resistant.
- 2.24.2 The electrical windshield washer system shall evenly deposit washing fluid on the windshield and completely wet the entire wiped area. The windshield washer system shall have a minimum 3-gallon reservoir located for easy refilling through an access door from outside of the bus. Reservoir pumps, lines and fittings shall be corrosion-resistant and the reservoir itself shall be translucent for easy determination of fluid level.

On above specifications, this Proposal (circle one below)

EXCEEDS MEETS DOES NOT MEET

COMMENT:

2.25.0 INTERIOR CLIMATE CONTROL

- 2.25.1 The Heating, Ventilation and Air Conditioning (HVAC) climate control system shall be capable of maintaining the interior of the bus at the temperature and humidity levels defined in the following paragraphs. System shall incorporate a dedicated dash air system for the operator's area.
- 2.25.2 The proposed system **must** be capable of passing the Florida Department of Transportation Air Conditioning Pull-Down Performance Test.
- 2.25.3 Air circulation shall be high volume with low velocity to provide draft-free comfort.
- 2.25.4 All hoses shall be routed and secured in such a way that they will not rub or chafe. Routing of these hoses shall not interfere with access to maintenance items such as dipsticks, air filters, doors, etc. When routing hoses under the coach the hoses shall be run in a straight line and shall be secured with rubber or plastic coated p-clamps every 12 inches. Refrigerant hoses shall be a refrigerant type double braided barrier construction. Refrigerant fittings shall be "Quick Click" or equivalent. Hoses and fittings must be qualified to SAE specification J2064.
- 2.25.5 The proposal shall include a description of the air conditioning unit and the related

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components that they intend to furnish to meet the performance requirements described in Air Conditioning Performance Test.

- 2.25.6 The front heater shall include a means to defrost the windshield and driver's windows in accordance with FMVSS-103. There shall be a separate control to give heat to the driver's foot area.
- 2.25.7 Passenger area heating must achieve a 65 degree interior temperature with an empty coach when the ambient temperature is 30 degrees Fahrenheit within 45 minutes (measured at thirty inches above the floor at the standee line, at the center of the passenger area and twelve inches from the rear wall of the passenger area). Any additional heater(s) required to accomplish this performance standard shall be mounted at the manufacturer's standard location/s to produce an even interior temperature.
- 2.25.8 Bus shall be equipped with automatic heater shut off valves located under the bus. Shut off valves shall be controlled by the heater switch(s).
- 2.25.9 Any booster/auxiliary pump installed shall be designed to last the useful life of the bus.
- 2.25.10 Heater hoses shall be of top quality material. Hose clamps shall be constant torque type. **Proposal shall include information on hose offered.**
- 2.25.11 Hoses shall be protected and supported by stainless steel/rubber inserted p-clamps. Where hoses pass through metal frame members protection shall be provided to prevent chafing. Hoses shall be shielded against heat at locations where they pass over or near any part of the exhaust system.
- 2.25.12 Interior air flow shall be uniform to prevent hot and/or cold spots throughout the passenger compartment.
- 2.25.13 The HVAC system shall be centrally controlled with an advanced computerized electronic/diagnostic control system with provisions for extracting/reading data. System shall include an A/C Stop indicator for status display to the operator.

On above specifications, this Proposal (circle one below)
EXCEEDS MEETS DOES NOT MEET
COMMENT:

2.26.0 COMPRESSED AIR SYSTEM

- 2.26.1 The compressed air system provided shall be capable of operating air braking, air suspension and air accessories on the bus and maintain an adequate reserve capacity. The system shall meet requirements of FMVSS 121. **Proposal shall include information on the system offered.**

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- 2.26.2 The air system reservoirs shall have bottom mounted pull type drain valves at the lowest point. Pull cables shall be reachable from outside of bus. Manual drain valves shall also be installed for maintenance purposes. The total volume of the air reservoirs dedicated to the brake system shall be equal to twelve (12) times the total volume of all service brake chambers as required by FMVSS 121.
- 2.26.3 The air system shall be equipped with an appropriate sized air dryer with integral heated moisture ejector. The air dryer shall be vertically mounted with an easily replaceable desiccant cartridge and include automatic drain and purge function that is serviceable from the bottom. The air dryer shall meet all FMVSS 121 and SAE Standard J10 requirements.
- 2.26.4 The third reservoir shall be considered the "wet tank" and shall supply all systems with air and act as a reserve for all systems. The accessory air system shall be supplied from the fourth protected air reservoir. The reservoir system is equipped with a low-pressure protection valve set at 65 PSI.
- 2.26.5 An air system governor shall be mounted at the rear of the coach in a serviceable location.
- 2.26.6 Air lines shall be color coded nylon-tubing and routed for maximum protection and serviceability. All component fittings shall be installed for maximum serviceability. Air lines, except necessary flexible lines shall conform to the installation and material requirements of SAE Standard J1149 for copper tubing with standard brass, flared or ball sleeve fittings or SAE Standard J844 for nylon tubing if not subject to temperatures over 200 degrees F. Nylon tubing shall be installed in accordance with the following color-coding standards:
- Green:** Indicates primary brakes and supply
 - Red:** Indicates secondary brakes
 - Brown:** Indicates parking brake
 - Yellow:** Indicates compressor governor signal
 - Black:** Indicates accessories
- 2.26.7 Air for the compressor shall be filtered through the main engine air cleaner system. The air system shall be protected by a pressure relief valve set at 150 psi and shall be equipped with check valve and pressure protection valves to assure partial operation in case of line failures.
- 2.26.8 Line supports shall prevent movement, chaffing, flexing, tension strain and vibration. Stainless Steel lines shall be supported to prevent the lines 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 no more than 5-foot intervals. Nylon lines may be grouped and shall be supported at 2-foot intervals or less.

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- 2.26.9 The compressor discharge line between engine and body-mounted equipment shall be flexible convoluted copper or stainless steel line or may be flexible Teflon hose with a braided stainless steel jacket. Other lines necessary to maintain system reliability shall be SAE 100R14 hose. End fittings shall be standard SAE or JIC brass or steel flanged 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 before installation.
- 2.26.10 All air lines shall be routed to prevent water traps. Grommets or insulated clamps shall protect the air lines at all points where they pass through understructure components. A standard shop air quick disconnect fitting shall be conveniently located in the engine compartment.

On above specifications, this Proposal (circle one below)
EXCEEDS MEETS DOES NOT MEET
COMMENT:

2.27.0 SUSPENSION SYSTEMS

- 2.27.1 Both front and rear suspension shall be full air spring type using rolling lobe air springs. The suspension system shall offer superior ride and handling. The suspension system shall be designed to last the life of the bus without major overhaul or replacement. Adjustable shock absorbers shall be provided to ensure maximum ride smoothness and control. Floor height above axles shall remain constant regardless of load, up to GVWR. All bushings in both front and rear suspension to include both torque and lateral control arms will be a lube free design. All thrust washers in both the front and rear suspension shall be steel with a Teflon coating to prevent squeaking.
Proposal shall include information on the system offered.
- 2.27.2 The front suspension shall have adequate travel of 3" in rebound and 3.5" in jounce shall be provided to allow for proper suspension function and kneel.
- 2.27.3 The bus shall kneel a minimum of 3" at entrance doorways. A brake and throttle interlock shall prevent movement when the bus is kneeled. The Kneel control shall be disabled when the bus is in motion. The bus shall kneel at a maximum rate of 1.25 inches per second at a constant rate. After kneeling, the bus shall rise within 2 seconds to a height permitting the bus to resume service and shall rise to the correct operating height within 7 seconds regardless of load, up to GVWR. During the lowering and raising operation, the maximum acceleration shall not exceed 0.2g and the jerk shall not exceed 0.3g/sec. An indicator visible to the driver shall be illuminated until the bus is raised to a height adequate for safe street travel. An audible warning alarm shall sound simultaneously with the operation of the kneeling device to alert passengers and bystanders. A minimum 2.5" diameter amber lens warning light mounted near the curbside of the front door shall blink when kneel feature is activated. Kneeling shall not be operational while the

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wheelchair ramp is deployed or in operation. On buses equipped with a with a wheelchair ramp kneeling function shall be at the operators discretion.

On above specifications, this Proposal (circle one below)

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COMMENT:

2.28.0 FUEL TANK

- 2.28.1 The fuel tank shall be securely mounted to prevent movement under all in-service conditions, but shall be capable of removal and reinstallation by a skilled mechanic in 1.5 hours or less. The fuel tank shall be designed so that all fuel shall flow to the lowest point. The fuel tank capacity shall be a minimum of 70 usable U.S. gallons and be the largest available for vehicle application. The fuel tank shall be equipped with an external brass drain plug located at the lowest point of the tank. The fuel tank shall have an inspection plate or easily removable filler neck to permit cleaning and inspection of the tank without removal from the bus. The tank shall be baffled internally to prevent fuel-sloshing noise regardless of fill level. The baffles and fuel pickup location shall assure continuous fuel pick-up operation. The capacity, date of manufacture, manufacturer name, location of manufacture and certification of Federal Motor Carrier Regulation compliance shall be permanently marked on the fuel tank. The markings shall be readily visible from the fuel filler access door and shall not be covered by an undercoating material.
- 2.28.2 The fuel fill shall accommodate a 1-1/2-inch diameter nozzle and fill rate of not less than 20 gallons per minute of foam-free fuel without spitting back or causing the nozzle to shut off before the tank is full. The fuel fill shall be located behind the centerline of the bus. The fill cap shall twist/screw on to the fuel fill neck and must be chained to the bus body to prevent loss. The fuel fill neck shall be equipped with a pressure relief vent and level control. A fill whistle shall also be provided.
- 2.28.3 To accommodate existing refueling equipment the fuel fill shall accommodate a nozzle that forms a locked and sealed connection during the refueling process to eliminate spills. Fuel shall not be allowed to flow into the tank unless the nozzle has been properly coupled, locked and sealed to the filler. With the nozzle open fuel shall enter the tank at a fill rate of not less than 40 gallons per minute of foam-free fuel without causing the nozzle to shut off before the tank is full. The nozzle shall automatically shut off when the tank is essentially full. Once disconnected fuel shall not be allowed to flow through the nozzle at any time. Any pressure over 3 psi shall be relieved from the fuel tank automatically. An audible signal shall indicate when the tank is essentially full.
- 2.28.4 The fuel tank fill neck must be equipped with an internally mounted poppet valve to prevent splash back.

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COMMENT:

2.29.0 SERVICEABILITY

- 2.29.1 The engine, accessories and all maintenance components such as dip sticks and fluid fill locations shall be easily accessible for service through compartment doors. Access for maintenance and repairs shall be designed with a minimum requirement for the movement of unrelated components. Components requiring frequent service shall have first ease of access priority.

On above specifications, this Proposal (circle one below)

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COMMENT:

2.30.0 BODY CONSTRUCTION

- 2.30.1 The body assembly shall be a modular design and shall be comprised of lightweight and corrosion resistant materials. The body frame assembly shall be of modular construction.
Proposal shall include structural drawings of body and description of construction methods.
- 2.30.2 The body frame shall be designed for rapid repair/replacement of frame members and panels located in the Strike Zone; an area on both sides of the bus from a level six inches below the windows to the ground level.
- 2.30.3 The body shall be attached directly to the chassis. In order to achieve maximum strength, maximum durability and close-tolerance alignment, all body attachments shall be by high strength steel, treated bolts and shims as required. To prevent bimetallic corrosion between dissimilar metals an insulating compound shall be used.
- 2.30.4 The bus body and roof structure shall be manufactured and assembled in a manner to meet requirements of applicable FMVSS standards. Additionally, the bus shall withstand a 25-mph impact by a 4,000-pound automobile at any point, 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. . In addition to FMVSS requirements the manufacturer shall also meet all applicable State of Florida Regulations in effect at the time of manufacture.
Proposal shall include test reports on the requirements above.
- 2.30.5 All joints shall be caulked and sealed at the time of construction to produce water and dust tight seal.

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- 2.30.6 All dimensions, positioning of components, clearances, etc., shall be based on adult passengers.
- 2.30.7 All interior and exterior fiberglass reinforced plastic panels and assemblies shall meet the flammability protection requirement of FMVSS-302.
- 2.30.8 The passenger and engine compartments shall be separated by a bulkhead(s) that by incorporation of fireproof materials is a firewall. The engine compartment shall include areas where the engine and exhaust system is housed, if mounted above the horizontal shelf. This firewall shall preclude or retard propagation of an engine compartment fire into the passenger compartment and shall be in accordance with the most current Recommended Fire Safety Practices defined by FTA. 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 fittings sealed at the firewall with copper or steel piping on the forward side. Wiring may pass through the bulkhead only if connectors or other means are provided to prevent or retard fire propagation through 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.
- 2.30.9 The front and rear section (caps) shall be molded fiberglass installed to provide quick and low-cost body repair.
- 2.30.10 Wheel housings shall be constructed of corrosion and fire-resistant material. Wheel housings as installed and trimmed shall withstand impacts of a 2-inch steel ball with at least 200 foot-pounds of energy without penetration.
- 2.30.11 Features to minimize water spray from the bus in wet conditions shall be included in wheel housing design. Any fender skirts shall be easily replaceable. They shall be flexible if they extend beyond the allowable body width. Wheels and tires shall be removable with the fender skirts in place.
- 2.30.12 Each proposer's design will be evaluated by the Proposal Committee.

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COMMENT:

2.31.0 FLOOR

- 2.31.1 Floor material shall be composite material. Floor sections shall be secured to the body understructure. If proposed, the rear exit step area shall be constructed of 12-ga. stainless steel and shaped to taper toward the door to reduce rear doorstep height. The entire floor shall have no visible seams.
Proposal shall include a description of installation method.

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- 2.31.2 The floor deck shall be reinforced as needed to support passenger loads. At GVWR the floor shall withstand the application of 2.5 times gross load weight without permanent detrimental deformation.
- 2.31.3 The floor shall be a continuous flat plane from the entrance door to the upper rear section, except at the wheel housings, and shall not interfere with passenger seating. Where the floor meets the walls of the bus the surface edges shall be blended with a circular section of radius not less than ¼”.
- 2.31.4 The assembled floor, including the covering, sealant, and attachments, shall be waterproof, non- hygroscopic, resistant to mold growth and impervious to insects.
- 2.31.5 All interior panels shall be tamper proof and attached so there are no rough surfaces or exposed edges.
- 2.31.6 Access floor openings shall be minimized in this design. Any required openings shall have flush stainless trim and a shape that allows proper installation only in the right orientation and shall be secured by flush fasteners.
- 2.31.7 The interior of all box frame structures (tubing) shall be coated. The coating shall pass all requirements of Military Specifications A-A-59295, MIL-C-62218, MIL-C-0082933 and SAE J1804.
- 2.31.8 Floor shall be covered with transit quality rubber flooring. .-Aisle shall be 3/16" thick ribbed rubber. Under seat areas will be 1/8" smooth. Driver's area shall be covered with 1/8" smooth rubber. All step edges shall have yellow nosing. All joints shall be sealed to prevent moisture intrusion on to the sub floor. The floor covering shall turn up the wall, non-jointed to a point 11 inches from the floor and shall be trimmed.
Proposal shall include a sample of material to be used.
- 2.31.9 A 2" white standee line shall extend across the bus aisle in line with the barrier to the rear of the driver and the front edge of the first door-side passenger seat, behind the front entrance area.
- 2.31.10 The bus flooring, sides, roof, understructure, axle and suspension components shall be designed to resist rust, corrosion or deterioration from atmospheric conditions and road salts. Bus shall maintain structural integrity and original appearance throughout its service life, provided that it is maintained by the purchaser in accordance with the procedures specified in the bus manufacturer’s service manual. With the exception of periodically inspecting the visible coatings applied to prevent corrosion and reapplying these coatings in limited spots, the manufacturer shall not require the complete reapplication of corrosion compounds over the life of the bus.
- 2.31.11 All materials that are not inherently corrosion resistant shall be protected with corrosion-resistant coatings. All joints and connections of dissimilar metals shall be protected from

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bimetallic corrosion. Representative samples of all materials and connections shall withstand a 2-week (336-hour) salt spray test in accordance with ASTM Procedure B-117 with no detrimental structural effects to normally visible surfaces, and no weight loss of over 1 percent.

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COMMENT:

2.32.0 INSULATION AND UNDERCOATING

- 2.32.1 Manufacturer shall propose insulation to be used including the R-factor of the insulation. Insulation must not impede mechanics ability to perform repairs to hoses or wiring.

- 2.32.2 The entire underside of the coach chassis, body, wheel housings, rear step well, passenger and driver's areas shall be sealed with an application of minimum 1/8" thick undercoating.
Proposal shall include information on the coating offered.

- 2.32.3 Splash aprons, composed of 1/4-inch-minimum composition or rubberized fabric, shall be installed behind front wheels as needed to reduce road splash and protect under floor components. The splash aprons shall extend downward to within 3 inches of the road surface at static conditions. Apron widths shall be no less than tire widths, except for the rear apron, which may be sectional, and which 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. The flexible portions of the splash aprons shall not be included in the road clearance measurements. Other splash aprons shall be installed where necessary to protect bus equipment from road splash.

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COMMENT:

2.33.0 SERVICE COMPARTMENTS AND ACCESS DOORS

- 2.33.1 Interior access for maintenance and replacement of equipment shall be provided by panels and doors that appear to be an integral part of the interior. Removal of fixtures or equipment unrelated to the repair task shall be minimized. Access doors shall be hinged with props or over-center springs, where practical to hold the doors out of the mechanic's way.

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- 2.33.2 Access doors for the door actuator compartments shall be secured with hand screws or latches and shall prevent entry of mechanism lubricant into the bus interior. All fasteners that retain access panels shall be captive in the cover.
- 2.33.3 Exterior access shall be provided by conventional hinged doors for the engine compartment and for all auxiliary equipment compartments including doors for access to the swing out battery tray, fuel tank and radiator/aftercooler. Access openings shall be sized for easy performance of tasks within the compartment including tool-operating space. Access doors shall be of rugged construction and shall maintain mechanical integrity and function under normal operations throughout the service life of the bus. They shall close flush with the body surface. All doors shall be hinged at the top or on the forward edge and shall be prevented from coming loose or opening during transit service or in bus washing operations. All access doors shall be retained in the open position by counterbalancing with over-center or gas-filled springs and shall be easily operable by one person. Springs and hinges shall be corrosion resistant. Latch handles shall be flush with or recessed behind the body contour and shall be sized to provide an adequate grip for opening. Access doors, when opened, shall not restrict access for servicing other components or systems. The locks shall be standardized so that no tools are required or only one tool, a standard 5/16" square, shall be required to open access doors on the bus. At the front of the coach under the windshield there shall be a door utilizing flush latches to allow access to the windshield washer reservoir, driver's heater and air piping board. The door shall be hinged on the bottom and swings down and rest against a stop to allow easy servicing of components.
- 2.33.4 Rain gutters shall be provided over the entrance, exit doors and driver's side window to prevent water from flowing onto passengers.

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COMMENT:

2.34.0 BUMPER SYSTEM

- 2.34.1 The bumpers shall provide impact protection for front and rear of the bus up to 26" above the street. The bumpers shall wrap around the bus to the extent practical without exceeding allowable width.
- 2.34.2 **FRONT BUMPER:** No part of the bus, including the bumper, shall be damaged as a result of a 5-mph impact of the bus at curb weight with a fixed, flat barrier perpendicular to the bus longitudinal centerline. The bumper shall return to its pre-impact shape within 10 minutes of the impact. The bumper shall protect the bus from damage as a result of 6.5 mph impacts at any point by the Common Carriage with Contoured Impact Surface defined in Figure 2 of FMVSS 301 loaded to 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 the longitudinal centerline of the bus. The energy absorption system of the bumper shall be independent of every power system of the bus and shall not require service or

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maintenance in normal operation during the service life of the bus. The bumper may increase the overall bus length specified by no more than 6 inches. Bumpers may be painted to match the coach color.

- 2.34.3 **REAR BUMPER:** No part of the bus, including the bumper, shall be damaged as a result of a 2-mph impact with a fixed, flat barrier perpendicular to the longitudinal centerline of the bus. The bumper shall return to its pre-impact shape within 10 minutes of the impact. When using a yard tug with a smooth, flat plate bumper 2 feet wide contacting the horizontal centerline of the rear bumper, the bumper shall provide protection at speeds up to 5 mph, over pavement discontinuities up to 1 inch high, and at accelerations up to 2 mph/sec. The rear bumper shall protect the bus, when impacted anywhere along its width by the Common Carriage with Contoured Impact Surface defined in Figure 2 of FMVSS 301 loaded to 4,000 pounds, at 4 mph parallel to, or up to a 30 degree angle to, the longitudinal centerline of the bus. The rear bumper shall be shaped to preclude unauthorized riders standing on the bumper. The bumper shall be independent of all power systems of the bus and shall not require service or maintenance in normal operation during the service life of the bus.
Proposal shall include information on bumpers offered.
- 2.34.4 Bumper material shall be corrosion-resistant and withstand repeated impacts of the specified loads without sustaining damage. Visible surfaces shall be black or color - coordinated with the bus exterior. These bumper qualities shall be sustained throughout the service life of the bus.
- 2.34.5 Towing devices shall be provided on each end of the bus. Each towing device shall withstand, without permanent deformation, tension loads up to 1.2 times the curb weight of the bus within 20 degrees of the longitudinal axis of the bus. The rear towing device(s) shall not provide a toehold for unauthorized riders.
- 2.34.6 The front towing devices shall allow attachment of adapters for a rigid tow bar and shall permit lifting and towing of the bus, at curb weight, until the front wheels are clear off the ground. Towing device should accommodate flat bedding. The rear tow eyes shall permit towing of the bus for a short distance, such as in cases of an emergency. Each towing device shall accommodate a crane hook with a 1-inch throat.
- 2.34.7 There shall be a quick disconnect air fitting provided in the front and rear of the coach to charge the air system while towing.

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COMMENT:

2.35.0 ENTRY DOOR

- 2.35.1 The forward entrance door shall be forward of the front axle and shall be of a twinleaf design with a clear opening of 34" minimum. Glass area shall be maximum area

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practical and glass shall have a gray single density tint and 73% light transmission. Doors and fittings shall be of durable and corrosion resistant materials.

- 2.35.2 Passenger entrance doors shall be two position and pneumatically or electrically powered. Full door opening or closing cycle shall be adjustable from 1 to 3 seconds of operator's control activation. Operation of and power to, the passenger door shall be completely controlled by the operator by the actuation of an open and a close push button switch located on the driver's panel. Door actuators shall be adjustable so that the door opening and closing speeds can be independently adjustable to satisfy the requirements. Actuators and the complex door mechanism shall be concealed from passengers but shall be easily accessible for servicing. On pneumatically powered doors an air dump valve near the operator shall allow manual operation.
- 2.35.3 A master door switch not within reach of the seated operator when set in the "OFF" position shall close the doors, deactivate the door control system, release the interlocks and permit only manual operation of the doors.
- 2.35.4 No more than a 10 pound force shall be imposed on a one square inch area of any passenger struck by a closing door. A maximum force of 35 pounds shall be required for a passenger to free himself/herself after having door close on him/her, even if the sensitive edge or safety device fails.
- 2.35.5 A door interlock signal shall be required for brake control if the intended use of vehicle is for paratransit service. The door system shall be interlocked with the brake and accelerator to stop the coach when doors open or prevent the coach from being operated while the door is open. A zero (0) motion detector shall be provided that will prevent the doors from opening prior to the vehicle coming to a complete stop. This system is not required if the intended use of the bus is for fixed-route service.
- 2.35.6 The clear opening between grab rails shall be at least 34" wide and at least 80" high. Mating edges shall be of the overlapping type and provide a minimum of 4" between door edges. The leading edge of each door shall be equipped with extruded rubber safety sensitive edge to reverse the door closing cycle when obstructed.
- 2.35.7 Entry doors shall incorporate gaskets and/or seals to provide a barrier against intrusion by wind, water and dust around their perimeter. The seal at the center of the door shall be by means of full height overlapping rubber seals, and shall include a barrier or sweep at the bottom of both doors.
- 2.35.8 In the event of an emergency it shall be possible to open the door manually from inside the bus using a force of no more than 25 pounds after actuating the door release device at the door. The release device shall be clearly marked as an emergency-only device and shall require two distinct actions to actuate. The respective door emergency release device shall be accessible from the door area. When this emergency device is actuated, the door interlock throttle system shall return the engine to idle and the door interlock brake system shall apply to stop the bus.

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- 2.35.9 Locked doors shall require a force of more than 100 pounds to open manually. When the locked doors are manually forced to open, damage shall be limited to the bending of minor door linkage with no resulting damage to the doors, engines, and complex mechanism.

On above specifications, this Proposal (circle one below)

EXCEEDS

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DOES NOT MEET

COMMENT:

2.36.0 WHEELCHAIR RAMP

- 2.36.1 A wheelchair ramp shall be an automatically-controlled, power-operated ramp system, compliant to requirements defined in 49 CFR Part 38, Subpart B, §38.23c
- 2.36.2 The front or rear door shall be equipped with a fully automated, electric ramp. The ramp effective length shall be a minimum 70 inches and 30" wide with a minimum capacity of 660 lbs. Ramp deployment shall interlock brakes and throttle. Must meet ADA slope and width standard.
Proposal shall include manufacturer and pricing of ramp.
- 2.36.3 The ramp controls shall be of simple yet durable design to be controlled by the seated operator. The design shall allow for easy pullout manual operation, and shall be fully ADA compliant.
- 2.36.4 All ramp manufacturers or installers shall legibly and permanently mark each wheelchair ramp assembly with the following minimum information in a location easily visible without deploying the ramp:
1. The manufacturers name and address.
 2. The month and year of manufacture.
 3. A certificate that the wheelchair ramp and installation conforms to State of Florida requirements applicable to accessible vehicles.
 4. The vehicle manufacturer shall affix a label to each wheelchair ramp installed verifying that the manufacturer has physically inspected each lift and each lift meets the technical specifications described in 49 CFR PART 38 Accessibility Specifications for Transportation Vehicles, Section 38.23 Mobility Aid Accessibility.
 5. All labels described above shall be affixed to the wheelchair ramp in such a manner that each is visible to inspection in the stowed position.

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2.37.0 SECUREMENT DEVICES

- 2.37.1 Securement devices, their design, installation and operation shall comply with The Americans With Disabilities Act (ADA), Regulations and Requirements as Amended (Title 49 Code of Federal Regulations, Part 38, and Subpart B. Section 38.23) and 30MPH/20G Impact Test Criteria Per SAE J2249. *General guidance for securement devices is provided below. Omission in this specification does not relieve the successful bidders from compliance requirements of the ADA and SAE J2249.*
- 2.37.2 In vehicles with securement device or system, the wheelchair or mobility aid, shall face toward the front of the vehicle.
- 2.37.3 Retractors shall be heavy duty with heat treated components and a metal or impact resistant plastic housing.
- 2.37.4 The securement system shall be complete with four retractor straps for securing the wheelchair or mobility aid and two retractors for the occupant restraint system.
- 2.37.5 The wheelchair mobility aid retractors shall not be equipped with manual tension knobs.
- 2.37.6 The wheelchair or mobility aid retractors shall be equipped with “S” or “J” hooks to simplify operation.
- 2.37.7 The occupant restraint system shall be equipped with a height adjuster for the shoulder belt, having a vertical adjustment of approximately 12 inches.
- 2.37.8 The tie-down system shall be able to secure a standard wheelchair or mobility aid in less than 10 seconds. A set of “quick straps” are to be provided at each station.
- 2.37.9 The retractor securement system shall meet the following requirements:
1. 30MPH/20G impact test criteria per SAE J2249, and
 2. 49 CFR Part 38 Americans with Disabilities Act (ADA).
- 2.37.10 The occupant restraint system shall meet the following requirements when used in conjunction with the retractor system:
- Federal Motor Vehicle Safety Standards (FMVSS209 & FMVSS302)
 - 49 CFR Part 38 Americans with disabilities Act (ADA)
 - 30MPH/20G impact test criteria SAE J2249.
- 2.37.11 Proposer shall provide an option for a WC-18 tie down system.
- 2.37.12 Proposer shall provide an option for a fully automatic, self-securing wheel chair system.
- 2.37.13 Proposer shall provide an option for a fully integrated wheel securement station.

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EXCEEDS

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COMMENT:

2.38.0 EMERGENCY EXIT

2.38.1 Hinge-out windows shall be installed for emergency escape. Emergency escape windows shall comply with FMVSS-217.

2.38.2 Emergency escape windows shall be clearly labeled and operation instruction shall be clearly visible at each escape window. The emergency release handle (or bar) shall meet FMVSS-217 requirements and shall not return to the locked position automatically: it shall require the driver or other authorized person to manually re-lock it.

All emergency exits must comply with F.A.C. 14-90.

2.38.3 Each emergency exit shall be identified with a 12 VDC red LED light assembly with a 10,000 hour life bulb wired to the vehicle ignition circuit. This system, along with window signage, shall provide passengers with a clear understanding of exit routes.

2.38.4 For standardization purposes all vehicles shall be equipped with a roof hatch with both an internal and external operating handle. Hatch shall open from rear toward the front.
Proposal shall include information on the system offered.

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EXCEEDS

MEETS

DOES NOT MEET

COMMENT:

2.39.0 SASH AND GLASS

2.39.1 The windshield shall permit an operator's field of view as referenced in SAE Recommended Practice J1050. The vertically upward view shall be a minimum of 15 degrees, measured above the horizontal and excluding any shaded band. The vertically downward view shall permit detection of an object 3-1/2 feet high no more than 2 feet in front of the bus. The horizontal view shall be a minimum of 90 degrees above the line of sight. Any binocular obscuration due to a center divider may be ignored when determining the 90-degree requirement, provided that the divider does not exceed a 3-degree angle in the operator's field of view. Windshield pillars shall not exceed 10 degrees of binocular obscuration. The windshield shall be designed and installed to minimize external glare and reflections from inside the bus.

2.39.2 The windshield shall be easily replaceable by removing zip-locks from the windshield retaining moldings. Bonded-in-place windshield shall not be used. The windshield glazing material shall have a 1/4-inch or 6-mm nominal thickness laminated safety glass conforming to the requirements of ANSI Z26.1 Test Grouping 1A and the Recommended Practices defined in SAE J673.

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- 2.39.3 A sun visor shall be provided and located in a recessed area above the driver's side windshield.
Proposer shall provide optional sun visors.
- 2.39.4 Each side window except the side destination side window shall be a tip in transom type. 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. Side windows glazing material shall have a 1/4-inch nominal thickness, AS 3, 28% density, blue/gray laminated safety glass. The material shall conform to the requirements of ANSI Z26.1 Test Grouping 2 and the Recommended Practices defined in SAE J673.
- 2.39.5 The operator's side window shall open sufficiently to permit the seated operator to easily adjust the street side outside rearview mirror. This window section shall slide rearward in tracks or channels designed to last the service life of the bus. The operator's side window shall not be bonded in place and shall be easily replaceable. The glazing material shall have a single density tint.
- 2.39.6 The operator's side window glazing material shall have a 1/4-inch nominal thickness laminated safety glass conforming to the requirements of ANSI Z26.1 Test Grouping 2 and the Recommended Practices defined in SAE J673.
- 2.39.7 The use of transit quality, scratch resistant plastic glazing material is acceptable in side windows and rear end windows; excluding windshield and driver's windows. Glazing material shall be in accordance with the latest version of ANSI - Z26.1, Safety Code for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways. Glass must be AS-2 tempered. Glass grade shall be visible on each window pane.

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COMMENT:

2.40.0 SEATING

- 2.40.1 An air ride driver's seat shall be provided. The standard seat shall have a pneumatic suspension system with two (2) shock absorbers. The side bolsters shall be adjustable with dual side manual recliner. The lumbar will be a three (3) cell pneumatic system and the seat cushion will have a manual tilt adjustment. The seat shall adjust fore and aft with 9.05" travel. The steel riser base shall be painted color coordinated with the driver's floor covering and seat color selection.
Proposal shall include pricing for optional driver seats.

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- 2.40.2 All passenger seats shall include Fiberglass shell with vandal-resistant inserts, cantilevered carbon steel frames and hardware; coated grab handles; thermo-formed plastic backs; supplied with the Advanced Restraint Module (ARM) or similar. All floor plans shall accommodate as many forward facing seats as possible.
Proposal shall include standard seats offered and copies of all floor plans.
- 2.40.3 The contractor shall provide and install sign(s) which indicate that seats in the front of the vehicle are priority seats for persons with disabilities and that other passengers should make such seats available to those who wish to use them. Each securement location shall have a sign designating it as such.

On above specifications, this Proposal (circle one below)
EXCEEDS MEETS DOES NOT MEET
COMMENT:

2.41.0 INTERIOR FINISH

- 2.41.1 The interior shell shall be designed to provide a pleasing aesthetic appearance designed to resist debris collection and wear and tear. All coves and corners shall be finished in a manner that precludes the accumulation of debris, permit easy cleaning, and present a clean appearance. The materials used shall be color impregnated, not painted.
- 2.41.2 Materials shall be selected on the basis of maintenance, durability, appearance, safety, flammability and tangible qualities. Trim and attachment details shall be kept simple and unobtrusive. Materials shall be strong enough to resist everyday abuse and vandalism; they shall be resistant to scratches and markings. Interior trim shall be secured to avoid resonant vibrations under normal operational conditions.
- 2.41.3 Sidewall panels below the windows shall be constructed of color coordinated panels and retained by color coordinated plastic moldings.
- 2.41.4 The ceiling material shall be color coordinated. Formed material shall be supported as required to prevent buckling, drumming or flexing and shall be secured without loose edges.
- 2.41.5 Ceiling shall be designed to appear as if entire interior is a single, molded, color matched, component.
- 2.41.6 The entire front end of the bus shall be sealed to prevent debris accumulation behind the dash and to prevent the operator's feet from kicking or fouling wiring and other equipment. The front end shall be free of protrusions that are hazardous to passengers standing 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, composite or plastic material. Formed fiberglass dash panels shall be painted and finished to reduce glare. Plastic dash panels shall be reinforced as necessary,

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vandal-resistant and replaceable. All colored, painted and plated parts forward of the operator's barrier shall be finished with a dull matte surface to reduce glare.

- 2.41.7 The rear bulkhead and rear interior surfaces shall be material suitable for exterior skin, painted and finished to exterior quality or paneled with melamine-type material, plastic or carpeting and trimmed with stainless steel, anodized aluminum or plastic.
- 2.41.8 Headroom above the aisle and above all aisle seats shall exceed 74".
- 2.41.9 A 6" thick driver's barrier shall be provided behind the driver and shall house most of the electrical system control components. The barrier shall extend from the ceiling, down the roadside sidewall to the wheel housing, to prevent passengers from reaching to the driver or his/her personal effects. Barrier shall be of a sturdy material with a finish that will reduce windshield glare and reflections during nighttime operation.
- 2.41.10 Sturdy composite divider panels constructed of durable, unpainted, corrosion-resistant material complementing the interior trim shall be provided to act as both a physical and visual barrier for seated passengers. Modesty panels shall be located at doorways to protect passengers on adjacent seats and along front edge of rear upper level. Design and installation of modesty panels located in front of forward facing seats shall include a handhold/grab handle along its top edge. These dividers shall project toward the aisle no farther than passenger knee projection in longitudinal seats or the aisle side of the transverse seats. Modesty panels shall extend no higher than the lower daylight opening of the side windows and those forward of transverse seats shall extend downward to a level between 4-8 inches above the floor. Panel's forward of longitudinal seats shall extend to below the level of the seat cushion. Dividers positioned at the doorways shall provide no less than a 1-inch clearance between the modesty panel and the opened door to protect passengers from being pinched. Modesty panels installed at doorways shall be equipped with grab rails. The modesty panel and its mounting shall withstand a static force of 250 pounds applied to a four-inch by four-inch area in the center of the panel without permanent visible deformation.
- 2.41.11 All materials must comply with FMVSS-302.
- 2.41.12 A metal builder's plate shall be installed on the inside of the front of the bus, listing the manufacturer's name, bus and chassis model, serial number and date of manufacture. The plate shall be installed with permanent fasteners. Include a FMVSS sticker in addition to the builder's plate
- 2.41.13 Interior decals such as, but not limited to the following, "*Stand Behind White Line*," "*No Smoking, Eating or Drinking*," "*Exit Door*," "*Emergency Exit*," "*Watch Your Step*," "*Wheelchair instructions*," "*Priority Seating*" and "*Reserved for Wheelchairs*," etc. shall be provided. All decals shall be in English. All decals shall conform to FAC 14-90.

On above specifications, this Proposal (circle one below)

EXCEEDS

MEETS

DOES NOT MEET

COMMENT:

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2.42.0 GRAB RAILS AND STANCHIONS

- 2.42.1 Handrails and stanchions shall be provided in the entrance of the vehicle and elsewhere in a configuration as specified in 49 Code of Federal Regulation Part 38, Subpart B. Section 38.29.
- 2.42.2 Passenger assists in the form of full grip vertical stanchions and grab rails shall be provided for the safety of standees and for ingress/egress. From the entrance door throughout the bus and out the exit door, vertical assist shall be provided as a part of seat backs or hand rails so that a 5th-percentile passenger may easily move from one assist to another without losing support. Stanchions and hand rails shall have a cross-sectional diameter of between 1-1/4 and 1-1/2 inches. All passenger assists shall permit a full handgrip. Passenger assists shall be designed to minimize the catching or snagging of clothes or personal items and shall be capable of passing the NHTSA Drawstring Test.
- 2.42.3 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 assist. All joints in the assist structure shall be underneath supporting brackets and shall not twist inside brackets. With the exception of seat and door handholds all areas of the passenger assists shall be 16-gauge stainless steel with 180 grid finish. Assists shall withstand a force of 300 pounds applied over a 12-inch lineal dimension in any direction without permanent visible deformation. All passenger assist components including brackets, clamps, screw heads and other fasteners used shall be flush with the surface and free from burrs or rough edges.
- 2.42.4 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 average step tread surface. The assists at the front of the bus shall be arranged to permit a 5th-percentile passenger to easily reach from the door assist to the front assist, to vertical assists on the operator's barrier or front modesty panel.
- 2.42.5 Non forward facing seats shall have vertical assists located at every seating position, except for seats that fold/flip up to accommodate wheelchair securement. Assists shall extend from near the leading edge of the seat and shall be no more than 52 inches apart.
- 2.42.6 A full height wrap around driver's barrier shall be provided. This must meet all ADA requirements. The barrier shall extend from the left side panel to the right rear of the driver's station. The back panel shall in no way detract from, or interfere with the safe, normal operation of the bus nor restrict full movement of the driver's seat. Colors will be specified in individual orders. Available colors should be listed in proposals. The barrier assembly shall be rigid, shall not shake or rattle in service.
- 2.42.7 There shall be an approximately 6" x 6" x 1" pocket, preferably on the left side of the

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driver's station to store permits, etc.

- 2.42.8 An option for a schedule holder and consumer/public information display frame to be mounted on the driver's protective shield facing passenger seating shall be proposed.

On above specifications, this Proposal (circle one below)
EXCEEDS MEETS DOES NOT MEET
COMMENT:

2.43.0 EXTERIOR FINISH

- 2.43.1 All welds shall be chipped to remove slag. All metal parts shall be de-greased and properly cleaned and sanded in preparation for painting. All metal surfaces shall be sprayed with rust preventative primer. Parts and surfaces that will be covered in the finished vehicle shall be given a second coat of primer to prevent corrosion as much as possible. If any parts are pre-primed prior to assembly and should any welding be done during assembly then the weld shall be chipped. The weld and the surrounding area shall be primed again. The manufacturer shall propose exterior body material used.
- 2.43.2 All surfaces that will be exposed on the finished vehicle shall be properly sanded prior to finish color paint application. This proposal shall also include an outline of their painting procedure.
- 2.43.3 Buses shall have fleet numbers on the interior and exterior of the bus in sequence with factory serial numbers. Exterior numbers shall be high quality reflective material. Each individual order will include the correct starting number, location, size and color of numbers. Agency
- 2.43.4 Proposer shall submit a minimum of three and a maximum of five samples of different paint schemes with their proposals. Samples should give Agencies options regarding paint schemes and use of reflective material such as, but not limited to window black-out versus non-black out. Purchaser may request a specific corporate design and/or vinyl wrap but any additional expense over the contract standards will be borne by the purchaser.
- 2.43.5 Proposal shall include an option for fleet numbers to be installed on the roof of the bus.

On above specifications, this Proposal (circle one below)
EXCEEDS MEETS DOES NOT MEET
COMMENT:

2.44.0 LEFT BLANK INTENTIONALLY

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2.45.0 FIRE SUPPRESSION SYSTEM

- 2.45.1 Each vehicle shall be equipped, as standard, with an automatic thematic fire suppression system to provide adequate coverage in the engine compartment and main electrical box areas.
- 2.45.2 The system shall incorporate a dash mounted operator warning light, audible indicator and function that will automatically shut off all fans and climate control systems in the event of discharge.
- 2.45.3 Each vehicle shall be delivered with a certificate identifying the vehicle identification number (VIN) for which the fire suppression system applies. The system shall be U.L., U.C.L., and F.M. listed and meets all D.O.T. and FMVSS regulations and is certified by the vehicle and equipment manufacturer. Additionally, an independent certification in accordance with EN45011 (ISO Guide 65) as detailed in SPCR 183, SP Technical Research Institute, shall be included.
- 2.45.4 Purchaser will select fire suppression system when ordering the bus.

On above specifications, this Proposal (circle one below)
EXCEEDS MEETS DOES NOT MEET
COMMENT:

2.46.0 NOISE ABATEMENT

- 2.46.1 The combination of inner and outer panels and any material used between them shall provide sufficient sound insulation so that a sound source with a level of 80 dBA measured at the outside skin of the bus shall have a sound level of 65 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. The bus generated noise level experienced by a passenger at any seat location inside the bus shall not exceed 83 dBA and the driver shall not experience a noise level of more than 75 dBA.
- 2.46.2 Exterior airborne noise generated by the bus and measured from either side shall not exceed eighty-three (83) dBA under full power acceleration when operated at or below thirty-five (35) mph at curb weight and just prior to transmission up shift. The bus-generated noise at curb idle shall not exceed sixty-five (65) dBA.
- 2.46.3 Proposer shall conduct noise testing as part of this proposal. All noise readings shall be taken fifty (50) feet from, and perpendicular to, the centerline of the bus with all accessories operating. Instrumentation, test sides, and other general requirements shall be in accordance with SAE Standard J366. The pull-away test shall be conducted with the rear bumper even with the microphone.

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Proposal shall include certificate of compliance with proposal.

- 2.46.4 TRIPS requests a proposal for a noise canceling function employing a single momentary switch that shuts down noise making equipment such as A/C and heater fans, auxiliary fans, etc. This function shall not shut down the two-way radio system.

On above specifications, this Proposal (circle one below)
EXCEEDS MEETS DOES NOT MEET
COMMENT:

2.47.0 GENERAL SAFETY EQUIPMENT

- 2.47.1 Each vehicle shall be equipped with a first aid kit, (see Exhibit 3), mounted in an accessible location.
- 2.47.2 Each vehicle shall be equipped with a 5-pound rechargeable ABC type Fire extinguisher, mounted in an easily accessible location near the driver's position. The bottle shall be dated with the most recent charge date and have a visible indicator of the status of the charge for quick reference.
- 2.47.3 Each vehicle shall be equipped with reflective type warning triangles secured in a readily accessible location.
- 2.47.4 Each vehicle shall be equipped with a seat belt cutter mounted in an accessible location near the wheelchair ramps.
- 2.47.5 Each vehicle shall be equipped with a bio-hazard kit mounted in an accessible location. Kit must meet federal OSHA regulation 29 CFR1910.1030(d)(3)(i).
- 2.47.6 An oxygen tank holder shall be provided uninstalled inside each bus at delivery.
- 2.47.7 Provide a G-force accelerometer monitor and recorder as standard, configured with 2 Accelerometer devices allowing it to detect and record G-forces in 3 axes, front/rear – left/right – up/down. System should also provide the following inputs: reverse, brake and left and right turn signals. Data shall be recorded and retained for a maximum of 60 seconds before and 15 seconds after an event.
- 2.47.8 The EDR Manufacturer shall provide a document with each bus certifying the unit is operating properly and defining the parameters of the initial set-up. **Proposal shall include information on EDR used.**

On above specifications, this Proposal (circle one below)
EXCEEDS MEETS DOES NOT MEET
COMMENT:

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2.48.0 SPARE PARTS

2.48.1 90 days before delivery of the first bus, successful bidders shall submit to TRIPS and subsequently to each purchaser initial parts inventory and a price list which recommends the types and quantities of parts most likely to be required to support the buses for a one-year period. The manufacturer shall submit their current transit parts price list for all parts covered in the parts manual and all parts utilized in the construction of the bus. A cross reference shall list components by manufacturer and part number.

2.48.2 Proposers shall submit option pricing for the following parts:

- (1) Differential center section (drop-in unit only)
- (1) A/C compressor, complete with clutch assembly
- (1) Heater core
- (1) Set of wiper motors
- (1) Set of windshields
- (1) Set of type window glazing
- (1) Complete set of skirt panels
- (1) Spare Power Pack (see description below)
- (1) Spare Engine
- (1) Spare Transmission
- (1) Destination Sign package (Including; front, side(s), and rear
- (1) Set of Entrance Doors
- (1) Door Motor
- (1) Left Rear corner panel
- (1) Right Rear corner panel
- (1) Rear Bumper
- (1) Front cap excluding windshield
- (1) Engine Door
- (1) Set of Access door(s) and exterior door(s)

On above specifications, this Proposal (circle one below)
EXCEEDS MEETS DOES NOT MEET
COMMENT:

2.49.0 MAINTENANCE MANUALS

2.49.1 Successful bidders shall provide to each purchaser one (1) set of loose-leaf "AS BUILT" manuals per four (4) buses delivered. This set will include a Service/Maintenance Manual, Parts Manual, Electrical Schematic Manual, Operator's Manual and the same for all subsystems and sub components incorporated in the bus. In addition to loose leaf

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manuals the contractor will provide all the aforementioned manuals in an electronic format. A final copy of all literature must be delivered within 90 days of delivering the first bus of each order. Failure to provide a final copy of all literature within the 90 day period will result in the manufacturer being required to supply onsite representation to address literature related concerns.

- 2.49.2 Successful bidders shall keep maintenance information available for a period of ten (10) years after the date of acceptance of the equipment procured under this contract. The Contractor shall also keep all information up-to-date for the same ten (10) year period.
- 2.49.3 Successful bidders shall provide large body/structure drawings that include structure component part numbers and locations to each purchaser before delivery of the first bus Agency.
- 2.49.4 Successful bidders shall furnish a complete bill of materials of all parts/components used in the assembly of the bus. This list shall include bus manufacturer's part number, part description, name and part number of original part manufacturer.
- 2.49.5 Successful bidders shall provide the purchaser a quarterly parts update referencing component part up-grades with part number change cross reference. This quarterly update shall be provided for the life of the bus.

On above specifications, this Proposal (circle one below)
EXCEEDS MEETS DOES NOT MEET
COMMENT:

EXHIBITS

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Exhibit 1

DATACenter Dealer Requirements
(VERSION 1)

The Transit Research Inspection Procurement Services (TRIPS) DATACenter is managed by the Florida Department of Transportation (FDOT) and administered by the Center for Urban Transportation Research (CUTR). The TRIPS DATACenter is an online application developed to capture data related to vehicles procured from TRIPS vehicle contracts. The TRIPS DATACenter can be found at www.cutr.usf.edu/fvpp2

The Dealer is required to enter various information into the DATACenter as the vehicle moves through the procurement process, from order origination to agency acceptance.

All pertinent vehicle data must be entered into the TRIPS DATACenter prior to vehicle arriving at the TRIPS Springhill Bus Inspection & Testing facility (SBITF), located in Tallahassee, FL. Any vehicle(s) arriving at the TRIPS Springhill facility without complete “Vehicle Information Form” data in the DATACenter will not be inspected, which may delay the vehicle delivery process. Failure to enter prescribed vehicle information into the TRIPS DATACenter may result in contract suspension after two (2) violations.

Once the vehicle has been inspected, the dealer is **required** to enter all actions taken to correct defects found during the **SBITF** vehicle inspection. These actions are entered into the DATACenter through the **“Inspection Letter”** form that is generated from the inspection.

The Dealer is required to input any reported and actionable ***standard repair*** issues with the vehicle after the vehicle has been delivered and is put into service and report the actions taken to fix these issues during the vehicle’s entire useful life period. These actions are entered into the DATACenter through the ***“Vehicle Defect Form”***, accessed through the **“Repairs”** Tab. Select **“standard”** on the form.

The Dealer is required to input any reported and actionable ***warranty repair*** issues with the vehicle after the vehicle has been delivered and put into service, and report the actions taken to fix these issues during the entire warranty period. These actions are entered into the DATACenter through the ***“Vehicle Defect Form”***, accessed through the **“Repairs”** Tab. Select **“warranty”** on the form.

The DATACenter provides various other means of extracting information for the dealer, including PO management, searches, and reporting features. Please refer to the provided User’s Manuals as needed for complete information.

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Exhibit 2

Instruments

DISPLAY	GAUGE	LIGHT(S)	AUDIBLE
VOLTMETER	X	X	
ENGINE WATER TEMP	X	X High Temp	X High Temp
ENGINE OIL PRESSURE	X	X Low Pressure	X Low Pressure
TRANSMISSION TEMPERATURE	X	X High Temp	X High Temp
FUEL GAUGE	X	X Low Fuel	X Low fuel
GENERATOR/ALTERNATOR NOT CHARGING	X	X	X
DIRECTIONAL / HAZARD SIGNALS		X	X
HEADLIGHT HIGH BEAM		X	
PARKING BRAKE ON		X	
SPEEDOMETER WITH ODOMETER	X		
AIR PRESSURE	X		
LOW AIR WARNING		X	X

NOTE: The instrument package above shall be provided by the OEM manufacturer. After market substitutes will not be accepted.

Exhibit 3

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Medical Kit Supplies

<u>Contents</u>	<u>Amount</u>
Deluxe Kit, Metal, Empty	1 box
Clean Wipes 50/Box	5 each
Antibacterial Towelettes	20/box / 1 box
Tape, ½" X 5 Yd. Spool	1 each
Eye Wash, Sterile	1 each 4 oz.
Sheer Strip 1"	100 per box
QR Wound Seal	2 per package
Sterile Dressing 5" X 9"	1 each
Elastic Roller Gauze N/S	2" X 4.5 YD, 1 each
Pain-Aid	100 per Box (Zee)
First Aid Pocket Guide	1 each
Small Instant Ice Pack	1 each
Bandage, Triangular 40" N/S	1/Un, 1 each
3-in-1 Antibiotic Ointment	6 per unit, 1 each
Fingertip Bandages	10 per unit, 1 each
Gauze Pads, 3" X 3"	1 each
Knuckle Bandages	10 per unit, 1 each
Water-Jell Burn Jell	6 per box, 1 each
Eye Pads w/Adhesive Strips	2 per unit, 1 each
Nitrile Gloves, Large	2 pairs, 1 each
Disposable Tweezers, Sterile	1 each

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Exhibit 4

FLORIDA DEPARTMENT OF TRANSPORTATION

GASEOUS FUEL SYSTEM INSTALLATION STANDARD
(VERSION 1)

OVERVIEW

The gaseous fuel system installation standard will be evaluated on all vehicles procured from TRIPS vehicle contracts in support of both performance standards and quality star ratings. Testing conditions will replicate severe duty transit operations. Evaluation will be performed on all vehicles up-fitted with an after-market gaseous fuel system.

EVALUATION CRITERIA

Evaluation will occur at FDOT's Springhill Bus Testing and Inspection Facility (SBTIF) located at 2612 Springhill Road, Tallahassee, FL 32305. A gaseous fuel powered engine, which is the manufacturer's standard for this size bus considering components and accessories proposed, will be provided. The specified engine must give satisfactory performance over terrain encountered in Florida with maximum passenger load.

Gaseous fuel systems shall include up-graded components to ensure durability when used with gaseous fuels. The only fuels covered by this program are compressed natural gas (CNG) and liquefied petroleum gas (LPG). Gaseous fuel systems shall meet all current applicable **FMVSS**, **NFPA** and **OEM UPFITTER** guidelines.

INSTALLATION REQUIREMENTS

1. A service and parts manual shall be made available that specifies all gaseous fuel system components along with tank removal and installation methods and any special tools that may be required to prevent damage or injury to the tanks, facilities, and personnel. This manual should state that the fuel tank must be grounded prior to servicing the system and include a grounding procedure.
2. The CNG/LPG fuel system maximum pressure and working pressure shall be specified in the installation documentation. The working pressure of CNG is the settled pressure at a uniform gas temperature of 70°F at full gas content.
3. Heat shields shall be added for all new fuel components located within 8 inches of the exhaust system. Isolate all fuel handling components at least 8 inches from unshielded heat sources or at least 3 inches if shielded.
4. All components for the gaseous fuel fill and de-fuel ports shall be located in the normal fueling location. An interlock switch shall be provided to prevent starting the vehicle when fueling or de-

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fueling. All gaseous fuel lines, fittings and tubes shall be stainless steel or flex tubing approved for use with CNG at 3600PSI; LPG at 300PSI to meet current NFPA 52 and 58 guidelines and:

- Be routed away from, and not attached to, items that are likely to move during normal vehicle operation
- Be routed in such a manner that they will not be affected by the deformation or displacement of adjacent components during a crash
- Be routed inboard of the frame rails (except for connection to the filler) and above the plane of the lower frame flange
- Have adequate flexibility to avoid rupture or disconnection during crash situations
- Be routed away from sharp objects and be retained adequately to prevent movement into such regions or against such objects
- Be clear of moving suspension components
- Avoid exposure to road debris or undercoating
- Be properly grommeted where they pass through panels

5. When CNG/LPG fuel tanks are mounted outside of the OEM frame rails, an additional crash barrier structure shall be provided to surround the tanks. This structure must equal or exceed the section modulus and material strength of the OEM frame rail. Final design shall be approved by FDOT.

6. The CNG fuel tanks shall be a minimum Type III; aluminum and carbon fiber construction with a minimum twenty (20) year life that complies with current NGV2-2007 and FMVSS 304 regulations. The conversion shall include stainless steel dust and gravel shields to protect the tanks and valves. The tanks shall have a production date of no more than 24 months from the date the vehicle is delivered.

7. A methane detection system shall be provided that alerts the driver with an audible and visual alarm when fumes exceed the specified threshold greater than 20% and disable the fuel system when fumes exceed specified threshold greater than 50%. The power supply for the methane detection system shall be separate from the chassis.

8. This standard is written to compliment and to be in compliance with NFPA 52 and 58. In the event of conflicting standards, NFPA 52 and 58 take precedence.

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Exhibit 5

FLORIDA DEPARTMENT OF TRANSPORTATION

AIR CONDITIONING PULL-DOWN TEST PROCEDURE

OVERVIEW

This test will be performed on all air-conditioning systems installed in vehicles procured from TRIPS vehicle contracts in support of both performance standards and quality star ratings. Testing conditions will replicate severe duty transit operations. FDOT will test one or more buses (systems) from each contract within the first award year. If a system fails the test, FDOT reserves the right to suspend vehicle orders utilizing this system, or terminate the contract associated with the failed system. FDOT reserves the right to randomly test new buses at any time during the contract period to ensure compliance.

TEST CONDITIONS / EQUIPMENT

The test will be performed on an asphalt parking lot in direct sunlight. The vehicle will be surrounded by a wall five (5) feet high, fifteen (15) feet wide and the length adjusted to the length of the bus. The minimum testing conditions require an ambient temperature of 94 degrees Fahrenheit (F) (+- 3 degrees) with 60% relative humidity.

All temperature measurements will be recorded in degrees of F using a 12 channel Omega data acquisition device. Calibration of the device is conducted prior to the test using the manufacturer's software.

Voltage readings are captured using the Fluke model 78 automotive multi-meter.

Amperage readings are captured using the Fluke model 336 True RMS Clamp Meter.

TEST SET-UP

1. Perform a system inspection to verify proper function of A/C system to be tested.
2. Ensure all windows and doors are closed properly, with no gaps or leaks. Ensure interior engine cover is sealed properly.

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3. Connect all test equipment:
 - a. T0 Lead: An Omega Engineering J-Type 5 position Fine Wire Thermocouple will be placed outside of the vehicle, away from mechanical and radiant heat sources, to capture ambient temperature
 - b. T1 Lead: An Omega Engineering J-Type 5 position Fine Wire Thermocouple will be placed 48 inches to 52 inches from the rear wall and four feet above the floor surface to capture bus interior temperature
 - c. T2 Lead: An Omega Engineering J-Type 5 position Fine Wire Thermocouple will be placed at the center line of the bus interior, four feet above the floor surface, to capture bus interior temperature
 - d. T3 Lead: An Omega Engineering J-Type 5 position Fine Wire Thermocouple will be placed at the first row of seats, four feet above the floor surface, to capture bus interior temperature
 - e. T4 Lead: An Omega Engineering J-Type ICSS Thermocouple will be placed near the center of the evaporator core to capture rear evaporator core temperature
 - f. T5 Lead: An Omega Engineering J-Type 5 position Fine Wire Thermocouple will be placed above the engine, near the fire wall, to capture the bus engine compartment temperature
 - g. T6 Lead: An Omega Engineering J-Type ICSS Thermocouple will be placed near the center at the air-in side of the condenser to capture the condenser core temperature
 - h. T7 Lead: An Omega Engineering J-Type 5 position Fine Wire Thermocouple will be placed near the center of the air-out side of the condenser to capture the condenser air temperature
 - i. Connect the multi-meter to the battery (s).
 - j. Connect the ammeter to the battery cable.

TEST PROCEDURE

1. Heat-soak the bus under test conditions for a minimum of two hours. Record the date, time of day, vehicle identification number and location.
2. With the vehicle in park and all doors and windows closed, start the engine.
3. Turn on the air conditioning system, set the a/c system to maximum cooling position and turn on all interior and exterior lights.

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4. Let vehicle run with the high idle on (approximately 1200 RPM on diesel engines and approximately 1500 RPM on gasoline engines). If the high idle is designed to automatically turn off after the first 15 minutes, the driver's door will be opened and the high idle immediately turned back on to complete the test. This action will not invalidate the test
5. Record all temperature readings (seven leads) in 30 second increments
6. Record battery voltage readings at the battery (s) at the beginning of the test and at ten (10) minute increments thereafter
7. Record amperage readings at the positive cable coming off the battery (s) at the beginning of the test and at ten (10) minute increments thereafter
8. At the end of the 30 minute A/C pull down test there will be a 30 minute heat-gain test performed to determine the efficiency of the insulation in the bus using the same measurement equipment used for the A/C pull down test. Record all temperature readings (seven leads) in 15 second increments to determine fastest rise and total rise in bus interior temperature

SYSTEM TEST RESULTS

During the test, the interior temperature of the bus should lower uniformly throughout and should lower the interior temperature within the prescribed time.

The system will **fail** the test if:

- a) The temperature difference between C1, C2, and C3 varies more than two degrees during each 30 second reading during the last 15 minutes of the test
- b) The system fails to lower the interior temperature to a minimum of 70 degrees F (+ or - 2 degrees) measured at C1 by the end of the 30 minute test (conditions must reflect an ambient temperature of 94 degrees F (+ or - 3 degrees) measured at T0, with a minimum of 60% relative humidity).
- c) The voltage readings at the batteries fall below 12.9 volts at any time during the test

Additional data will be captured to allow the TRIPS program to analyze and compare system attributes and configurations:

- i. Fastest time to achieve 70 degrees with the lowest amperage draw
- ii. Fastest overall time to achieve 70 degrees
- iii. Lowest temperature retained during the 30 minute heat-gain test
- iv. Lowest head pressure reading captured during step 6 of the test
- v. Highest voltage output captured during step 7 of the test
- vi. Lowest amperage draw captured during step 8 of the test

Exhibit 6

FLORIDA DEPARTMENT OF TRANSPORTATION

Alternator Output Test Procedure **(VERSION 1)**

OVERVIEW

This test will be performed on all vehicles procured from TRIPS vehicle contracts in support of both performance standards and quality star ratings. Testing conditions will replicate severe duty transit operations. Testing will be performed on both OEM and after-market alternators, as determined by contract.

TEST CONDITIONS / EQUIPMENT

Testing will occur at FDOT's Springhill Bus Testing and Inspection Facility (SBTIF) located at 2612 Springhill Road, Tallahassee, FL, 32305. The Crumbliss 2115 Alternator testing device will be utilized. The alternator will be shrouded and heat applied to it during the test via a five hundred (500) degree heat gun, simulating a real-world, under-hood operating environment. A 12 or 24 volt battery (as applicable) is used during testing to simulate an active charging system. Two (2) DC condenser fan motors are added to the circuit. These fans are turned on and off as needed to prevent the battery from overcharging during testing.

TEST SET-UP

1. Install alternator into testing machine vise
2. Verify correct size pulley on alternator
3. Verify and install correct size pulley on testing machine to drive alternator at prescribed (production) engine idle RPM
4. Install drive belt between alternator pulley and tester pulley
5. Check for proper pulley alignment
6. Attach test leads to alternator
7. Connect cables to batteries
8. Place heat-shroud over alternator/vise assembly
9. Position heat gun
10. Turn on test machine cooling fans
11. Turn on BATTERY switch (if needed)

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12. Set MOTOR switch to **slow** position
13. Set VOLT switch to 12 or 24 volt position
14. Set PULLEY knob to diameter of pulley being used
15. Turn on START switch

TEST PROCEDURE

1. Adjust RPM to prescribed engine idle speed
2. Slowly turn FIELD CURRENT load control from minimum position toward maximum position until VOLT gauge reads 12.4 volts
3. Note reading from AMP gauge: **This reading is Maximum Output at Idle under Full Load**

Continue testing to determine SAE (hot) rating Performance Curve

*Raise RPM gradually another 500 RPM;
Note reading from AMP gauge*

*Raise RPM gradually another 500 RPM;
Note reading from AMP gauge*

*Raise RPM gradually another 500 RPM;
Note reading from AMP gauge*

*Raise RPM gradually another 500 RPM;
Note reading from AMP gauge*

Using the four (4) readings documented in the performance test above, plot Alternator Performance Curve using appropriate software

4. Capture temperature readings of housing surface, stator, rotors and both bearings
 5. Document these readings for use in subsequent comparisons and/or star rating computation
- During the test period, the temperature inside the heat shroud will be between 120 - 150 degrees F. The alternator will run at minimum idle speed (600 rpm) for 30 minutes and at maximum rpm speed (2000) for 30 minutes
 - The alternator amperage output, minimum battery voltage, and temperature of the alternator will be continuously monitored and readings documented during testing for use in subsequent comparisons and/or star rating computation

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SYSTEM TEST RESULTS

Alternator will **fail** the test if:

- a. Amperage output falls below the maximum amperage draw for the type bus it will be used on
- b. Alternator Performance Curve rating is lower than manufacturer provided Performance Curve rating

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Exhibit 9

After Sales Service

1. Successful bidder shall provide a contact person(s) for warranty and parts with a dedicated phone line to be answered during normal business hours.
2. Successful bidder shall provide a list of most often requested bus parts to be used in creating a parts stockage level list at the dealer's location.
3. Successful bidder shall provide a list of authorized service centers in the state of Florida capable of general bus repairs, wheelchair lift/ramp repair, and A/C repair.
4. Successful bidder shall provide a minimum of one field service technician familiar with all areas of the bus. This technician must be prepared to travel throughout the state and provide repairs when local agencies cannot make the repair.

Exhibit 10

TRIPS PROGRAM-STAR RATING GUIDELINES

Air Conditioner *(Version 5)*

Stars are earned for achievements in each of the categories listed below. Air conditioner manufacturers have the ability to receive up to 5 stars (one per category). Continuous type data will be averaged by contract to obtain ratings. Ratings will be updated semi-annually.

Category One: Temperature: One star will be earned if the temperature captured individually by the C1, C2, and C3 Leads during the A/C pull-down test is between 67- 69 degrees F. If unable to obtain this metric, a half star will be earned if the **average** on all three sensors as captured by the C1, C2, and C3 Leads during the A/C pull-down test is between 67- 69 degrees.

Category Two: Amperage Draw: One star will be earned if the system has the lowest amperage draw as captured by step 8 of the A/C pull-down test. A half star will be earned if the system has the second lowest amperage draw as captured by step 8 of the A/C pull-down test. A quarter star will be earned if the system has the third lowest amperage draw as captured by step 8 of the A/C pull-down test.

Category Three: After Sales Service: One star will be earned if the A/C manufacturer displays timeliness in repairing any and all system defects. TRIPS defines “timeliness” as four (4) business days or less, from notification of defective system/component to completion of repairs. A half star will be earned if the repair occurs between five (5) and eight (8) days, a quarter star will be earned for repairs taking longer than eight (8) days.

Category Four: Warranty: A half star will be earned for providing the longest system warranty as detailed in the vehicle purchasing agreement. A half star will be earned for **exceeding** the provisions of Part 5, Section 5.4.0 of the vehicle purchasing agreement, “work necessary to affect the repairs defined in Section 5.1.2 shall commence within ten (10) working days after receipt of notification by Dealer.” A quarter star will be earned for **meeting** the provisions of Part 5, Section 5.4.0.

Category Five: Product Reliability: One star will be earned for having ten percent (10%) or less of A/C systems encountering any type of defect for the useful life of the system (as determined by vehicle type), excluding post-delivery inspection results. A half star will be earned for having less than fifteen percent (15%) but greater than ten percent (10%) of A/C systems encountering any

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type of defect for the useful life of the system (as determined by vehicle type), excluding post-delivery inspection results.

Exhibit 11

TRIPS PROGRAM-STAR RATING GUIDELINES

Alternator *(Version 5)*

Stars are earned for achievements in each of the categories listed below. Alternator manufacturers have the ability to receive up to 5 stars (one per category). Continuous type data will be averaged by contract to obtain ratings. Ratings will be updated semi-annually.

Category One: Temperature: One star will be earned for the lowest average temperature captured on the housing surface, stator, rotors and both bearings as compared to alternators with similar characteristics. A half star will be earned for the second lowest average temperature captured on the housing surface, stator, rotors and both bearings as compared to alternators with similar characteristics

Category Two: Performance: One star will be earned if alternator maintains a 150 amp output with a minimum of fourteen (14) volts supplied to the battery for 30 minutes, at an alternator rotor speed of 2000 RPM.

Category Three: After Sales Service: One star will be earned if the alternator manufacturer displays timeliness in repairing any and all product defects. TRIPS defines “timeliness” as four (4) business days or less, from notification of defective system/component to completion of repairs. A half star will be earned if the repair occurs between five (5) and eight (8) days, a quarter star will be earned for repairs taking longer than eight (8) days.

Category Four: Warranty: A half star will be earned for longest alternator warranty provided as detailed in the vehicle purchasing agreement. A half star will be earned for ***exceeding*** the provisions of Part 5, Section 5.4.0 of the vehicle purchasing agreement, “work necessary to affect the repairs defined in Section 5.1.2 shall commence within ten (10) working days after receipt of notification by Dealer.” A quarter star will be earned for ***meeting*** the provisions of Part 5, Section 5.4.0.

Category Five: Product Reliability: One star will be earned for having ten percent (10%) or less of alternators encountering any type of defect for the useful life of the system (as determined by vehicle type), excluding post-delivery inspection results. A half star will be earned for having less than fifteen percent (15%) but greater than ten percent (10%) of alternators encountering any type of defect for the useful life of the system (as determined by vehicle type), excluding post-delivery inspection results.

Exhibit 12

TRIPS PROGRAM-STAR RATING GUIDELINES

Manufacturer *(Version 5)*

Stars are earned for achievements in each of the categories listed below. Manufacturers have the ability to receive up to 5 stars (one per category). Continuous type data will be averaged by contract to obtain ratings. Ratings will be updated semi-annually.

Category One: Quality: One star will be earned if the results of the post-delivery inspection conducted at the SBTIF reveal an average of four (4) defects or less for all vehicles inspected, specific to purchasing agreement. A half star will be earned if the results of the post-delivery inspection conducted at the SBTIF reveal an average of between five (5) and eight (8) defects for all vehicles inspected, specific to purchasing agreement. A quarter star will be earned if the results of the post-delivery inspection conducted at the SBTIF reveal an average of between nine (9) or greater defects for all vehicles inspected, specific to purchasing agreement.

Category Two: Design / Crashworthiness: One star will be earned if the manufacturer's Pre-Qualification Structural Test results equal or exceed:

- Floor to Wall (FTW) connection test- 400 J/m
- Roof to Wall (RTW) connection test- 200 J/m
- Sidewall Panel Test - 1000 J/m with less than 150 mm deflection

A half star will be earned if the manufacturer's Pre-Qualification Structural Test results are between the passing standard and the one-star criteria listed in this Category.

Category Three: Compliance: One star will be earned for complying with Part 4, Quality Assurance Provisions, of the contract, in its entirety and having a completed TRIPS generated Plant Inspection report on file for the current production year. A half star will be earned for meeting one of the two requirements of this Category.

Category Four: Product Reliability: One star will be earned for having twenty five percent (25%) or less of vehicles encountering any type of defect for the useful life of the system (as determined by vehicle type), specific to purchasing agreement and excluding post-delivery inspection results. A half star will be earned for having less than thirty five percent (35%) but greater than twenty five percent (25%) of vehicles encountering any type of defect for the useful life of the system (as determined by vehicle type), specific to purchasing agreement and excluding post-delivery inspection results.

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Category Five: Insulation / R value: One star will be earned for the lowest retained temperature captured during the 30 minute heat-gain test conducted as part of the A/C pull down test, specific to purchasing agreement. A three quarter star will be earned for the second lowest retained temperature captured during the 30 minute heat-gain test conducted as part of the A/C pull down test, specific to purchasing agreement. A half star will be earned for the third lowest retained temperature captured during the 30 minute heat-gain test conducted as part of the A/C pull down test, specific to purchasing agreement. A quarter star will be earned for the fourth lowest retained temperature captured during the 30 minute heat-gain test conducted as part of the A/C pull down test, specific to purchasing agreement.

Exhibit 13

TRIPS PROGRAM-STAR RATING GUIDELINES

Dealer

(Version 5)

Stars are earned for achievements in each of the categories listed below. Dealers have the ability to receive up to 5 stars (one per category). Continuous type data will be averaged by contract to obtain ratings. Ratings will be updated semi-annually.

Category One: After Sales Service: One star will be earned if the dealer fully complies with Exhibit 9, After Sales Service, as defined in the purchasing agreement, and receives an average score of four (4) or above from the agency post-delivery surveys. A three-quarter star will be earned if the dealer is in partial compliance with **Exhibit 9, After Sales Service**, as defined in the purchasing agreement and receives an average score of at least four (4) or above from the agency post-delivery surveys. A half star will be earned if the dealer is in full or partial compliance with **Exhibit 9, After Sales Service**, as defined in the purchasing agreement and receives an average score of greater than three (3) but less than four (4) from the agency post-delivery surveys.

Category Two: Warranty: One star will be earned if the dealer starts work immediately on warranty claims, as defined in Part 5, Section 5.4.0 and fully complies with Part 5, Section 5.10.5. A half star will be earned for complying with one of the two Sections referenced in this Category.

Category Three: Compliance: One star will be earned if the dealer is in full compliance with **Exhibit 1, DATACenter Dealer Requirements**, of the contract.

Category Four: TRIPS Satisfaction Survey: One star will be earned if the dealer receives an average score of four (4) or above from the TRIPS Overall Satisfaction survey. A half star will be earned if the dealer receives an average score of greater than three (3) but less than four (4) from the TRIPS Overall Satisfaction survey. A quarter star will be earned if the dealer receives an average score of greater than two (2) but less than three (3) from the TRIPS Overall Satisfaction survey.

Category Five: Contract Management: One star will be earned if both the dealer and manufacturer participate in TRIPS requested annual meeting to review contract status and problem solve. One half star will be earned for dealer-only participation.

Exhibit 14

Provide signs #1, #2, and #3 with black letters on white background. Agency is to be consulted on exact wording prior to delivery.

Sign #1

*Transportation services
provided by this vehicle
are open to the general
public.*

Sign #2

*Florida Law and Title VI of the Civil
Rights Act of 1964 Prohibits
Discrimination in:*

*Public accommodations on the basis of
race, color, religion, sex, national origin,
handicap, or marital status.*

*Persons believing they have been
discriminated against on these conditions
may file a complaint with the Florida
Commission on Human Relations at 850-
488-7082 or 800-342-8170 (voice
messaging).*

Sign #3

*Florida Law and Title VI of the Civil
Rights Act of 1964 Prohibits*

Discrimination in:

*Public accommodations on the basis of
race, color, religion, sex, national origin,
handicap, or marital status.*

*Persons believing they have been
discriminated against on these conditions
may file a complaint with the
(xxxxxxxxxxxxxxxxxx) at (xxxxxxxxxxxxxxxxxx)*

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Exhibit 15

FDOT AMP Draw Analysis Worksheet

CHASSIS

MANUFACTURER & MODEL _____ VIN# _____ BUS NO. _____
DATE: _____ VEHICLE DESCRIPTION _____
ALTERNATOR MANUFACTURER _____ RATED AMP. OUTPUT _____

TOTAL IDLE AMP. OUTPUT (a)

SYSTEMS

AMP. DRAW

OEM Chassis	<input style="width: 90%;" type="text"/>
Lift	<input style="width: 90%;" type="text"/>
Entry Door	<input style="width: 90%;" type="text"/>
Second Stage A/C	<input style="width: 90%;" type="text"/>
Additional Second Stage Components	<input style="width: 90%;" type="text"/>

TOTAL AMP. DRAW (b)

{ (a)-(b)=(c) } TOTAL RESERVE AMPS. AVAILABLE (c)

Amp. Draw of Anticipated Components to be added

NOTE: Anticipated and/or Add on component(s) Amp draw should not total more than 90% of (c) above.

Bus Manufacturer:
Address:
Prepared By:
Signed:
Title: