FED STD 833E

JULY 9, 2010

FEDERAL STANDARD

BUSES: LIGHT-DUTY SHUTTLE BUS, BASIC, SUPPORT TEXT

LIGHT-DUTY SHUTTLE BUS, BASIC

1.0 Scope and Classification

1.1 Scope

This Standard covers commercial light-duty, shuttle buses.
The buses specified herein are mounted on cutaway type cutaway type or full cab, rear-wheel drive truck chassis with dual rear wheels.
This Standard is intended to simplify competitive procurement of commercial vehicles, and achieve a practical degree of standardization within the federal fleet.
The Government takes no exemptions to the laws and regulations for vehicles used on public roads and highways.

1.2 Application

This Standard does not include all varieties of the commodity indicated by the title but is intended to cover those vehicles generally acquired by the Government. Buses with standardized components and equipment are highlighted in this Standard. A selection of coded optional additional systems and equipment is included for agencies, divergent geographic and operational related needs.

1.3 Coverage of Bus Types

The types of buses covered by this standard are listed below. Optional equipment appears in section 3.25. The item descriptions, minimums, options, and manufacturer data can be viewed on the web www.gsa.gov/automotive. Click on the link for all standards and refer to Fed Std 833E, Items 241-247, Light-Duty Shuttle Bus, Basic.

1.1.1 Classifications

The individual bus configuration classifications are referred to by a Standard Item Number (SIN)
The SINs covered by this Standard are as follows:

241N - 12 Adult, 77-89 Inch Wide, Light-Duty Shuttle Bus, Basic
241 - 12 Adult, 90-98-Inch Wide, Light-Duty Shuttle Bus, Basic
242N - 16 Adult, 77-89 Inch Wide, Light-Duty Shuttle Bus, Basic
242 - 16 Adult, 90-98 Inch Wide, Light-Duty Shuttle Bus, Basic
243 - 20 Adult, 90-98 Inch Wide, Light-Duty Shuttle Bus, Basic
246 - 24 Adult, 90-98 Inch Wide, Light-Duty Shuttle Bus, Basic
247 - 28 Adult, 90-98 Inch Wide, Light-Duty, Shuttle Bus, Basic

2.0 Applicable documents

The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues in effect are those cited in the solicitation or contract.

The documents listed in this section are specified in sections 3, 4, or 5 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, or 5 of this specification, whether or not they are listed.

2.1 Federal Specifications

A-A-393A Commercial Item Description Extinguishers, Fire, Dry-Chemical (Hand-Portable)

2.2 ADA Transportation Vehicle Accessibility Guidelines (ADA) 36 CFR Part 1192

1192.25 Doors, steps and thresholds
1192.29 Interior circulation, handrails and stanchions
1192.31 Lighting
1192.39 Destination and route signs

2.3 Federal Motor Vehicle Safety Standards (FMVSS) 49 CFR Part 571

571.101 Controls and Displays
571.102 Transmission Shift Lever Sequence, Starter Interlock, and Transmission Braking Effect
571.103 Windshield Defrosting and Defogging Systems
571.104 Windshield Wiping and Washing Systems
571.105 Hydraulic Brake Systems
571.106 Brake Hoses
571.108 Lamps, Reflective Devices, and Associated Equipment
571.111 Rearview Mirrors
571.113 Hood Latch Systems
571.116 Motor Vehicle Brake Fluids
571.119 New Pneumatic Tires for Vehicle Other Than Passenger Cars
571.120 Tire Selection and Rims for Vehicles other than Passenger Cars
571.124 Accelerator Control Systems
571.205 Glazing Materials
571.207 Seating Systems – Standard applies to the driver's seat only
571.208 Occupant Crash Protection - Standard applies to the driver's seat only
571.209 Seat Belt Assemblies - Standard applies to the driver's seat only
571.210 Seat Belt Assembly Anchorages - Standard applies to the driver's seat only
571.212 Windshield Mounting
571.213 Child Restraint Systems – Standard applies to vehicles with an integral child safety seat
571.217 Bus Emergency Exits and Window Retention and Release
571.219 Windshield Zone Intrusion
571.225 Child Restraint Anchorage Systems
571.302 Flammability of Interior Materials
571.303 Fuel System Integrity of Compressed Natural Gas Vehicles
571.403 Platform Lift Systems for Motor Vehicles
571.404 Platform Lift Installation in Motor Vehicles

2.4 Federal Motor Carrier Safety Regulations (FMCSR) 49 CFR Part 393

393.11 Lighting devices and reflectors
393.19 Requirements for turn signaling systems
393.22 Combination of lighting devices and reflectors
393.23 Lighting devices to be electric
393.24 Requirements for headlamps and auxiliary road lighting lamps
393.25 Requirements for lamps other than head lamps
393.26 Requirements for reflectors
393.28 Wiring to be protected
393.30 Battery installation
393.40 Required brake systems
393.41 Parking brake system
393.42 Brakes required on all wheels
393.44 Front brake line, protection
393.45 Brake tubing and hose, adequacy
393.46 Brake tubing and hose connections
393.47 Brake lining
393.50 Reservoirs required
393.51 Warning devices and gauges
393.52 Brake performance
393.53 Automatic brake adjusters and brake adjustment
393.55 Antilock brake systems
393.62 Window obstructions
393.65 All fuel systems
393.67 Liquid fuel tanks
393.69 Liquefied petroleum gas systems
393.77 Heaters
393.78 Windshield wipers

393.79 Defrosting device
393.81 Horn
393.88 Television receivers
393.89 Buses, driveshaft protection
393.90 Buses, standee line or bar
393.94 Interior Noise Levels in Power Units
393.95 Emergency equipment on all power units

2.5 Non-Government standards and other publications

2.5.1 Society of Automotive Engineers (SAE) Standards and Recommended Practices

J163 Low Tension Wiring and Cable Terminals and Splice Clips
J198 Windshield Wiper Systems- Trucks, Buses, and Multipurpose Vehicles
J381 Windshield Defrosting Systems Test Procedure and Performance Requirements- Trucks, Buses, and Multipurpose Vehicles
J551 Performance Levels and Methods of Measurement of Electromagnetic Compatibility of Vehicles, Boats (up to 15m), and Machines (50 Hz to 18 GHz)
J516 Hydraulic Hose Fittings
J537 Storage Batteries
J561 Electrical Terminals-Eyelets and Spade Type
J575 Test Methods and Equipment for Lighting Devices and Components for Use on Vehicles Less Than 2032 MM in Overall With
J588 Turn Signal Lamps for Use on Motor Vehicles Less than 2032 mm in Overall Width
J589 Turn Signal Switch
J673 Automotive Safety Glasses

J686 Motor Vehicle License Plates
J695 Turning Ability and Off Tracking-Motor Vehicles
J910 Hazard Warning Signal Switch
J1127 Battery Cable
J1128 Low Tension Primary Cable
J1292 Automobile, Truck, Truck-Tractor, Trailer, and Motor Coach Wiring
J1318 Gaseous Discharge Warning Lamp for Authorized Emergency, Maintenance, and Service Vehicles
J1350 Selection and Application Guidelines for Diesel, Gasoline, and Propane Fired Liquid Cooled Engine Pre-Heaters
J1489 Heavy Truck and Bus Retarder Downhill Performance Mapping Procedure
J1908 Electrical Grounding Practice
J2064 R134a Refrigerant Automotive Air-Conditioning Hose
J2188 Commercial Truck and Bus SAE Recommended Procedure for Vehicle Performance Prediction and Charting

2.5.2 American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)

A03 Handbook, Chapter 9, Surface Transportation
37 Methods of Testing for Rating Unitary Air-Conditioning and Heat Pump Equipment
41.1 Standard Methods for Temperature Measurement
41.2 Standard Methods for Laboratory Airflow Measurement
41.3 Standard Method for Pressure Measurement

2.5.3 American Trucking Association, Inc.

Technology and Maintenance Council (TMC) RP 803

2.6 Order of Precedence

In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3.0 Requirements

a. Chassis manufacturer, intermediate stage vehicle converter, and final state manufacturer, as applicable, shall be registered with the National Highway and Traffic Safety Administration (NHTSA).

b. The bus shall be complete with all the necessary operating components, features, and accessories customarily furnished for commercial sale, whether stipulated herein or not.
c. Buses and furnished accessories shall comply with all applicable Federal Motor Vehicle Safety Standards and the Federal Motor Carrier Safety Regulations listed in section 2.4 applicable on the date of manufacture.
d. All standards and specifications listed in Section 2 shall apply with the only exceptions being those in conflict with FMVSS standards.
e. Only one body length / model number vehicle shall be furnished for each Standard Item Number (SIN).
f. Buses furnished shall meet or exceed this Standard. All deviations to this Standard must be directed in writing to the GSA Procurement officer assigned to the bus program.
g. Options are defined in Paragraph 3.25. Option codes are selected by the purchaser to meet agency needs. An Option cited in a purchase order, is a requirement to be provided under a contract.
h. Information for this Standard and Items can be viewed on the web www.gsa.gov/automotive. Click on the link for all standards and refer to Fed Std 833E, Items 241N-247, Light-Duty Shuttle Bus, Basic.

3.1 Body and Chassis

The body and chassis furnished shall be no older than the bus manufacturer's current production at the time of vehicle manufacture. The foundation chassis shall be a cutaway configuration light-duty truck.

3.1.1 Passenger Capacities

Standard Item Number (SIN)	Adult Capacity (Seated)
SIN 241N	12 adults
SIN 241	12 adults
SIN 242 N	16 adults
SIN 242	16 adults
SIN 243	20 adults
SIN 246	24 adults
SIN 247	28 adults

3.1.2 Body Construction

Buses shall be of commercial construction and are not applicable to school bus type construction.

3.1.3 Body Fastener Application

All fasteners shall be corrosion resistant.

3.1.4 Body Structure

Wood shall not be used for structural framing.

3.1.5 Body Integrity

a. The body, floor, roof, and panel joints shall be water and air tight.
b. All body seams shall be sealed and not permit dust or fume entry into passenger compartment.
c. Body, hinge, and, mirror mounting points shall be reinforced to prevent cracking, fastener, or fastener device pull out.

3.1.6 Body Exterior Lengths

Body measurement shall be exterior rear surface to front face of body. Length measurement shall not include bumpers. Bus body lengths shall not be changed to accommodate space consuming optional equipment. Only one body length shall apply to each SIN.

3.1.7 Body Exterior Width

This measurement shall be taken from the exterior vertical body surface of the primary body skin panel.

3.1.8 Body Exterior

a. Tires shall not protrude beyond exterior body side wall.

b. Composite rubber fender extensions or molded high impact plastic body accents can be used to cover tire edge.

3.1.9 Rain Splash Control

Rain gutters, hoods, or lips shall be provided to prevent water from the roof flowing onto the passenger doors, side windows, and the door boarding area.

3.1.10 Passenger Compartment Interior Dimensions

Interior height shall be measured from the floor surface to center peak of ceiling. Measurement minimum shall be maintained between the first and last vertical roof bows.

3.1.11 Insulation

All bus and chassis manufacturers supplied insulation shall comply with FMVSS 571.302.

3.1.12 Maintenance

a. The design of the bus and optional equipment shall permit access for routine servicing and shall permit access for replacement and adjustment of component parts and accessories with minimal disturbance of other components and systems.
b. Interior hinged and fastener-secured access panels and doors for maintenance:
    i. Shall use common tools to open and be flush with the surrounding materials.
    ii. Shall be sealed to prevent entry of fumes and water into passenger compartment.

3.1.13 Sound Level

The interior sound level shall be in accordance with FMCSR 393.94.

3.1.14 Body Mounting

a. The cab, body, and chassis interface shall "float" per chassis manufacturer's Body Builders Book.
b. Reinforcements or filler blocks shall be used where mounting devices might otherwise deform frame flanges.
c. Mounting devices shall utilize fasteners that will minimize loosening but which may require regular scheduled tightening.
d. Interface of chassis and body, including all electrical, fluid, mechanical systems, and mounted equipment shall be in full accordance with the chassis manufacturer's "Body Builders Book" and published equipment technical data.

3.1.15 Corrosion Protection

a. All hardware shall be corrosion resistant.
b. Fastener materials shall be compatible with materials being fastened.
c. No bare metal permitted.
d. All joints and connections of dissimilar metals shall be insulated to minimize effects of galvanic corrosion.

3.1.16 Undercoating

Underbody, fenders, skirts, and wheelwells shall be undercoated. The exceptions to this requirement are plastic or polymer exterior parts not subject to deterioration or damage from road splash and debris. Examples are one piece hoods and fender well extensions.

3.1.17 Mud Flaps

Rubber composition mud flaps at all wheel ends shall extend to within 3 to 7 inches off the ground when suspension is at normal operating height and at curb weight.

3.1.18 Curb Weight

The curb weight shall include the weight of the chassis and body with all attachments, accessories, standard and optional equipment, a full complement of fuel, lubricants, coolants.

3.1.19 Payload and Gross Vehicle Weight

The payload weight of passengers shall be calculated using 215 pounds per person and 215 pounds for the driver. These ratings include provisions for parcels and shall be considered an even weight distribution throughout the body. Wheelchair positions shall be calculated using 300 lbs. for each wheelchair position specified. When a wheelchair position includes convertible seating, the 215 pounds per seated person shall be included in the calculation instead of the wheelchair position weight.

3.1.20 Capacity Decal

An instruction decal shall be applied to the forward bulkhead visible to all passengers and driver. The lettering shall be not less than 1-1/2 inch in height and in strong contrast to the interior background color. The message can be in a single line or two lines and must state "No Standees Permitted" or "No Standees" and "Maximum Passenger Capacity XX" or "Capacity XX Passengers". The two X's shall represent the passenger capacities specified as standard and optional. Multiple decals can be used to accommodate this requirement with one displaying the no standees instruction statement and another displaying passenger capacity.

3.1.21 Towing Devices

a. Front and rear towing devices shall be furnished. Front devices can deleted if the chassis manufacturer's incorporates a frame crush zone that prohibits attachment of the towing devices.
b. If the bus cannot be lifted with the furnished hooks or loops without damaging body panels or frame, a warning label shall be permanently affixed to the frame area immediately next to the towing devices and clearly visible to tow truck operator during recovery procedures. Warning label shall be in high contrast to its surrounding to provide immediate recognition. The warning label shall read in bold letters no smaller than ¼ inch, "DO NOT LIFT BUS WITH TOW EYES. TOW EYES FOR FLAT GROUND MANEUVERING ONLY."
c. Complete towing instructions shall be furnished with the operator's manual.
d. Rear towing device(s) shall not provide a toehold for unauthorized riders

3.2 Air Pollution Control

The vehicle and engine shall confirm to 40 CFR Subchapter C-Part 86- "Control of Emissions from New and In-use Highway Vehicles and Engines," as evidenced by an EPA certificate of compliance. Vehicles shall also comply with all pollution control requirements for the State of final destination. Certificates of compliance shall be made available upon request.

3.3 Engines

Engine horsepower and torque ratings shall be the engine manufacturer's advertised values.

3.3.1 Cooling System

a. Cooling system shall be charged with extended life coolant.
b. All coolant hoses and lines shall meet or exceed the requirements of SAE J20 D2.
c. Silicone hoses shall not be used in the passenger compartment
d. All hoses and lines shall be securely attached with constant-tension, or thermoplastic clamps. Hoses and lines shall not be permitted to rub components that may eventually lead to a coolant leak. Hoses and lines shall not be supported by wire ties or straps.
e. Passenger compartment heater hoses shall be equipped with full-flow, quarter-turn valves located in a protected location to permit complete shutoff of engine coolant flow to heating units. The location of the valves shall be indicated with a label stating the purpose of the valves such as "Heater Shutoff Valves" and located to be visibly obvious.

3.3.2 Engine Compartment

a. Engine compartment shall be readily accessible for servicing and routine maintenance of engine and engine components.
b. All fluid locations shall be accessible with standard funnels, pour spouts, and automatic dispensing equipment.
c. All lubricant sumps shall be fitted with magnetic-type external, drain plugs if available from the component manufacturer as standard or optional.
d. Ready access to engine compartment shall be furnished for servicing and routine maintenance of engine and engine components.

3.4 Engine Accessories

3.4.1 Automatic Engine Idle Shutdown

Engine shall shutdown automatically after a 300-second idle period when the transmission is in the neutral position. Shutdown command can be overridden when the air conditioning is switched to on.

3.4.2 High-Idle Control

Automatic engine high-idle control shall:

a. Be preset to operate at an elevated rate not to exceed maximum rate permitted by engine manufacturer if lower.
b. Operate (engage) when switched to the "ON" position and the transmission in "NEUTRAL" or "PARK" (applicable to design furnished).
c. Operate (engage) when the air conditioning is operating and the transmission in "NEUTRAL" or "PARK". High idle speed shall not rely on manual on/off switch position to elevate idle. A low voltage sensing controller can be used to accommodate this requirement in lieu of immediate idle up when A/C is activated.
d. Disengage when the service brake pedal is depressed or transmission in-gear position is selected.
e. Transmission shall not be allowed to engage until engine has returned to low idle speed setting.
f. Control shall be chassis manufacturer furnished when available as standard/ optional equipment or supplied as aftermarket when approved by the GSA.

3.5 Transmission

3.5.1 Automatic Transmission

a. Transmission shall be equipped with synthetic fluid and be labeled on its exterior to indicate the type of fluid installed.

3.6 Brakes

3.6.1 Service Brakes

Chassis OEM Antilock Brake System shall be furnished with independent sensors at all wheel ends.

3.7 Axles

a. GVWR - the GVWR (Gross Vehicle Weight Rating) and individual axle GAWR (Gross Axle Weight Rating) shall not be exceeded when loaded with the specified number of passengers and baggage including the driver.
b. GAWR calculation shall reflect maximum weight ratings as advertised by axle manufacturer and no higher rating of components shall be acceptable.

3.7.1 Drive Axle

Differential and bearing lubrication shall be synthetic grease/fluid.

3.7.2 Driveshaft

Driveshaft protection shall comply with FMCSR 393.89

3.8 Electrical

3.8.1 Electrical System

a. Shall comply with SAE J163, J561, J589b, J910, J1127, J1128, J1292, and FMCSR 393.28, 393.29, 393.31.
b. All electrical and electronic components, including, but not limited to: switches, connectors, terminal strips, relays, circuit breakers, fuses, fusible links, lamps, indicators, appliances, etc. shall be clearly identified and shown in as-built wiring diagrams and schematics to be furnished and provided with each bus order at time of delivery. This information can be supplied by electronic means as well as in paper copy. When information is made available via electronic format all necessary program downloads shall be provided at no charge with no limit to service life.

c. All wires shall be color-coded or permanently marked no less than every 6-inches the entire length of the wire for identification with easily read numbers and/or letters and routed in Nylon-6 split-loom. Multi-conductor cabling does not need to be covered in split loom.
d. All wires and cables furnished by chassis and bus manufacturer shall be stranded high-temperature crosslinked polyethylene insulation.
e. The use of ribbon cables are permitted only when used in the interior of control modules and computers.
f. All wiring (including grounds), connecting terminals, relays, and switches shall be rated to carry at least 120 percent of the maximum ampere load for which the circuit is protected.
g. No more than three ground wires or cables are permitted per grounding stud.
h. All grounding locations shall be accessible for inspection and repair.
i. In addition to grounds rated to carry the full load, RF grounding of the bus body shall be furnished to the chassis with a minimum 19 mm (3/4"), braided and tinned, ground strap with soldered ends that are secured to clean metal surfaces, with star washer, on the body and frame and sealed with non-hardening, battery terminal type sealer. This requirement is not applicable to unibody construction methods.
j. Electrical system shall incorporate master panels for current limiting devices and other electronic devices and be located in areas that provide easy access but not require underbody access or removal of other components for inspection and service of components contained within. No current limiting devices or relays shall be located outside of electrical panels. The only exceptions to this requirement are the fuses and relays that are specifically required to be located inside battery box by the powered component manufacturer and those that are an integral part of a large component or device.
k. All overcurrent protection devices shall be securely mounted, easily removable, and readily accessible for inspection, replacement, resetting if required, and service.
l. All wiring between the chassis and body shall be connected to terminal strip(s), block(s), or multi-pin connector(s) and all shall be readily accessible for checking and service. All connections interior and exterior susceptible to moisture exposure shall be sealed. Wiring harness junctions shall use multi-pin water tight connectors.
m. The body and accessory electrical equipment shall be interfaced to chassis in accordance with chassis manufacturer's recommendations.
n. All electrical consumers shall be disconnected from battery power with the ignition in the off position with the exception of all devices required to be powered as required by FMVSS and all memory functions.
o. All wiring shall be installed in a manner that does not stress the conductor, insulation, terminal ends, connectors, appliances or switches and provides enough slack at terminal ends to allow for the removal of light assemblies and other components for repair.
p. All unnecessary additional wire length shall be removed. The exception to this requirement is allowed when prescribed resistance is required in wire length by interconnected components and controls or a predestined wiring harness that cannot be easily or commonly shortened to the appropriate length. When this exception applies, excess length shall be neatly wrapped and secured to prevent damage or abrasion during use.
q. All electrical components and wiring shall be accessible through panels that are installed to facilitate easy removal and servicing.
r. All lights or powered components mounted on hinged covers or doors shall have a flex loop secured at both ends to allow for normal opening of cover without damaging wires
s. All wiring harnesses shall be in protected locations and kept at least 15 cm (6 in.) away from exhaust system components unless properly protected by a heat shielding.
t. All wiring harnesses shall be rigidly supported at distances not greater than 20-inches by one or more of the following to prevent sagging and movement which results in abrasion, chafing, pinching, snagging, or any other damage. All plastic materials shall be UV resistant and metal supports corrosion resistant:
    i. P-clamps– Clamps shall be corrosion resistant with a neoprene, Viton, or silicone insulator.
    ii. Saddle-supports – Formed metal support with smooth radius edges designed to carry no less than twice the weight of the harness it supports.
    iii. Cable clamps – Die-formed, radius-edge, corrosion-resistant metal cable clamps and can only be used in bus interior or engine compartment in areas not subject to wetting by rain or road spray. Plastic clamps can only be used in areas not exposed to heat that could exceed their working limits.
    iv. Button-cable ties – Harnesses supported by this method shall not exceed one half the designed weight of the tie. Cable ties must be UV-resistant and are acceptable only for bundling and should never be used to support wiring or wiring harness. Saddle-supports can incorporate tie wraps provided they are only used to prevent movement of the harness and in no way provide support or retention. The government will make final determination of rigid support acceptability if not one of the aforementioned.
u. All apertures in vehicle shall be grommeted for passing wiring through. Exception to this requirement:

i. If surface mount light fixture is centered over a hole in body skin no less than 3/4 inch in diameter and the hole has been die punched with a radius edge painted or coated completing a smooth edge incapable of abrading wire. No drilled or bored holes are acceptable for this exception.
ii. All body penetrations shall be sealed with an elastomeric sealing compound if grommeting alone cannot provide a tight seal against the entry of water, fumes, or dust into the passenger compartment.
iii. Electrical circuit board panels and components that are susceptible to accidental contact shall have a protective cover, shield, or enclosed/dedicated compartment to prevent accidental shorts that can result in injury, fire, or damage to the electrical system.

3.8.2 Alternator

a. The maximum alternator RPM rating shall not be exceeded at the top governed engine RPM.

b. The alternator shall be sized to carry the worst case load with transmission in gear, engine at idle as described herein:

1. Air Conditioner fans operating at maximum speed.

2. Air Conditioning Compressor clutch turned on.

3. All interior and exterior lights on.

4. Starting batteries at ¾ to full state of charge.

5. Alternator housing temperature at 200 degrees Fahrenheit or higher.

3.8.4 Batteries

a. Shall comply with FMCSR 393.30 and SAE J537
b. Batteries shall be mounted in a fully enclosed box on a self-draining roll-out tray made of stainless steel or other materials intrinsically resistant to damage or corrosion due to battery acid exposure and capable of supporting the full weight of the batteries without assistance.
c. Tray shall roll out to allow for complete visual inspection without removing battery(s) or battery cables. SINs 241N and 242N buses may use factory battery mounting provisions when aforementioned mounting and storage methods are not available to the product line.
d. A minimum of two, Group 31, maintenance-free batteries shall be furnished. Two OEM batteries are acceptable for SINs 241N and 242N when OEM mounting does not provide enough space for the Group 31 size battery.
e. The total reserve capacity rating and the total cold cranking ratings at O degrees F, both measured in accordance with SAE J537, shall be not less than that required by the engine manufacture for starting at zero degrees Fahrenheit.
f. All components within the battery compartment shall be protected from battery electrolyte and gas corrosion.
g. Only battery cables shall be connected to batteries.
h. Battery cables shall be routed through dedicated holes in battery box independent of each other and insulated from abrasion by grommets.
i. No spliced battery cables permitted. Cables shall be one-piece, stranded-conductor with protective covering (jacket) pigmented red to indicate positive and black to indicate negative and shall be run from the positive battery terminal of the leading battery directly to the starter solenoid.

3.8.3 Auxiliary Interior Power Receptacle

a. Shall be 12-volt powered with 10 amp minimum supply located in the driver's area.
b. Receptacle shape shall be similar to cigar lighter.

3.8.2 120-Volt Shore Power

a. All powered components requiring alternating current (ac) shall operate on 120-volt (v), 60 Hz. The power inlet connector shall be polarized and of the grounding type and shall be listed as suitable for the purpose. The power inlet connector shall be in a weatherproof housing with a spring-loaded and gasket sealed cover. The inlet connector shall be constructed and installed as to guard against inadvertent contact by persons with parts made live. The inlet connector shall be provided with a

grounding pole with a first to make and last to break contact. The supply equipment shall have sufficient rating to supply the load served.

b. All electrical and heating materials shall be listed or labeled by a Nationally Recognized Testing Laboratory - i.e.: UL/CSA/ETL and shall be installed in accordance with both the manufacturers' instructions and the National Electrical Code.
c. 120 Volt Shore Power is included with all powered optional components.

3.9 Fuel

3.9.3 Fuel System

a. Shall comply with FMCSR 393.65, FMCSR 393.67, and FMCSR 393.69

3.9.4 Fuel Tank(s)

a. When the tank filler cap is located behind body skin, a hinged access door shall be furnished.
b. Fuel fill(s) shall permit filling of tank(s) with only the nozzle end of the fuel handle.
c. Fuel type shall be indicated on the body skin immediately next to fill cap or on the inside face of the fuel fill door. The words "Ultra Low Sulfur Diesel" must be included when applicable.

3.10 Exterior

3.10.3 Exterior Mirrors

a. Exterior mirrors shall be corrosion proof stainless steel or composite plastic.
b. Mirror mounting hardware shall be made of corrosion proof materials or corrosion resistant materials if covered with plastic caps or plugs to prevent water moisture exposure.

3.10.4 License Plates

Front and rear license plate mounting provisions shall be furnished and comply with SAE J686.

3.10.5 Other Plates and Decals

Dealer identification decals and placards shall not be applied to vehicle exterior. Bus manufacturer decals are permitted so long as they do not interfere with other required or specified markings.

3.10.6 Stowage Compartment

Provision shall be made for lockable weatherproof stowage of tire changing tools and tire chains.

3.10.7 Exterior Paint

a. The standard exterior color of buses shall be manufacturer's bright white unless otherwise specified by option paragraph 3.25.

3.11 Doors and Windows

3.11.3 Passenger Doors

a. Shall comply with FMVSS 217.
b. Passenger door shall comply with ADA requirements.
c. The passenger entry door panel glazing material shall be laminated safety glass.

3.11.4 Keys

Exterior access panels to the engine compartment, battery compartment, doors, and storage compartments shall be keyed. All locks of similar design shall be keyed alike. Passenger entry and exit doors can be electronically or mechanically locked. Duplicate keys shall be furnished with each bus.

3.11.5 Steps

a. Shall comply with ADA guidelines.
b. The material chosen for the stepwell construction must be compatible to the surrounding body structure.
c. Square vertical leading edge of stepwell shall have a flat surface to provide a positive seal where doors contact stepwell or otherwise provide a positive seal for doors to prevent intrusion of water, dirt, wind, etc.

3.11.6 Emergency Exits

Shall comply with FMCSR 393.92

3.11.7 Passenger Windows

a. Provided with fingertip control, permitting ready opening and adjustment to various desired openings.
b. Rattle proof and, when closed, waterproof and windproof.
c. All windows shall be fitted with latching devices.

3.11.7.1 Tinting

a. Chassis manufacturer's tinted windshield shall be furnished.
b. Windows on the bus sides and in the rear door shall be tinted a neutral color, complementary to the bus exterior.
c. Windows over the destination signs shall not be tinted.

3.11.8 Windshield Defrosting

Shall comply with FMCSR 393.79, and SAE J381

3.11.9 Windshield Wiping and Washing

Shall comply with FMVSS 571.104, FMCSR 393.78, and SAE J198

3.12 Lights and Lighting

3.12.3 Exterior Lighting

a. All exterior lights on the bus shall comply with ADA 1192.31, FMCSR 393.11, 393.19, 393.22, 393.23, 393.24, 393.25, 393.26, ans SAE J589, J910.
b. All exterior lights shall be grounded with an insulated wire.
c. The ground lead shall not be secured by the lamp fixture mounting screws or hardware.
d. A terminal shall be attached to the wires by a simple mechanical crimp-type process that conforms to SAE J163.
e. Ground terminal lugs shall be solder plated, cadmium, tin or zinc plated.
f. Ground terminals should be clustered and shall be accessible for servicing.
g. A serrated paint-cutting terminal shall be utilized to make proper contact when used on painted surfaces.
h. When two wire lights are not commercially available, then ground return connections may be made to vehicle structure, frame or engine using the ground-return system (one wire systems per SAE J1292).
i. Lights and reflectors shall not be mounted on rub rails or vehicle bumpers unless recess protected.
j. All lights or powered components mounted on hinged covers or doors shall have a flex loop secured at both ends to allow for normal opening of cover without damaging wires.
k. Clearance lamps shall be low-profile design or body recessed to prevent damage from tree limbs. Armor shields shall not be supplied to protect lighting unless supplied commercially as standard equipment.
l. All buses shall be equipped with an auxiliary side marker/ turn signal combination lamp positioned below the passenger windows, nominally center of body or forward to the rear of the passenger door and driver's door. This lamp is not required on SINs 241N and 242N buses. All exterior housings of lamps, switches, electronic devices, and fixtures shall be corrosion resistant and weatherproofed.

3.12.4 Interior Lighting

a. Bus manufacturer's standard equipment.
b. Interior illumination shall meet or exceed requirements of ADA 1192.31.

c. Standard overhead interior lighting can be incandescent and shall be switched on when the entry door is opened and off with the door closed. The power circuit shall be limited to a maximum of 5 minutes on-time regardless of door position and no driver override shall be provided.
d. Minimum of one domelight over the driver area controlled independently of other interior lighting with a separate switch.

3.13 Electronics/Audio Visual

3.13.3 Radio

AM/FM Compact-Disc combination radio shall be furnished.
a. Minimum of two flush mount speakers shall be provided for every 3 rows of seats.

3.14 Interior

3.14.3 Air Conditioning System

a. The system capacity must be calculated as follows: (1) add together all evaporator capacities, (2) add together all condenser capacities, (3) add all compressor capacities. The BTUH capacity stated must be the lowest added value. Dash air conditioning system must be added to the passenger compartment lowest added value and considered part of the total Air Conditioning Output listed in the Minimums for each Standard Item.
b. The system shall be electronically controlled and have the capability of self diagnostics.
    1. Evaporator fan speed control and thermostat setting shall be digital and located in driver area.
    2. Minimum diagnostic outputs and system protections shall include high pressure, low pressure, low voltage, and clutch or unloader cycling.
c. Automatic tensioning compressor drive belt(s)
d. Receiver dryers shall have an easily to read, refrigerant moisture contamination sight glass.
e. All air shall pass through the evaporator filter system.
f. The chassis manufacturer's dash defroster system shall not be tapped into as part of the passenger compartment cooling.
g. Condensation drains shall be sufficient to evacuate all water accumulated in evaporator and prevent standing water.
h. All system components subject to corrosion from moisture shall be aluminum, copper, stainless steel, galvanized, or epoxy coated.
i. Condenser(s) can be skirt or roof mounted.
j. Evaporators can be free-blow, ducted, or a combination to attain an even air flow and temperature environment.

3.14.3.1 Air Conditioning Installation

a. System components shall not interfere with or adversely affect chassis OEM and bus body systems, components, function, reliability, and fit.
b. Installation of the evaporator(s) and ancillary equipment inside the vehicle shall be mounted away from the head impact zone as specified in FMVSS 222.
c. System shall be installed on the assembly line in accordance with the A/C manufacturer's documented instructions.
d. All lines, hoses, cables, wires, and harnesses shall be rigidly supported at distances not greater than 20-inches. Cable ties or straps of any kind shall not be used to support any lines or hoses. UV-resistant cable ties are acceptable only for bundling.
e. All line, hose, cable and wires shall pass-through grommeted holes.
f. All body penetrations shall be sealed with an elastomer sealing compound if grommeting alone cannot provide a tight seal against the entry of water, fumes, or dust into the passenger compartment.
g. All mounting hardware shall be stainless steel or other corrosion resistant materials.
h. No sheet metal screws shall be used in mounting equipment within contact of hoses.
i. the condenser.
j. System charging and monitoring access ports shall be located in areas where they will not be subject to damage from foreign objects while bus in motion. Ports shall be readily accessible without the need to remove components or permanently secured panels.

3.14.3.2 Air Conditioning Performance

The BTUH capacities shall be based upon the SAE individual component ratings including compressor, evaporator, condenser, and all ancillary refrigeration components.

a. The evaporator shall be tested at 80 degrees F dry bulb/ 67 degree F wet bulb in 37 degrees F saturated evaporating refrigerant temperature versus air entering the evaporator.
b. Condenser shall be tested at 95 degrees F with saturated refrigerant temperature as 45 degrees delta T.

The following test must be used to validate air-conditioning performance:

a. The bus must be heat soaked to 100 degree F for not less than two hours in a controlled environment prior to testing.
b. A relative humidity of 50% shall be maintained in the test chamber during testing.
c. The system must cool the interior of the bus from 100 degrees F to 70 degree F in no more than 30 minutes with the engine at an elevated RPM and all standard components of the bus and climate control system installed during the test.
d. Interior temperature must be measured at not less than three points inside the bus along the centerline and located four feet above the floor.
e. The minimum three points of measure shall be (1) three feet above the center pint of the horizontal driver seat surface, (2) at the longitudinal midpoint of the body, and (3) three feet forward of the rear emergency door.
f. The temperature probes inside the bus must be within +/- 3 degrees F of the average temperature at the conclusion of the test except for the Forward Control Front Engine buses. The probe at the driver area will be considered in compliance when the temperature drop from one hundred is not less than 20 degrees to allow for engine compartment heat emission.

3.14.4 Heating

Passenger compartment heating shall be provided using heat exchangers integrated into the air conditioning system or by radiant heaters located along the interior walls.

3.14.5 Driver's Area

Driver's area shall include as a minimum:

a. Shall comply with FMCSR 393.51
b. All switches and controls shall be marked with easily read identifiers
c. Ignition switch
d. Tilt steering wheel/column
e. Cruise control
f. Engine coolant temperature indicating gauge
g. Engine coolant temperature overheat warning light
h. Engine oil pressure indicating gauge
i. Engine oil low pressure warning light
j. Fuel level indicating gauge
k. Water-in-fuel warning light
l. Transmission selector

3.14.6 Interior Mirror

Minimum of one non-glare type mirror shall be mounted inside the bus with a reflective surface area of not less than 40 square inches with rounded corners. Driver shall be able to view complete passenger compartment through interior mirror.

3.15 Floor

3.15.3 Floor Construction

a. Construction methods that employ plywood as a structural component of the floor shall use minimum 5/8" nominal thickness plywood. All wood and wood product ends shall be sealed and securely fastened to the metal stringers prior to being covered with matting.
b. All floor fasteners shall be of corrosion resistant materials.
c. All surfaces exposed to weather shall be coated with a waterproofing substance such as undercoating or epoxy surfacers.

3.15.4 Floor Coverings

Floor covering shall be permanently bonded to the sub-floor and shall be impervious to temperature changes. Bonding or adhesive material shall be waterproof, including joints and seams, and shall be of the type recommended by the manufacturer of the floor covering material.

3.15.5 Wheelhousings

Wheelhousings which protrude into the passenger compartment shall be covered with the same matting used under the seats or a material equal in durability as the flooring material. The wheelhouse shall be designed in shape and strength so it may be used as a footrest.

3.16 Walls

Standard interior walls shall comply with FMVSS 571.302

3.17 Ceiling

Standard ceiling panels shall comply with FMVSS 571.302.

3.18 Seats

3.18.3 Driver's Seat

Bus manufacturer's standard cloth seat shall be furnished as standard with 3-point safety belt system.

3.18.4 Passenger Seats

a. Standard passenger seating shall grey vinyl.
b. Each seat shall be equipped with a retractable safety belt with the retractor in a fixed position below the seat cushion.
c. Seating and leg room requirements –
    i. Hip-to-knee room measured from the front of one seat back horizontally across the highest part of the seat to the seat or panel immediately in front, shall be no less than 27-inches. At all seating positions in paired forward facing seats immediately behind other seating positions hip-to-knee room shall be no less than 27-inches.
    ii. Foot room, measured at the floor forward from a point vertically below the front of the seat cushion to an obstruction such as the driver barrier, shall be no less than 12 inches. Seats immediately behind the wheel housings may have foot room reduced, provided the wheelhouse is shaped so that it may be used as a footrest.

3.19 Safety

3.19.3 Bumpers

a. Front and rear bumpers shall be manufacturer's standard.
b. Bumpers shall not contact body
c. Bumpers shall be painted, anodized, or e-coated on all sides prior to installation.
d. Back surface of bumper can be epoxy primed in the absence of top coating if not visible during normal operation.

3.19.4 Stanchions, Barriers, and Grab Rails

a. Barrier panels shall be furnished between the stepwell and the passenger seats and immediately behind the driver's area. A barrier is not required on the curb side if the first seat is a single and the door frame acts as a barrier by preventing the passenger from entering the stepwell. A barrier is not required on the street side of buses under 22-feet in length when all of the passenger seats are equipped with seat belts. ADA guidelines must be maintained in the entrance area regardless of design and throughout the bus when a handicap package is specified.
b. The installation of the stanchion and barrier behind the driver's area shall not interfere with the full reward motion of the driver's seat.
c. ADA compliant hand rails required at the front and rear of the passenger entrance shall be arranged to safely assist passengers entering or leaving the bus.
d. All stanchions and grab rails shall be ADA compliant stainless steel, epoxy coated, or padded injection-foam covered tubing. If padded tubing is used, the foam must meet all FMVSS requirements and be vandal resistant transit quality material. Opaque barriers shall be covered with the same material as the wall covering unless formed from injection molded plastic.

e. All stanchions, barriers, and grab rails shall be attached to tapping plates in walls, floor and ceiling if no structural members are available.

3.19.5 Emergency Equipment

a. Shall comply with FMCSR 393.95
b. Minimum of 10-unit type first-aid kit shall be furnished.

3.20 Suspension

3.20.3 Gross Vehicle Weight Ratings

a. Vehicle GVWR's shall be the chassis manufacturer's published ratings.
b. Component and vehicular ratings shall not be increased to meet the requirements of this Standard.
c. When published ratings are not available, verification of rating shall be made available upon request by the Government.

3.20.4 Rear Suspension

a. Manufacturers Standard
b. Minimum of one shock absorber per wheel end

3.21 Tires and Wheels

3.21.3 Tires

Tubeless, steel belted radial tires with highway tread and a minimum speed rating of 75 mph.

3.21.4 Wheels

a. Wheel/Tire size and ply rating shall be the same for all wheels/tires.
b. Shall be manufacturer's standard color

3.22 Miscellaneous

3.22.3 Servicing and Adjusting

a. Prior to acceptance of the vehicle by the Government, the Contractor shall inspect, service and adjust each vehicle for operational use in accordance with an approved manufacturer's prescribed pre-delivery servicing form.
b. The areas to be inspected and adjusted, if necessary, shall include as a minimum:
    i. Alignment of headlights.
    ii. All engine adjustments.
    iii. Electrical and brake systems.
    iv. Filling and charging of batteries.
    v. Alignment of front wheels.
    vi. Inflation of all tires.
    vii. Complete lubrication of body, chassis, engine and running gear with grade of lubricants recommended for the ambient air temperature at the delivery point.
    viii. Servicing of the cooling system with a solution of ethylene glycol type antifreeze and water in equal parts by volume.
    ix. Servicing of the windshield washer reservoir with water and appropriate additives.

3.23 Reserved

3.24 Reserved

3.25 Options

See Appendix A

3.26 General Workmanship Rejection Standards

The following shall be reason for rejection:

a. A rough, sharp or unfinished edge, burrs, seams, corners, joints, cracks, and dents.
b. Panels, non-uniform with edges that are not radiused, beveled, etc.
c. Final stage manufacturer's paint shall be free of dirt and not have runs, sags, orange peel, "fish eyes", blisters, bubbles, chips, scratches, cracks, gouges, over-spray, peeling, chemical stains, water spots, and any other imperfection or lack of complete coverage.
d. Body panels or components that are uneven, unsealed, or contain cracks, dents or have voids.
e. Misalignment of: body fasteners, glass, viewing panels, light housings, items with large or uneven gaps or spacing and doors, body panels, and hinged panels.
f. Improper body design or interface with the chassis that could cause injury during normal use or maintenance.
g. Improperly fabricated, routed, supported or secured hoses, wires, wiring harnesses and mechanical controls.
h. Loose, vibrating, abrading body parts, components or subassemblies.
i. Interference of chassis components, body parts, doors, etc.
j. Leaks of any gas or fluid lines, (AC, coolant, oil, etc.)
k. Sagging, non-form fitting upholstery or padding.
l. Incomplete or incorrect application of rust proofing/undercoating.
m. Inappropriate or incorrect use of hardware, fasteners, components, or methods of construction.
n. Incomplete or improper welding, riveting. Welded, bolted and riveted construction utilized shall be in accordance with the highest standards of industry using certified welders.
o. Improper body design or interface with the chassis substructure that could cause injury during normal use or maintenance, and which fail to provide access to perform routine or mandatory repairs or maintenance on vehicle electrical and mechanical systems. In addition, the improper combination of options by their combination and installation are inherently incompatible with regard to function or safety.
p. Visual deformities and equipment malfunctions.
q. Lack of uniformity and symmetry where applicable.
r. Unsealed appurtenances or other body components, gaskets, etc.
s. All exterior surfaces shall be smooth and free of wrinkles and dents.
t. Water leaks
u. In addition, any deviation from the requirements or any other item, whether or not stipulated herein, that affects form, fit, function, durability, reliability, safety, performance or appearance shall be cause for rejection.

3.27 Identification of Vehicles

The Contractor must show the applicable GSA Purchase Order number on the carrier's freight bill or other document used in the delivery of vehicles awarded f.o.b. destination under this solicitation. This information is essential to the consignee for identification purposes. Vehicles will not be accepted by the Government without this identifying number.

3.28 State of Origin or Bill of Sale

a. A Manufacturer's Statement of Origin or Bill of Sale showing the applicable purchase order number is required for each bus procured under this Standard. The document shall be forwarded to the Consignee Mailing Address shown on the Motor Vehicle Delivery Order (MVDO) prior to shipment.
b. Vehicle title/registration and safety/emission tests are the responsibility of the requisitioning agency.

3.29 Warranty Requirements

a. Warranties in this document are in addition to any statutory remedies or warranties imposed on the Contractor. Consistent with this requirement, the Contractor shall warrant and guarantee to the Government each complete bus vehicle and specific subsystems and components according to the following provisions.
b. The Contractor shall, be fully responsible for warranty administration for any and all warranty periods.
c. The Contractor shall have an authorized service representative assigned to assist the Government warranty administration.

3.29.3 Complete Bus Vehicle

The Contractor shall warranty and guarantee the bus for the same time and mileage durations as publically published and furnished to non-Government buyers. The Contractor shall be responsible for all defects, parts failure or malfunction due to design,

construction or installation errors, defective workmanship, and missing or incorrect parts. The warranty period shall begin upon delivery and acceptance at the final delivery point and exclusive of accumulated drive away mileage. The Contractor shall be fully responsible to ensure the bus is delivered free of defects and in ready of use condition at the time of delivery. If the vehicle is found to have deficiencies the Contractor will resolve those prior to final delivery

3.29.4 Subsystem and Components

If the Contractor receives from any supplier or subcontractor additional warranty coverage on the whole or any component of the vehicle, in the form of time and/or mileage including any pro rata arrangements, or the Contractor generally extends to his commercial customers a greater or extended warranty coverage, including anti-corrosion, powertrain, or emission, the Government shall receive corresponding warranty benefits if warranted by their manufacturer for a period longer than that required by the contract.

3.30 Exceptions to Warranty

The warranty shall not apply to scheduled maintenance items and items furnished by the Government, except insofar as such equipment may be damaged by the failure of a part or component for which the contractor is responsible.

3.31 Detection of Defects

If the Government detects a defect within the warranty periods, it shall promptly notify the Contractor's representative. Within 5 working days after receipt of notification, the Contractor's representative shall either agree that the defect is in fact covered by warranty, or reserve judgment until the subsystem or component is inspected by the Contractor's representative or is removed and examined at Government property or at the Contractor's plant. At that time the status of warranty coverage on the subsystem or component shall be mutually resolved between the Government and the Contractor. Work necessary to affect the repairs shall commence within 10 working days after receipt of notification by the Contractor. If within 8 working days of notification to Contractor, the Government and Contractor are unable to agree whether a defect is covered by the warranty provisions, the Government reserves the right to commence repairs and seek reimbursement through any legally available means.

3.32 Scope of Warranty Repairs

When warranty repairs are required, the Government and the Contractor's representative shall agree within 5 working days after notification of a detected defect on the most appropriate course for the repairs and the exact scope of the repairs to be performed under the warranty. If no agreement is obtained within the 5-day period, the Government reserves the right to commence the repairs.

3.33 Fleet Defects

A fleet defect is defined as cumulative failures of any kind in the same components in the same or similar application where such items are covered by the warranty and such failures occur within the warranty period in at least 10 percent of the vehicles delivered under this contract. The Government shall have final approval of corrections or changes under these conditions.

3.34 Intended Use

The Government in transporting personnel or cargo intends the vehicles covered by this Standard for general non-tactical use. Intended operation is on paved roadways with some semi-improved road surface use.

3.35 Repair Parts and Service

Continuous operation of the buses is of utmost importance. It is necessary that the Contractor be in a position to render prompt service by furnishing a list of branch offices or agencies where complete stocks of repair parts are maintained and can be secured within the time limits established in this section after ordering by part number from the manufacturer’s part books. Parts such as body panels, window assemblies excluding glass panels and windshields, doors, seats, seat covers, engines, and transmissions must be shipped within 30 days from order. All other parts must be shipped within 10 days from order. Parts shall be available for a period not less than seven years from the date of delivery.

3.36 Domestic Use

When vehicles are used within the fifty States of the United States, the District of Columbia, Puerto Rico, American Samoa, Guam, The Republic of Palau, the Federated States of Micronesia, the Commonwealth of the Northern Mariana Islands, the Republic of

the Marshall Islands , and the Virgin Islands, the warranty shall include the furnishing, without cost to the Government (FOB contractors nearest dealer or branch to vehicle's location or station), of new parts and assemblies to replace any that failed or malfunctioned within the warranty period. In addition, when the Government elects to have the work performed at the contractor's plant, branch, dealership, or with the contractor's approval (i) to correct the supplies itself; or (ii) to have them corrected by a commercial garage facility; the cost of the labor involved in the replacement of the failed or malfunctioned parts or assemblies shall be borne by the contractor.

3.37 Foreign Use

When vehicles are used outside the fifty States of the United States, the District of Columbia, Puerto Rico, and the Virgin Islands, the warranty shall include the furnishing of new parts or assemblies to replace any returned to the Contractor by the Government that failed or malfunctioned within the warranty period. The replacement parts or assemblies shall be delivered by the Contractor to the port of embarkation in the United States operator may locate and read it easily.

4 Quality Assurance Provisions

4.8 Verification

The Contractor shall verify compliance to the requirements herein prior to first vehicle production release, based on the following verification matrix. Verification may be in the form of drawings, instructions, test results, vendor documentation, certifications, or design analytical data. The Contractor shall not proceed with production before receiving agreement from the Government that verification of compliance is satisfactory. Acceptance of designs by the Government does not relieve the Contractor from the responsibility to meet all the requirements and specifications herein, whether reviewed by the Government or not. It shall be the Contractor's responsibility to assure all production documentation results in the production of vehicles comply with these requirements and specifications.

PWO Provide with offer

FVI First Vehicle Inspection

The type of verification to be submitted for acceptance is listed below:

COC Confirmation of Compliance- Validation by analysis or production builds documentation to be performed by the Contractor and submitted for acceptance by the Government. Verification may be in the form of analysis summaries, build documentation, purchase orders, or similar written documentation.

ET Engineering Test- to be performed by the Contractor and results accepted by the Government. Engineering tests are tests resulting in data output from engineering instruments used to take measurements of parameters such as temperatures, sound levels, etc. Verification may be in the form of an engineering report, test result sheet, or test summary with results documented.

Verification Matrix

SECTION NO.	REQUIREMENT TO BE VERIFIED	TYPE OF VERIFICATION	WHEN VERIFICATION REQUIRED
4.2.3	Water Spray Test Plans	ET	PWO
3.14.1 and 3.14.1.2	Air conditioning and heating system components, ratings and performance test results ratings	COC	PWO

4.3	TMC RP 803 Inspection Pre-Service Inspection	COC	FVI
4.2.2	TMC RP 803 Road Test	COC	FVI
3.1.18, 3.1.19, 3.17.2	Layout drawings and weight calculations for each Standard Item Number with minimum required equipment and configuration	COC	PWO
Various	Exceptions taken, documentation to validate "or equal" submissions	COC	PWO

4.9 First Production Vehicle Inspection

a. The first vehicle produced under this Standard for each Standard Item Number shall be inspected by the Contractor at his plant under the direction and in the presence of Government representatives.
b. The purpose of the inspection shall be to determine vehicle conformance with the contract.
c. Acceptance of the first production vehicle shall not constitute a waiver by the Government of its rights under the provisions of the contract.

4.9.3 Vehicle Weight

The first production vehicle shall be weighed to determine the curb weight and distribution of the curb weight on the front and rear axles.

4.9.4 Road Test

Vehicle shall be examined and road tested by the Contractor, less payload, on highways and roads for a distance of not less than 10 miles to assure that the vehicle will operate in accordance with the contractual requirements.

4.9.5 Water Spray Test

a. All buses must be water tested. Bus shall be subjected to a water spray test for approximately 15 minutes.
b. The frequency of testing can be reduced and the process modified at the discretion of the GSA Industrial Operations Analyst based on a history of previous successful tests.

c. There shall be no water leakage into the bus interior or exterior compartments with the following exceptions:

    1. A minimal amount of water can enter at the passenger entry and exit door seals so long as there is a designed path to move the water out of the bus without the door having to be opened and the water shall no collect or puddle at any point. The bottom step shall be the only one location in the well area to get wet when water does enter during normal operation of the bus.

    2. A minimal amount of water can enter at any window that is not a fixed-position, non-vented type. Water that enters from a slider rail or at a glass pane joint must be routed through a deliberately designed exit path and not puddle or allow the passenger compartment to get wet. Water that has entered must not flow across glass surfaces at any time.

d. Testing shall be conducted in accordance with the bus manufacturer's standard testing procedures.
e. Evidence of water leakage shall be cause for rejection until leaks are corrected.

4.9.6 Failure

Failure of the first production vehicle to meet requirements of the contract shall be cause for the Government to refuse acceptance of all vehicles under contract until corrective action has been taken.

4.10 Inspection of Production Vehicles

a. The Contractor's inspection system shall at a minimum assure that the vehicle conforms to the physical and dimensional requirements and is capable of meeting performance requirements specified herein.

b. For each vehicle under contract, the Contractor shall make available to the Government, at the point of final acceptance records acceptable to the Government indicating that the servicing, adjusting, and water spray test have been accomplished.

4.10.3 Rejection

Deficiencies of workmanship and nonconformance to any requirements of the contract shall be cause for rejection until corrective action has been taken.

5 Preparation

5.8 Vehicle Processing

The vehicle shall be processed for shipment, from the manufacturer's plant to the initial receiving activity, in accordance with the manufacturer's standard commercial practice. Before final delivery to destination address the bus will be inspected and cleaned by the nearest delivery center to ensure all items which may have become loose, leaks, rattles, etc are repaired or adjusted prior to acceptance at the destination address. All fluids and fuel tank(s) shall be full at time of final delivery. The in-transit mileage accumulation on vehicles driven from the assembly plant to the receiving location shall be recorded and the start of warranty coverage adjusted to begin once the bus reaches the destination address.

6 Notes

6.8 Ordering Data

This standard reflects information on commercially available buses which have been segregated into classes to provide for competitive acquisition. This information is reflected as side-by-side model comparisons on the General Services Administration's website. Purchasers must use the AUTOCHOICE web site accessible at: www.gsa.gov/automotive to select vehicles, colors, and delivery options.

6.9 Deviation from Federal Standard

An Agency requesting a bus or equipment not identified in AutoChoice should consult with the Contract Specialist for the assigned commodity to determine availability. All requests for systems and equipment not identified in the Standard are reviewed by GSA Engineering to determine the appropriate application.

6.10 Changes and Notices

Requests for changes or additions to the Federal Vehicle Standard, along with rationale, should be sent to the General Services Administration, GSA Automotive Suite 10000, 2200 Crystal Drive, Arlington, VA 22202, for appropriate action. The requesting agency will be informed of the action taken.

MILITARY REVIEW ACTIVITIES:

Air force - 84-99

Army – AT – CE

Navy – YD – MC

Defense Logistics Agency

CIVIL COORDINATION & PREPARING ACTIVITY:

GSA-FSS-FFAE

CIVIL AGENCY REVIEWING ACTIVITIES:

Agriculture-FS-ARS-NRCS-APHIS

DC Government

Interior - BLM-Reclamation

State - AID

Transportation – CG

Treasury – IRS – Sec. Svc. – Customs – ATF

Energy – BPA

Commerce – NOAA

Justice – INS, FBI

EPA, TVA, VA

Army – Air Force Exchange Service