



South Central Area Transit Service

South Central Tennessee
Development District
(SCTDD)

RFP
for
Vintage Trolley Bus

September 27, 2016

South Central TN Development District
101 Sam Watkins Blvd
Mount Pleasant, TN 38474
931-379-2907

Submissions shall be returned : November 30, 2016 by 10:00am
Questions can be submitted in writing (email is acceptable) to:
tfrazier@sctdd.org

DETAILED SPECIFICATIONS
ONE-COMPARTMENT VINTAGE TROLLEY BUS

1. GENERAL

- a. The design of the vehicle shall simulate as near as possible a one-compartment vintage tram with the compartment enclosed. The Contractor shall incorporate in this coach the latest technological advancements in the art of building motor coaches to achieve maximum service life and superior attractiveness of appearance. All materials used in the construction of the coach and in all its parts shall conform to ASTM, S.A.E. or similar association published standards. All materials and workmanship shall be first quality.
- b. The coach must meet all applicable Federal and Tennessee motor vehicle laws in effect at the time the coaches are manufactured. All coaches shall be identical in components and design unless specified otherwise herein.
- c. The body shall be built with suitable and easily accessible compartments provided for all apparatus, sound-deadening insulation wherever needed, and all operating devices so mounted as to reduce and keep all noise and vibrations to an absolute minimum, inside and outside the coach.
- d. The tram-type vehicle furnished under these specifications shall comply with the following general dimensions:

Width	94” min, 102” max.
Interior Width	88” Minimum
Height overall	134” Maximum
Seating Capacity	18 – 20 Passengers
Length	24’ min.- 28’max
Wheelbase	158” min
Floor	Level except for entrance steps
Ground Clearance	9 ¾” Minimum at step and 15” at the axle
Chassis	19,000 GVW minimum

- e. All exposed surfaces and edges inside and outside the coach shall be smooth, free from burrs and other projections, and shall be neatly finished with a minimum of dimple effect in the riveting process.
- f. Service life of vehicle should be seven (7) years or two hundred fifty thousand (250,000) miles.

2. AXLES

- a. Heavy-duty rear axle shall be provided. It shall be compatible with an automatic transmission. Axle gear ratio shall be such as to provide at least sixty-five (65) miles per hour on a zero percent grade, at governed engine RPM.

Front axle capacity	9,000 lbs minimum
---------------------	-------------------

Rear axle capacity	15,000 lbs minimum
--------------------	--------------------

- b. Drain and filler plugs shall be of the magnetic type, with hexagon heads.
- c. Propeller shaft shall be guarded.
- d. The front axle shall be designed with proper wheel and axle geometry so that imperfect front axle operation will be minimized in service. The axle shall be of ample capacity to carry the load imposed on it as set forth in this section. Provisions shall be made for caster adjustment without removing the torque rods, if used.
- e. The combined front and rear axle capacities, as rated by the axle manufacturers, must equal or exceed the total “wet” curb weight of the coach, plus a full seated load, plus standing passenger load of fifty percent (50%) of seated passenger load, plus operator, as one hundred fifty (150) pounds per person.

3. SUSPENSION

Suspension system shall consist of Air ride and be of proper design and suitable capacity, capable of furnishing a comfortable ride. Heavy-duty shock absorbers shall be provided at front and rear. Front leaf spring system will be considered if front air suspension is not available.

4. STEERING

Steering system shall be hydraulic powered with sufficient capacity to provide ease of steering and full maneuverability of vehicle loads.

5. ELECTRICAL SYSTEM

- a. The electrical system shall be 12-volts. All components, appurtenances, wiring, etc., shall be of the same capacity.
- b. The alternator shall be 200 amps. (minimum) with matching voltage regulator, 270amps preferred.
- c. Battery(s) shall be conveniently located and readily accessible for servicing. A 1200-ampere 8D heavy-duty battery shall be provided or dual 1231 pmf/1275CCA batteries.
 1. Trolley bus shall have a battery disconnect switch located in an easily accessible position in the battery compartment.
- d. Heavy-duty 12-volt horns shall be furnished and installed so as to be protected from wheel wash.
- e. Passenger signal shall be pull cord type, located on both sides of the coach. Signal to be located in such a position that it can be conveniently reached by a seated passenger. Cord guides shall be approximately 30 inches apart, and should have a cord stop near guide nearest chime, to prevent cord from pulling loose from chime. The signal itself shall be a single tone chime, located near the driver, with a driver operated shut-off switch.
- f. Main battery starting cables shall be protected from the weather and properly fastened. The main wiring harness shall be loom covered and installed inside the coach body.
- g. All wiring covering shall be flame, abrasion, solvent and petroleum product resistant.
- h. All engine compartment wiring shall have cross-linked polyethylene insulation.
- i. Light fixture wiring shall be high temperature type.
- j. Each bus shall be equipped with a static strap.

6. LIGHTING AND SAFETY EQUIPMENT

- a. Interior lighting shall be by incandescent forty (40) watt (or greater) bulbs, such as to provide adequate light for reading at each seated position and be controlled by the driver by a separate switch.
- b. Step lights shall be installed in the doublewide stepwell, suitably mounted on each side of the stepwell so that the entire stepwell and not less than two feet off the ground area immediately outside of door is well illuminated. Door stepwell lights shall be automatically on only when door is open.
- c. Two remote tail, turn signal, brake light on each rear upper corner of the body. Lights shall be modern LED style.
- d. Each vehicle will come equipped with all lighting required by Federal and State of Tennessee regulations.
- e. One five-pound UL approved fire extinguisher mounted readily accessible to driver.

7. ENGINE

- a. Engine shall be a proper design produced by a reputable and recognized engine manufacturer with readily available source of replacement engine, or parts. Engine shall be of sufficient horsepower and torque over the range of engine speeds to give maximum performance.
- b. Engine shall be a Cummins 6.7 L Turbo Diesel six (6) cylinder or approved equal with a minimum 220 horsepower, and shall have suitable air, fuel, and oil filters. Cummins engine is preferred.
- c. Engine shall comply with all Federal and Tennessee laws and regulations with regard to air and noise pollution that are in effect on the date of manufacture.
- d. The engine and components are to be arranged and mounted so as to provide convenient access for servicing the engine and all of its accessories. Also clearance and accessibility for removal of the accessories and the engine itself.
- e. Engine compartment shall be insulated as much as possible to reduce heat to the driver and noise level. Insulation that is glued or affixed to the inside of the engine cover will have metal strips or a configuration of wire cage that would prevent any chance of the insulation from coming detached and falling onto the engine. The engine cover will have handles on each side for use by mechanics to access the engine area. The noise

level generated by the engine, air intake, and other vehicle systems shall not exceed eighty-four (84) dba at any point thirty (30) inches above the floor over any seat at full governed RPM, and with all engine-driven accessories in operation.

- f. An additional Modine automatic hydraulic transmission fluid heat exchanger or approved equal shall be furnished.
 - 1. One remote spin-on transmission filter (Fram HP-1 preferred).
 - 2. All coolers and tanks and cores shall be mounted to prevent damage from vibration.
- g. The radiator system shall be of sufficient size to accommodate stop and go operation, including long periods of idling. Coolant shall be protected to minus thirty (30) degrees Fahrenheit with permanent type antifreeze.
- h. Engine oil cooler remote mounted of size sufficient to cool oil in idle position
- i. Optional engine noise covers to be supplied.
- j. **The engine shall come with the longest available manufacturer's extended warranty.**

8. TRANSMISSION

The automatic transmission shall be an Allison 2200 PTS Automatic or approved equal, compatible with the approved engine. Automatic shifting of gears must be completed smoothly without jerking the bus. Rear axle shall be compatible with the engine and transmission.

The transmission shall come with the manufacturer's longest available extended warranty.

9. HEATERS, DEFROSTER, AND VENTILATION/AIRCONDITIONING

- a. The heating equipment shall be thermostatically and/or manually controlled to provide optimum comfort to the passengers and operator in weather conditions of outside temperature down to ten (10) degrees Fahrenheit.
- b. Driver controlled switches shall control heating and airflow. Heater shall be sufficient to maintain eighty (80) degrees Fahrenheit throughout the bus.

- c. Dual front and rear air conditioning (Carrier system preferred) capable of cooling bus to 65 degrees. Dual compressors sharing no common lines (pressure or return) inside reusable evaporator filters. Readily accessible for ease of service.
- d. Coach shall be equipped with a front and rear heater and defroster and booster pump with a combined output of eighty thousand (80,000) BTU's minimum. Front heater to be equipped with individual duct and control, or heater, to driver's compartment. The defroster shall provide ample air to keep windshields clear at all times of ice on the outside and fogging on the inside. Should have air deflectors to force air upwards.
- e. All hoses carrying coolant for engine and heater shall be silicone type.

10. MIRRORS

- a. Each coach shall be equipped with two (2) 7" X 16" exterior rear view mirrors, one to be on the left front corner post and the other on the right front corner post. They shall be made with a chrome, anodized aluminum, or stainless steel clad back frame and bracket, and be retractable to prevent damage by wash machine brushes. Adjustable mirror arm to be of adequate length to provide rearward vision. Right front mirror shall be mounted to prevent contact with pedestrians or boarding passengers. Each mirror shall have a four (4) inch round convex mirror permanently attached to the frame of the mirror in the lowest inside position.
- b. A 4" X 16" rectangular inside rear view mirror shall be mounted in front and slightly over the driver's head.

11. STANCHIONS

- . Brushed stainless steel will be considered.

12. SPLASH APRONS

Splash aprons made of not less than ¼" rubber, fiber reinforced shall be provided on rear of each wheel housing projecting downward to a point within approximately 4" of ground with coach loaded. Aprons shall have a maximum width compatible with the under structure of the vehicle.

13. FUEL SYSTEM

- a. The UL approved fuel tank shall be a minimum of sixty (60) gallon capacity and be rigidly supported and properly baffled to prevent surging. Fuel tank shall be removable for replacement or repair.
- b. Filler mechanism shall be of approved design, in compliance with applicable safety regulations on driver side.
- c. An appropriate fuel filter shall be provided.

14. EXHAUST SYSTEM

The exhaust pipe shall terminate just ahead of the left hand rear corner of the vehicle exhausting downward to the street and shall be so constructed that it will not cause undue backpressure. Flexible tubing will not be permitted in exhaust system. Adequate size aluminized steel long life muffler shall be used and system shall meet Federal regulations for exterior noise levels. Flexible tubing will be allowed for vibration dampening only.

15. BRAKES

- a. Brakes shall be Bosch hydraulic pin-slide disc type, front & rear Wabco hydraulic four-channel ABS.
- b. Parking brakes to be rear-wheel or transmission mounted.

16. WHEELS AND TIRES

- a. Contractor to include **Michelin XZE 245/70R19.5 16-ply tires** in vehicle price.
- b. All wheels will be **Alcoa aluminum wheels. (Dura Bright finish with XBR technology if available in selected wheel size)**
- c. All tires and wheels to be interchangeable, front to rear.

17. BODY CONSTRUCTION

- a. Chassis and body frame shall be all steel, adequately reinforced at all joints where stress concentration may occur.
- b. Before assembly all metal parts shall be treated with thorough multiple stage anti-corrosion treatment, and primer paints
- c. All metal nuts, bolts, clips, washers, clamps, rivets and like parts shall be zinc or cadmium plated, or phosphate coated, to prevent corrosion. Where wood and wood are placed together both shall be coated with Tuff-Cote, Neoprene, liquid polyurethane or other appropriate sealing compound.
- d. Body panels shall be minimum 0.063-inch thick aluminum, or minimum 20-gauge steel. Lower skirt panels below rub rail shall be removable separate from body panels for repair or replacement.
- e. All exterior roof and body panels shall be riveted in place: sheet metal screws, welding, or glue shall not be acceptable. Riveting shall be done with care to avoid dimple effect to sheet metal. Rivets shall be treated to accept paint.
- f. All exterior joints and seams shall be protected by the application of caulking of zinc-chromate type, or butyl tape. Body shall be thoroughly water tested to prevent leakage: corrective caulking shall be applied on dry surfaces to prevent recurrence for the life of the coach.
- g. Exterior body areas such as corner caps and trim may not be of reinforced fiberglass. All light fixtures on exterior shall be fastened with screws to frame members or with rivets to body panels: headlights must be supported by adequate frame support or reinforced body panels.
- h. Vehicles shall be undercoated to prevent corrosion and with fire-retardant material. Do not coat wiring harness because SCTDD of Mt. Pleasant, TN will refuse delivery.
- i. Wheelhouse shall be stainless steel, reinforced fiberglass or other material, with underside protection from rear wheel tire. Wheelhouse surface on inside of coach shall be stainless steel, or shall be painted to match the lower wall area.
- j. Rear wheel housing shall be well ventilated to prevent the heat from affecting the brake system.

18. INSULATION

- a. Inside walls and ceiling shall be insulated with materials providing a R-factor of 0.24 in walls and 0.26 to 0.27 in ceiling, at 75 degrees Fahrenheit.
- b. Engine compartment shall be insulated to prevent transmission of noise, exhaust odor, smoke or heat to the interior of the coach. Specific attention should be paid to insulating the driver's area from engine heat. No interior body surface accessible to a passenger or in the immediate vicinity of the driver shall attain a temperature greater than 80 degrees Fahrenheit generated by the engine. If access to the engine is provided from inside the coach, it shall be properly sealed and soundly constructed to retain its shape and securing method, and shall not require removal of any secured fixtures (grab rails, stanchions, heater assemblies, etc.) inside the coach except seat cover must be removable to facilitate removal of engine assembly.
- c. All insulation shall not deteriorate from heat, water, road shock, or age: must be fire retardant: and must be self-extinguishing within one minute after removal of a propagating flame. Insulation shall not contain polyvinyl chloride or any other substance, which emits poisonous gases or dense smoke when subjected to flame or temperatures over 105 degrees Fahrenheit.

19. INTERIOR TRIM

- a. Interior of coach to be finished in wood, or wood pattern vinyl over metal with trim strips of matching color to cover panel joints or one-piece interior plastic colors to be approved. If vintage style oak slat seating is to be provided, then vinyl seat cushions for full back and bottom shall be provided
- b. Sidewalls between windows to be paneled with wood, or 1/10" high pressure laminated plastic panels of matching wood color or same as above.
- c. A metal sided storage box will be installed in the right front corner of the trolley interior for storage of items. The top of the box will be of oak wood. The dimensions of the box will be approximately 16" high, 34" long, and 14" wide.

20. ROOF

Framing of roof to be of hat section steel carling and special formed rail around roof perimeter. Lantern type roof will be fabricated with steel basic framing insulated and covered with .040" aluminum.

21. FLOOR AND STEPS

- a. Floor shall be marine plywood minimum $\frac{3}{4}$ inch thick, 5-ply resin waterproof bond laminated fir plywood, grade C-C plugged or better, treated to resist decomposition.
- b. Floor shall be level throughout, except wheel housings. Minimum headroom at aisle shall be 78 inches.
- c. Floor covering shall be a ribbed $\frac{5}{16}$ inch thick rubber-like material on step threads, in the fare box area and under driver: ribbed $\frac{3}{16}$ inch thick rubber-like material in the center aisle of coach. The floor covering under the seats will be $\frac{1}{8}$ -inch smooth rubber-like floor covering. (**Color of flooring chosen after bid award.**) Yellow Hypalon step nosing shall be provided. All joints in floor covering shall be butt-cut type, and ribs shall be properly aligned to prevent gaps or edges and to facilitate cleaning. Must meet ADA requirements.
- d. Step wells shall be reinforced to prevent deflection. Steps inside the vehicle must be of equal rise, each rise not to exceed 8 inches; step treads depth minimum 12 inches.

22. EXTERIOR PAINT & TRIM

- a. Metal surfaces to be painted will be properly cleaned, etched, and primed as appropriate for the paint used prior to the application of the paint to ensure a proper bond. All exterior paint is to be an approved long lasting "wet look" type paint. Two tone color scheme, exact colors to be specified upon winning bid, and matching styled window etchings.
- b. Paint shall be applied smoothly and evenly with the finished surface free of dirt, runs, orange peel, and other imperfections.
- c. All exterior surfaces will be impervious to diesel fuel, gasoline, and other commercial cleaning agents.
- d. All concealed metal surfaces shall be given a coat of corrosion resistant protective paint. All non-anodized metal prior to painting must be thoroughly cleaned and treated to prevent rusting or corrosion before the primer coat is applied. Concealed non-anodized parts not normally painted must be treated to make them corrosion resistant.

23. DOORS

- a. A front singlewide entrance/exit doorway shall be provided on the right side of the vehicle, immediately behind the right front wheel and shall be **electrically operated** with both sets of door panels actuated together by a single door operator. The door shall fold inwardly or outwardly, providing a minimum of 21" clear opening without protruding beyond the exterior of the coach body. Edges on front and rear sections of door must be extruded rubber, overlapping to provide a sealed doorway. (Door should be key operated from outside.)
- b. The door shall be able to open even when the vehicle is tilted toward the curb.
- c. An emergency door in the rear of the vehicle or an escape hatch in roof of coach shall be provided if windows are not equipped with a safety release latch and a push out capability to provide an emergency exit in conformance with FMVSS #217. Interior dimensions of 27.5 inches by 23.5 inches. The type of hatch shall be Trans Spec Model 1122 or approved equal.
- d. A separate door lift shall be provided for handicapped accessibility. (A Braun Millennium series platform lift with an 800 pound lift capacity or an approved equal will be installed) The lift must fully comply in accordance with provisions of the Americans with Disabilities Act.
- e. Q'STRAIT self-tensioning and self-locking securement systems for the wheelchair lifts will be provided for each wheel chair position. All personal mobility aid devices must fully comply with all ADA regulations.
- f. The securement system shall be the four-point tie down system. The tie downs must not interfere with the placement of seats. The placement of the tie downs shall be behind the driver seat or at the rear of the coach and it must be facing forward. Each wheelchair tie down location shall be equipped with seat belts and shoulder harnesses, which are anchored to the floor that meet or exceed state and federal regulations.
- g. The contractor shall provide two sets of the tie downs including safety and shoulder belts per vehicle. The belts shall be neatly stored in hanger brackets when not in use. The hanger bracket shall be made of durable material and shall not be a hazard to passengers.

24. PASSENGER SEATS AND DRIVER'S SEAT

- a. All passenger seats shall be hardwood with cast aluminum ends. Backs and seats shall be “slat type” stained and properly coated to prevent splintering or rotting and shall be peripheral seating.
- b. **Bidder shall submit proposed seating layout with the bid.** Vehicle to simulate fully enclosed vintage tram with no rear exit, so rearmost seat shall provide seating accommodations for five passengers.
- c. Driver’s seat shall be a top of the line “**RECARO**” seat designed for the transit industry which is adjustable up and down, fore and aft, and with back tilt with adjustments, and equipped with seat belt. Seat cover color will be black.

25. WINDOWS

- a. Windows shall comply with all applicable FMVSS.
- b. Side and rear windows and door windows shall be laminated safety; single-density tinted, and shall open. The side and rear window glass will have a tint which will effectively block twenty-eight (28%) to thirty-one (31%) percent of incoming light. The side windows in the driver’s compartment shall be horizontal slide type, capable of being fully opened. Each of the side windows will be operable. The window design shall be patterned after the streetcars manufactured during the period of 1890 to 1905. The window latches must be a heavy duty design and capable of securing the windows in the open or closed position regardless of road vibration. The side windows will be trimmed with oak strips, or an approved equal material in the interior. The window frames will be **heavy duty** and in approved dark anodized aluminum. No bare glass edges will be accepted within the design of the side passenger windows. Because of past experience, “Hehr” brand windows will not be accepted. The construction and design of the side windows will be subject to SCTDD’s review and approval prior to submission of the bid proposal.
- c. The windshield shall consist of three separate windshield sections and shall be glazed with laminated, safety, single-density tinted glass. Padded left hand sun visor adjustable for windshield or driver’s window to be furnished, covering to match interior color.
- d. All non-metal window glazing material shall be black. Metal dash to be painted tan to have the “wood look”.

26. WINDSHIELD WIPERS AND WASHERS

- a. Windshield wipers (3) shall be electrically or air powered two speed mounted from bottom of windshields.
- b. Windshield washers shall have a minimum two (2) quart capacity.

27. DRIVER'S BARRIER

- a. A partition will be provided directly in back of the driver to provide security to the driver and to limit the amount of passenger conversation. This partition shall extend vertically from the floor to the ceiling and from the wall to the vertical stanchion located to the right rear of the driver's seat. This partition shall be constructed of an approved wood grain Melamine panel and laminated smoke safety glass.

28. SIGN PANELS

(This section reserved).

29. BUMPERS

Front and rear will be one piece ¼" steel fabricated assemblies. The front bumper will be at least five, but no more than ten (10) inches in height. The rear bumper will be at least seven, (7) but not more than eleven (11) inches in height. Both the front and rear bumper will extend from the body of the vehicle by at least one (1) inch, but not more than two (2) inches. The bumpers will match the curvature of the front and rear panels. The bumpers will also be finished in flat black polyurethane. **An authentic, vintage design cowcatcher front bumper is preferred.**

30. INSTRUMENT PANEL

- a. The instrument panel shall include all necessary instruments for safe operation of the coach, including, but not limited to air pressure gauge if compressed air is used, fuel gauge, low air pressure gauge and warning buzzer, speedometer indicating miles per hour and 7-digit odometer, high beam indicator, emergency brake light, low brake fluid indicator, oil pressure warning light and gauge, water temperature light gauge, door open warning lights, and voltmeter. Switch for control of lights, door controls, heat, fans, and engine control shall be conveniently located to the driver's position. Switches shall be protected in an approved manner against accidental operation.

- b. Instrument panel shall be constructed so as to provide easy access to all instruments or switches and fuses.

31. FARE BOX

- a. A vintage style drop and lock coin or token fare box shall be installed. The farebox will be a Diamond Model SV with two (2) vaults. Five (5) additional farebox “flapper springs” will be supplied with the farebox. Key codes for the Fareboxes are to be the same as other current City owned Diamond fareboxes. SCTDD can supply necessary keying information to Diamond, Mfg. if necessary or should questions arise.
- b. This fare box shall be located where it is readily accessible to both the passengers and driver. The exact placement of the farebox will be determined after the bid award.

32. AUDIO/PUBLIC ADDRESS SYSTEM

- a. A Midwest 470A or approved equal public address shall be installed in the vehicle. The amplifier shall be mounted overhead in the driver’s compartment in a location, which shall allow the driver to control both the volume and squelch.
- b. A minimum of four (4) interior speakers shall be provided throughout the vehicle and one curbside exterior speaker to allow the driver to communicate with the visually impaired. A switch shall be provided on driver’s console to provide the driver with the option of using either the exterior or interior speakers, or both.
- c. A heavy-duty gooseneck boom-type microphone shall be provided for the driver. A heavy-duty clip must be provided to secure the gooseneck microphone.
- d. A handheld microphone with a minimum of six (6) feet of wire shall be provided in the driver’s compartment. A jack shall be provided on the right side of the driver’s console to provide a connection for the handheld microphone.
- e. The microphone shall be a high quality, hand-held dynamic type with a minimum of ten (10) feet of coiled cord and a four (4) pin locking connector. The amplifier shall have a power output of twenty (20) watts at less than ten (10%) percent harmonic distortion. A microphone level of 65dBm shall provide an output of eighteen (18) watts.

- f. The four (4) loudspeakers shall be capable of handling eight (8) watts of power each and shall have magnetic weights of at least four (4) ounces. The speaker depth shall not exceed one and 13/16 inches and shall be factory assembled to a matching baffle made from Type 304 stainless steel. The baffle diameter shall not exceed eight (8) inches and shall not project more than 11/16 inches from the mounting surface.
- g. An AM/FM radio with CD player shall be overhead mounted within easy reach of seated driver. This system may share speakers with the public address system.

33. SECURITY CAMERA SYSTEM

- a. The vehicle should be equipped with a minimum of four security cameras, connected to a Fortress security camera DVR system.
- b. The cameras will come pre-wired, with conduits installed in which the wiring is run.
- c. The cameras will be mounted as such to provide a combined full coverage of the interior of the vehicle, all entrances, and the driver's compartment.

34. HANDRAILS

All hand rails to be brushed stainless steel inside trolley

34. UNDERCOATING

- a. The underneath portion of the undercarriage and stepwell, including the underside of the wheel housings shall be sprayed with an approved fire resistant undercoating material.
- b. All electrical components, air lines, brake system components, lube fittings and drain valves will be protected from undercoating overspray.
- c. The bidder shall be required to provide a full five (5) year or two hundred thousand (200,000) miles; whichever comes first, rust through protection warranty.

35. DECALS AND MONOGRAMS

The bidder shall supply and affix to the interior and exterior those decals regarding safety and operating procedures. Said decals shall include, but not be limited to, the following:

	<u>Decal</u>	<u>Number</u>	<u>Location</u>
a.	No Smoking	1	Interior above driver rear bulkhead
b.	Watch Your Step	1	Front Stepwells
c.	Fire Extinguisher	1	Front safety Compartment
d.	Passengers to stay behind white line while trolley is moving	1	overhead front

36. SAFETY EQUIPMENT

- a. The bidder shall provide and install a rechargeable ten (10) pound dry chemical **fire extinguisher** with an ABC rating. A metal label shall be attached to the fire extinguisher indicating it has been listed and approved by Underwriters Laboratories and Factory Mutual Laboratories. The fire extinguisher shall be mounted in a location approved by SCTDD.
- b. The bidder shall provide three (3) **folding reflective triangles** in accordance with Federal DOT Standard No. 125 in each vehicle. The triangles shall be stored in a fiberglass or aluminum container. The location of the container housing the triangles shall be subject to SCTDD’s review and approval prior to submission of bid proposal.
- c. The bidder shall provide one (1) **triangular wheel chock** mounted in a bracket in an approved location.

37. PARTS BOOKS, MANUALS, DRAWING AND TRAINING

a. Parts Books:

The bidder will furnish SCTDD with one complete set of draft parts books at least forty (40) days prior to the scheduled delivery of the vehicle for SCTDD's review and approval.

With the delivery of the vehicle the bidder will provide SCTDD with two (2) complete parts books as approved by SCTDD with each vehicle delivered

The bidder will provide SCTDD two (2) copies of the price list in United States dollars. The bidder will be required to provide up-to-date supplements to the parts book's price list for at least ten (10) years.

The bidder will carry an adequate supply of spare parts for twelve (12) years in the continental United States and will clearly list in the parts books supplied, the United States base for said spare parts.

All parts publications must be in the English language with clear diagrams detailing each subsystem found on the vehicle.

Each parts book will have a complete alpha and numeric listing for ease of use.

b. Maintenance Manuals:

The bidder will furnish SCTDD with a complete draft maintenance manual at least forty (40) days prior to the scheduled delivery of the first vehicle for SCTDD's review and approval.

With the delivery of the vehicle, the bidder will furnish SCTDD with four (4) complete maintenance manuals, as approved by SCTDD, for each vehicle delivered covering, but not limited to the following systems:

1. Trouble shooting guide.
2. Lubrications and adjustments required.

- 3 Replacement and repair procedures.
- 4 Preventive maintenance cycles and practice.
- 5 Wiring diagrams for the vehicle as manufactured.

The maintenance manuals must be in English.

c. Driver's Manuals

The bidder will furnish SCTDD with five (5) driver's manuals.

The driver's manuals will explain the operation and location of various gauges and switches found in the driver's compartment.

The driver's manual will also instruct the driver what corrective action should be taken in the event of failure or malfunction of various subsystems found on the vehicle.

The driver's manuals will be furnished to SCTDD concurrent with the delivery of the vehicle.

The driver's manual must be in English.

d. Driver's Training

The bidder will provide with the delivery of the first vehicle a training session in SCTDD for the designated vehicle drivers on how to safely drive the vehicle and explain all the subsystems found on the vehicle.

The training session for the drivers will be a minimum of four (4) hours.

e. Maintenance Training

The bidder will furnish with the delivery of the vehicle an on-site maintenance instructor to provide instruction on the vehicle and its related subsystems and how to file warranty claims.

The instructor will be required to provide a minimum of eight (8) hours of on site instruction.

The bidder will provide classroom instruction on the engine, transmission, and air conditioning systems. This training may be provided by the manufacturer of the engine, transmission, and air conditioning systems. The training may be at a regional service center. SCTDD is willing, at its expense, to send two (2) or three (3) mechanics to these training sessions.

f. Tool List

The bidder will furnish SCTDD, thirty (30) days prior to delivery of the vehicle, a list of recommended tools for maintaining the vehicle and its subsystems. Said list will be in order of priority and clearly state the manufacturer, part number and price of each tool.

g. Spare Parts List

Bidder will furnish SCTDD within one hundred (100) days after contract award, a list of recommended spare parts. This list shall clearly describe each part, quantity recommended, and the unit cost.

38. WATER TEST

A water test will be conducted over the entire surface of the trolley bus. The trolley at the time of the test shall be complete with no windows, doors, or other key components missing.

The nozzles that deliver the water will eject a minimum total volume of fifty (50) gallons per minute at a pressure of fifteen (15) pounds per square inch measured at each nozzle tip.

The water test shall be conducted for a minimum of ten (10) minutes.

If water leaks are evident during the water test, they shall be repaired and the vehicle shall undergo another test to ensure the leaks have been completely corrected.

39. WHEELCHAIR ACCESSIBLE DOOR, WHEELCHAIR LIFT AND WHEELCHAIR RESTRAINTS

a. Wheelchair Accessible Door

Wheelchair accessible door will be installed on the rear curbside of the trolley.

Doorway shall comply with all ADA requirements.

A full ADA approved interlock system will be provided on trolley.

b. Wheelchair Lift

Wheelchair lift shall fully comply with all ADA requirements.

The wheelchair lift shall be a commercial bus platform lift that has a rated load capacity of at least 800 pounds. **A Braun lift is preferred.** The platform lift shall be installed at the passenger side rear of the trolley

The switch box for lift operation shall be of a one-hand operation design made of durable ABS plastic. Color-coded rocker switches shall be required and be permanently stamped with the appropriate function legends. Control cable shall be of commercial quick connect type as standard, for ease of maintenance or field change.

The wheelchair lift shall be hydraulically operated and a manual back-up system shall be provided to ensure operation of the lift in case of electrical failure. The back-up system shall provide a reliable means of manually raising and lowering the lift while occupied. The back-up system shall fold and unfold the platform. The back-up pump shall be integrated with the hydraulic power pack system such that no hydraulic lines or fittings are required for fluid transfer.

The platform shall be of steel construction and shall be covered with a non-slip surface. The platform shall have a minimum usable wheelchair passageway width of thirty (30) inches and a minimum usable length of forty-eight (48) inches. The sides of the platform shall be a minimum to four (4) 1/4 inch high.

The platform shall be automatically folded and unfolded and fully automatic in operation. The platform shall allow both inboard and outboard facing of wheelchair and mobility aid users.

Dual handrails shall be provided to add security and convenience.

The lift shall operate in temperature ranges from –10 degrees to +115 degrees F.

Pinching movements, shear area, or places where clothing or other objects could be caught or damaged will be covered or otherwise protected to prevent passenger injury.

Interlocks shall be provided to prevent vehicle movement when the lift is in a position other than a stowed position.

Interlocks shall be provided to prevent lift activation and operation unless the vehicle is stopped and inhibited from movement and the appropriate door is opened.

c. Wheelchair Restraints

“Q’STRAINT” self-retractable wheelchair tie-downs & occupant restraint systems will be provided for each wheelchair seating position to restrain the wheelchair and its occupant safely during the ride. When not in use, all tie-down belts will retract and stow as to give a neat appearance and not be a tripping or catching hazard to any passenger.

The belts must not interfere with the folding of seats. The mounting and arrangements of the belts and wheelchair restraining devices will be subject to SCTDD’s review and approval prior to submission of bid proposal.

Wheel rim locks mounted on the bottom of the flip seat will also be provided in addition to the belts. The wheel locks provided must be capable of securely holding all standard wheelchairs, which can be accommodated by the lift.

Two wheelchair securement stations will be provided at the rear of the trolley bus.

40. VEHICLE EMISSION REQUIREMENTS

The bidder will certify in writing on delivery of the vehicle to SCTDD under contract, that it meets the U.S. Environmental Protection Agency emission standards as of date of manufacture.

41. MOTOR VEHICLE SAFETY REQUIREMENTS

Vehicles will comply with the federal motor vehicle safety standards as established by the U.S. Department of Transportation in effect on the date of manufacture.

Vehicles will comply with all requirements of the laws of the State of Tennessee.

If the requirements of this section change between the date of the contract and the date of manufacture or delivery, any additional cost reduction resulting from such changes will be negotiated to the mutual satisfaction of SCTDD and the contractor.

42. **VEHICLE INFORMATION QUESTIONNAIRE**

The following questionnaire is required to be completed and returned with the bidder’s response to the technical specifications. SCTDD will not respond to any bidder’s response(s) or request for approval or exception unless this questionnaire is completed and returned.

A. **MANUFACTURER**

1. Name _____

2. Address _____

3. Project Manager _____

4. Telephone Number _____

B. **VEHICLE MODEL NUMBER**

C. **MAXIMUM WARRANTED SPEEDS**

- 1. Main Drive Engine
 - Full Load _____ RPM
 - No Load _____ RPM
- 2. Generator _____ RPM
- 3. Propulsion Engine Fan _____ RPM
- 4. Power Steering Pump _____ RPM
- 5. Transmission _____ RPM
- 6. A/C Compressor _____ RPM
- 7. Vehicle Speed _____ RPM

D. GENERAL DIMENSIONS

- 1. Overall Length
 - Over Bumpers _____ IN.
 - Over Body _____ IN.
- 2. Overall Width _____ IN.
- 3. Overall Height, Front
 - Empty _____ IN.
 - With Gross Load _____ IN.
- 4. Overall Height, Rear
 - Empty _____ IN.
 - With Gross Load _____ IN.
- 5. Wheelbase _____ IN.
- 6. Overhang, Center of Axle
 - Over Bumper
 - Front _____ IN.
 - Rear _____ IN.
- 7. Height, Floor to Ceiling
 - Above Front Axle _____ IN.
 - Above Rear Axle _____ IN.
- 8. Width of Aisle
 - At Seat back _____ IN.
- 9. Floor height – height of aisle
 - Floor with the air suspension
 - Operating on properly
 - Inflated tires _____ IN.
 - Front Axle _____ IN.
 - Rear Axle _____ IN.
- 10. Step Height – front door, ground
 - To first step _____ IN.
- 11. Step Riser - Front
 - Height – First Step Depth _____ IN.
 - Height – Second Step Depth _____ IN.

- 12 Height of Door Opening Over
First step _____ IN
- 13 Minimum Road Clearances
Front Axle _____ IN.
Rear Axle _____ IN.
Location of Low Point
And Clearance _____ IN.
- 14. Gradeability Angles
Approach Angle _____ DEGS.
Departure Angle _____ DEGS.
Ramp Break over Angle _____ DEGS.
- 15. Tire Size
Front _____
Rear _____

E. WEIGHT

- 1. Curb Weight _____ LBS
- 2. Gross Vehicle Weight _____ LBS
- 3. Main Drive Engine with
Accessories and transmission
Ready for installation _____ LBS

F. MAIN DRIVE ENGINE

- 1. Engine Manufacturer _____
- 2. Engine Model Number _____
- 3. Number of Cylinders _____
- 4. Bore _____
- 5. Stroke _____
- 6. Displacement _____
- 7. Compression Ratio _____

- 8. Local Service Representative _____
- 9. Brake Horsepower _____ HP
At RPM _____
- 10. Crankcase Oil Capacity _____ QTS
New Engine Dry _____ QTS
New Engine Wet _____ QTS
- 11. Oil Filter Capacity _____
Full Flow _____
Bypass _____
Manufacturer of _____
Bypass Filter _____
- 12. Idle Speed _____ RPM
- 13. Fast Idle Speed _____ RPM

G. TRANSMISSION

- 1. Manufacturer _____
- 2. Transmission Model Number _____
- 3. Local Service Representative _____
- 4. Ratio _____
1st _____
2nd _____
3rd _____
4th _____
- 5. Fluid Capacity _____

H, AXLE, FRONT

- 1. Manufacturer _____
- 2. Model Number _____
- 3. Load rating _____ LBS

I. AXLE, REAR

- 1. Manufacturer _____
- 2. Model Number _____
- 3. Load rating _____ LBS
- 4. Ratio _____

J. POWER STEERING

- 1. Pump
Manufacturer and Model
Number _____
Type _____
Relief Pressure _____ PSI
- 2. Steering Box _____
Manufacturer and Model
Name _____

K. BRAKES

- 1. Manufacturer of
Fundamental System _____
- 2. Brake Chambers _____
Vendor and Size _____
Front _____
Rear _____
- 3. Slack Adjuster
Vendor and Model Number _____

Front _____

Rear _____

4. Front Brakes _____

Drum "Size _____

Lining Size _____

Lining Type _____

5. Rear Brakes _____

Drum Size _____

Lining Size _____

Lining Type _____

L. COOLING SYSTEM

1. Radiator Manufacturer _____

2. Radiator Model Number _____

3. Frontal Area _____ SQ IN.

4. Number of Radiator Cores _____

5. Capacity of Cooling System _____ GALS

M. HEATING SYSTEM

1. Main Heater Core _____

Manufacturer _____

Model Number _____

Number of Rows _____

Number of Fins Per Inch _____

Fin Thickness _____

Rated BTU's _____

2. Front Defroster _____

Manufacturer _____

Model Number _____

Number of Rows _____

Manufacturer of Motor _____

Size of Motor _____

Rated BTU's _____

3. Circulating Pump _____

Manufacturer _____

Model Number _____

Displacement _____

N. AIR SYSTEM

1. Air Compressor _____

Manufacturer _____

Model Number _____

Capacity _____

2. Air Governor _____

Manufacturer _____

Model Number _____

3. Air Dryer _____

Manufacturer _____

Model Number _____

O. ELECTRICAL SYSTEM

1. Generator _____

Manufacturer _____

Model Number _____

Rating _____

2. Batteries _____

Manufacturer _____

Model Number _____

Number of Batteries _____

Rating at Maximum
Engine RM _____

Rating at Idle _____

3. Regulator _____

Manufacturer _____

Model Number _____

Displacement _____

P. TIRES

Manufacturer _____

Size _____

Load Range _____

Model _____

Q. AIR CONDITIONING SYSTEM

1. Compressor(s) _____

Manufacturer _____

Model Number _____

Model Number _____

Number of Cylinders _____

Cubic Displacement _____

Drive Ratio (to engine) _____

2. Condenser(s) _____

Manufacturer _____

Model Number _____

Number of Rows _____

Number of Fins per Inch _____

Fin Thickness _____

3. Condenser Fan _____

Manufacturer _____

Model Number _____

Fan Diameter _____

Speed _____

Flow Rate _____

4. Evaporator _____

Manufacturer _____

Model Number _____

Number of Rows _____

Type of Evaporator Filters _____

Number of Fins per Inch _____

5. Evaporator Valve _____

Manufacturer and Model
Number _____

Superheat Setting _____

6. Drier _____

Manufacturer and Model
Number _____

43. WARRANTY AND REPAIR

WARRANTY REQUIREMENTS

Warranties in this document are in addition to any statutory implied warranties, remedies or warranties imposed on the contractor. Consistent with this requirement, the contractor warrants and guaranties to SCTDD the Complete vehicle, and specific subsystems and components as follows:

a. Complete Vehicle

The vehicle warranted and guaranteed to be free from defects for one (1) year or fifty thousand (50,000) miles whichever comes first. Beginning on the date of acceptance of the vehicle. During this warranty period, the vehicle will maintain its structural and functional integrity. The warranty is based on regular operation of the vehicle under the operating conditions prevailing SCTDD, Mt. Pleasant, Tennessee.

b. Subsystems and Components

Specific subsystems and components are warranted and guaranteed to be free from defects and related defects for the times and/or mileages given in the table below.

SUBSYSTEM AND COMPONENT WARRANTY
WHICHEVER COMES FIRST

<u>Item</u>	<u>Years</u>	<u>Mileage</u>
Engine (basic warranty plus longest available ext. warranty)		
Transmission (basic warranty plus longest available ext. warranty)		
Drive Axle	2	100,000
Brake system (excluding Friction material)	2	50,000
Air conditioning system	2	N/A
Basic body structure	5	200,000
Structural Integrity Corrosion	7	350,000

c. Voiding of Warranty

The warranty will not apply to any part or component of the vehicle that has been subject to misuse, negligence, accident, or that has been repaired or altered in any way to adversely affect its performance or reliability, except insofar as such repairs were in accordance with the contractor's

maintenance manuals and the workmanship was in accordance with the recognized standards of the industry. The warranty will also be voided if SCTDD fails to conduct normal inspections and scheduled preventive maintenance procedures as recommended in the contractor's maintenance manuals.

d. Exceptions to Warranty

The warranty will not apply to scheduled maintenance items nor to items furnished by the procuring agency such as radios, fare boxes, and other auxiliary equipment, except insofar as such equipment may be damaged by the failure of a part or component for which the contractor is responsible.

e. Detection of Defects

If SCTDD detects a defect with the warranty periods defined in Section 17.1.1 it will promptly notify the contractor's representative. Within five (5) working days after receipt of notification, the contractor's representative will 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 the procuring agency's property. At that time, the status of warranty coverage on the subsystem or component will be mutually resolved between the procuring agency and the contractor. Work necessary to affect the repairs defined in Section 18.2 will commence within ten (10) working days after receipt of notification by the contractor.

f. Scope of Warranty Repairs

When warranty repairs are required, SCTDD and the contractor's representative will agree within five (5) days after notification 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 five (5) day period, the procuring agency reserves the right to commence the repairs in accordance with Section 18.2.

44. REPAIR PROCEDURES

a. Repair Performance

As its option SCTDD or its designated representative may require the contractor or its designated representative to perform warranty-covered repairs that are clearly beyond the scope of SCTDD's capabilities. The

work may be done by the procuring agency's personnel with reimbursement by the contractor.

b. Repair by Contractor

If SCTDD requires the contractor to perform warranty-covered repairs, the contractor's representative must begin, within ten (10) working days after receiving notification of a defect from the procuring agency, work necessary to make repairs. The procuring agency will make the vehicle available for complete repairs in time with the contractor's repair schedule.

The contractor will provide at its own expense, all spare parts, tools and space required to complete repairs. At SCTDD's option the contractor may be required to complete repairs. At the procuring agency's option, the contractor may be required to remove the vehicle from the procuring agency's property while repairs are being conducted. If the vehicle is removed from the procuring agency's property, repair procedures must be diligently pursued by the contractor's representative.

c. Repairs by Procuring Agency

Parts Used

If SCTDD performs the warranty-covered repairs, it will correct or repair the defect and any related defects using contractor specified spare parts available from its own stock or those supplied by the contractor specifically for this repair. Monthly, or at a period to be mutually agreed upon, report of all repairs covered by this warranty will be submitted by the procuring agency to the contractor for reimbursement or replacement of parts. The contractor will provide forms for these reports.

SCTDD may request that the contractor supply new parts for warranty covered repairs being performed by the procuring agency. These parts will be shipped prepaid to the procuring agency from any source selected by the contractor within ten (10) working days of receipt of the request for parts.

d. Defective Components Return

The contractor may request that parts covered by the warranty be returned to the manufacturing plant. The total cost for this action will be paid by

the contractor. Materials should be returned in accordance with contractor's instructions.

e. Reimbursement for Labor

The procuring agency will be reimbursed by the contractor for labor. The amount will be determined by multiplying the number of labor hours actually required to correct the defect by the current per hour, straight wage rate, plus forty-three percent (43%) fringe benefits, plus the cost of towing in the vehicle if such action was necessary and if the vehicle was in the normal service area. These wage and fringe benefit rates will not exceed the rates in effect in the procuring agency's service garage at the time the defect correction is made.

f. Reimbursement for Parts

The procuring agency will be reimbursed by the contractor for defective parts and for parts that must be replaced to correct the defect. The reimbursement will be at the invoice cost of the part(s) at the time of repair and will include taxes where applicable and ten percent (10%) handling costs.

45. **WARRANTY AFTER REPLACEMENT/REPAIRS**

If any component, unit, or subsystem is rebuilt or replaced by the contractor or by the procuring agency's personnel, with the concurrence of the contractor, the subsystem will have the unexpired warranty period of the original subsystem.

46 **WARRANTY OF BASIC VEHICLE STRUCTURE**

The contractor or specified subcontractor will warranty the frame and suspension members for five (5) years or two hundred thousand (200,000) miles, whichever comes first. This warranty will not cover air bags leveling valves, springs or other normal wearing parts. The contractor is not liable for warranty if SCTDD voids the warranty as outlined in Section 17.2. If the frame or suspension fails or shows indication of imminent failure SCTDD will immediately notify the contractor of the defect. Within twenty (20) calendar days the contractor will inform SCTDD on how the contractor will repair the vehicle. Repair of frame and suspension failures will be the responsibility of the contractor. Within thirty (30) calendar days the contractor will begin the repair of the frame and suspension defects. If the vehicle is out of service for forty-five (45) or more calendar days because of the reported defect, the contractor will have

to provide a substitute vehicle with equal or greater seating capacity. SCTDD will also assess fifty dollars (\$50.00) per day as liquidated damages against the contractor, beginning on the fortieth (40th) day and continuing until the defect is repaired.

47. ACCEPTANCE TESTS

a. Responsibility

Fully documented tests will be conducted on the production vehicle following manufacture to determine its acceptance to the procuring agency. These acceptance tests will include pre-delivery inspections and testing by the contractor, and inspections and testing by the procuring agency after the vehicle has been delivered.

b. Pre-delivery Tests

The contractor will conduct acceptance tests at its plant on the vehicle following completion of manufacture and before delivery to the procuring agency. These pre-delivery tests will include visual and measured inspections, as well as testing the total operation. The test will be conducted and documented in accordance with written test plans. Additional tests may be conducted at the contractor's discretion to ensure that the completed vehicle has attained the desired quality and has met the requirements in the technical specifications. This additional testing will be recorded on appropriate test forms provided by the contractor.

The pre-delivery tests will be scheduled and conducted with sufficient notice so that they may be witnessed by the resident inspectors, who may accept or reject the results of the tests. The results of pre-delivery tests, and any other tests, will be filed with the assembly inspection records for the vehicle. The underflow, or elevated platform will be provided by the contractor. A hoist, scaffold, or elevated platform will be provided by the contractor to easily and safely inspect the vehicle roof. Delivery of the vehicle will require written authorization of a resident inspector. Authorization forms for the release of the vehicle for delivery will be provided by the contractor. An executed copy of the authorization will accompany the delivery of the vehicle.

c. Inspection-Visual and Measured

Visual and measured inspections will be conducted with the vehicle in a static condition. The purpose of the inspection testing is to verify overall dimensional and weight requirements, to verify that required components are included and are ready for operation and to verify that components and

subsystems are designed to operate with the vehicle in a static condition to function as designed.

d. Total Vehicle Operation

Total vehicle operation will be evaluated during road test. The purpose of the road test is to observe and verify the operation of a complete vehicle as a system and to verify the functional operation of the subsystem that can be operated only while the vehicle is in motion.

The vehicle will be driven for a minimum of fifteen (15) miles during the road tests. After the road test, SCTDD reserves the right to require the contractor to raise the vehicle or drive it over a pit to allow SCTDD's inspector to inspect the undercarriage. Observed defects will be recorded on the test forms. The vehicle will be retested when defects are corrected and adjustments are made. This process will continue until defects or required adjustments are no longer detected. Results will be pass/fail for these vehicle operation tests.

e. Post-Delivery Tests

SCTDD may conduct acceptance tests on the delivered vehicle. These tests will be completed within fifteen (15) days after vehicle delivery and will be conducted in accordance with written test plans. The purpose of these tests is to identify defects that have become apparent between the time of vehicle release and delivery to the procuring agency. The post-delivery tests will include visual inspection and vehicle operations.

A vehicle that fails to pass the post-delivery tests is subject to non-acceptance. The procuring agency will record details of all defects on the appropriate test forms and will notify the contractor of non-acceptance of the vehicle within five (5) days after completion of the tests. The defects detected during these tests will be repaired according to procedures defined in solicitation, offer and award/contractual provisions.

f. Visual Inspection

The post-delivery inspection is similar to the inspection at the contractor's plant and will be conducted with the vehicle in a static condition. Any visible delivery damage will be identified and recorded during the visual inspection of the vehicle.

g. Vehicle Operation

The road tests for total vehicle operation are similar to those conducted at the contractor's plant. Operational deficiencies of the vehicle will be identified and recorded.

h. Acceptance

Within fifteen (15) calendar days after arrival at the designated point of delivery to SCTDD, the vehicle shall undergo SCTDD's post-delivery inspection and tests. If the vehicle passes this inspection and tests, acceptance of the vehicle by SCTDD occurs on the fifteenth (15th) day after delivery. Acceptance may occur earlier if SCTDD notifies the contractor of early acceptance or places the vehicle in revenue service. If the vehicle fails the inspection test, SCTDD reserves the right to either have the contractor make the required repairs or make the repairs itself. If SCTDD makes the repairs they will be handled in accordance with the Warranty Provisions.

48. **CONTRACTOR'S IN-PLANT QUALITY ASSURANCE REQUIREMENTS**

a. Quality Assurance Organization

The contractor will establish and maintain an effective in-plant quality assurance organization. It will be a specifically defined organization and should be directly responsible to the contractor's top management.

i. Control

The quality assurance organization will exercise quality control over all phases of production from initiation of design through manufacture and preparation for delivery. The organization will also control the quality of supplies articles.

ii. Authority and Responsibility

The quality assurance organization will have the authority and responsibility for reliability, quality control, inspection planning, establishment of the quality control system, and acceptance/rejection of materials and manufactured articles in the production of the vehicles.

b. Quality Assurance Functions

The quality assurance organization will include the following minimum functions:

iii. Work Instructions

The quality assurance organization will verify inspection operation instructions to ascertain that the manufactured product meets all prescribed requirements

iv. Records Maintenance

The quality assurance organization will maintain and use records and data essential to the effective operation of its program. These records and data will be available for review by the resident inspectors. Inspection and test records for this procurement will be available for a minimum of one (1) year after inspections and tests are completed.

v. Corrective Actions

The quality assurance organization will detect and promptly assure correction of any conditions that may result in the production of defective vehicles. These conditions may occur in design, purchase, manufacture, tests, or operations that culminate in defective supplies, services, facilities, technical data or standards.

c. Standards and Facilities

The following standards and facilities will be basic in the quality assurance process.

MANUFACTURING CONTROL

The contractor will ensure that all basic production operations, as well as all other processing and fabricating are performed under controlled conditions. Establishment of these controlled conditions will be based on the documented work instruction, adequate production equipment, and special working environments if necessary.

vi. Completed Items

A system for final inspection and test of completed vehicles will be provided by the quality assurance organization. It will measure the overall quality of each completed vehicle.

vii. Nonconforming Materials

The quality assurance organization will monitor the contractor's system for controlling nonconforming materials. The system will include procedures for identification, segregation, and disposition.

viii. Statistical Techniques

Statistical analysis tests, and other quality control procedures may be used when appropriate in the quality assurance process.

ix. Inspection Status

A system will be maintained by the quality assurance organization for identifying the inspection status of components and completed vehicles. Identification may include cards, tags, or other normal quality control devices.

49. INSPECTION SYSTEM

The quality assurance organization will establish, maintain and periodically audit a fully documented inspection system. The system will prescribe inspection and test of materials, work in progress, and completed articles. At a minimum, it will include the following controls.

a. Inspection Stations

Inspection stations will be at the best locations to provide for the word content and characteristics to be inspected. Stations will provide the facilities and equipment to inspect structural, electrical, hydraulic, and other components and assemblies for compliance with the design requirements.

Stations will also be at the best locations to inspect or test characteristics before they are concealed by subsequent fabrication or assembly operations. These locations will minimally include underbody structure completion, body-framing completion, body prior to paint preparation, water test before interior trim and insulation installation, engine installation completion, underbody dress-up and completion, vehicle prior to final paint touch-up, vehicle prior to road test, and vehicle final road test completion.

b. Inspection Personnel

Sufficient trained inspectors will ensure that all materials components, and assemblies are inspected for conformance with the qualified vehicle design.

c. Inspector Records

Acceptance, rework, or rejection identification will be attached to inspected articles. Articles that have been accepted as a result of approved materials review actions will be identified. Articles that have been reworked to specified drawing configurations will not require special identification. Articles rejected as unsuitable or scrap will be plainly marked and controlled to prevent installation on the vehicle. Articles that become obsolete as a result of engineering changes or other actions will be controlled to prevent unauthorized assembly or installation. Unusable articles will be isolated and then scrapped.

Discrepancies noted by the contractor or resident inspector during assembly will be entered by the inspection personnel on a record that accompanies the major component, subassembly, assembly, or vehicle from start of assembly through final inspection. Actions will be taken to correct discrepancies or deficiencies in the manufacturing processes, procedures, or other conditions that cause articles to be in nonconformity with the requirements of the contract specifications. The inspection personnel will verify the corrective actions and mark the discrepancy record. If discrepancies cannot be corrected by replacing the nonconforming materials, the procuring agency will approve the modification, repair, or method of correction to the extent that the contract specifications are affected.

d. Quality Assurance Audits

The quality assurance organization will establish and maintain a quality control audit program. Records of this program will be subject to review by the procuring agency.

e. Resident Inspector

SCTDD may be represented at the contractor's plant by resident inspectors. They will monitor, in the contractor's plant, the manufacture of vehicles built under this procurement. The resident inspectors will be authorized to approve the pre-delivery acceptance tests, and to release the vehicles for delivery. Upon request to the quality assurance supervisor, the resident inspectors will have access to the contractor's quality assurance files related to this procurement. These files will include drawings,

material standards, parts lists, inspection processing and reports, and records of defects.

No less than thirty (30) days prior to the beginning of vehicle manufacture, the resident inspectors will meet with the contractor's quality assurance manager. They will review the inspection procedures and checklists. The resident inspectors may begin monitoring vehicle construction activities two (2) weeks prior to the start of vehicle fabrication.

The contractor will provide office space for the resident inspectors in close proximity to the final assembly area. This office space will be equipped with desks, outside and interplant telephones, file cabinet, chairs, and clothing lockers.

The presence of these resident inspectors in the plant will not relieve the contractor of its responsibility to meet all of the requirements of this procurement.

49. ACCEPTANCE TESTS

a. Responsibility

Fully documented tests will be conducted on the production vehicle following manufacture to determine its acceptance to the procuring agency. These acceptance tests will include pre-delivery inspections and testing by the contractor, and inspectors and testing by the procuring agency after the vehicle has been delivered.

b. Pre-Delivery Tests

The contractor will conduct acceptance tests at its plant on the vehicle following completion of manufacture and before delivery to the procuring agency. These pre-delivery tests will include visual and measured inspections as well as testing the total vehicle operation. The tests will be conducted and documented in accordance with written test plans. Additional tests may be conducted at the contractor's discretion to ensure that the completed vehicle has attained the desired quality and has met the requirements in the technical specifications. This additional testing will be recorded on appropriate test forms provided by the contractor.

The pre-delivery test will be scheduled and conducted with sufficient notice so that they may be witnessed by the resident inspectors, who may

accept or reject the results of the tests. The results of pre-delivery tests, and any other tests, will be filed with the assembly inspection records for the vehicle. The under floor equipment will be made available for inspection by the resident inspectors, using a pit or vehicle hoist provided by the contractor. A hoist, scaffold, or elevated platform will be provided by the Contractor to easily and safely inspect the vehicle roof. Delivery of the vehicle will require written authorization of a resident inspector. Authorization forms for the release of the vehicle for delivery will be provided by the contractor. An executed copy of the authorization will accompany the delivery of the vehicle.

x. Inspection-Visual and Measured

Visual and measured inspections will be conducted with the vehicle in a static condition. The purpose of the inspection testing is to verify overall dimensional and weight requirements, to verify that required components are included and are ready for operation and to verify that components and subsystems are designed to operate with the vehicle in a static condition to function as designed.

xi. Total Coach Operation

Total vehicle operation will be evaluated during road tests. The purpose of the road test is to observe and verify the operation of the vehicle as a system and to verify the functional operation of the subsystem that can be operated only while the vehicle is in motion.

The vehicle will be driven for a minimum of fifteen (15) miles during the road tests. Observed defects will be recorded on the test forms. The vehicle will be retested when defects are corrected and adjustments are made. This process will continue until defects or required adjustments are no longer detected. Results will be pass/fail for these vehicle operation tests.

xii. Heating and Air Conditioning Performance Tests

SCTDD reserves the right to require the contractor to test the performance of the heating and air conditioning system in the vehicle before shipment to SCTDD if it has reasonable cause to believe the vehicle does not meet the described standards. The heating test shall consist of placing the vehicle in an environmental test chamber and lowering the temperature of the room to Thirty (30) degrees F. with a relative humidity of twenty (20) to forty-five (45) percent. The vehicle will be cooled for a minimum of five (5)

hours before the start of the test. Before starting the test, the main engine shall be started and brought to standard operating temperature. The vehicle will be cooled to a uniform fifteen (15) degrees F + or - three (3) degrees F. After the engine has been brought to normal operating temperatures the test shall start. All doors and windows shall be closed and only one (1) person shall be on the vehicle. The engine shall operate at a constant one thousand five hundred (1,500) RPM throughout the test. The heating system must be able to bring the inside temperature of the passenger compartment to a uniform sixty (60) degrees F. + or – three (3) degrees within thirty (30) minutes. The makeup air vent shall be open to allow ten percent (10%) air into the climate control system. The air around the vehicle will be kept at a constant fifteen (15) degrees + or - three (3) degrees throughout the test.

The air conditioning test shall consist of heating the vehicle to a uniform one hundred fifty (150) degrees F + or – two (2) degrees F. and soaking the vehicle at this temperature for a minimum of six (6) hours. Measurements will be taken four (4) feet from the floor in the center of the aisle of the passenger compartment. After the vehicle has been heated and soaked at the prescribed temperature, the engine will be started and the air conditioning will be activated. All windows, vents, and passenger doors will be closed. Engine speed will stay at one thousand five hundred (1,500) RPM. The outside temperature will stay at one hundred fifty (150) degrees F + or – two (2) degrees F. The temperature of the air discharged from the condenser shall be monitored along with the high and low side readings of air conditioning compressor. In thirty (30) minutes or less the air conditioning system will bring the inside temperature to seventy – nine (79) degrees F + or – three (3) degrees when measured at all four (4) points listed above.

The heating and air conditioning test will be witnessed by SCTDD resident inspector and by the Transit Director. If the design of the air conditioning system or heating or ducts is modified during the production SCTDD reserves the right to have the heating and air conditioning test performed on the modified system.

c. Post –Delivery Tests

SCTDD may conduct acceptance tests on the delivered vehicle. These tests will be completed within fifteen (15) days after vehicle delivery and will be conducted in accordance with written test plans. The purpose of these tests is to identify defects that have become apparent between the

time of vehicle release and delivery to the procuring agency. The post-delivery tests will include visual inspection and vehicle operations.

A vehicle that fails to pass the post-delivery tests is subject to nonacceptance. The procuring agency will record details of all defects on the appropriate test forms and will notify the contractor of nonacceptance of the vehicle within five (5) days after completion of the tests. The defects detected during these tests. The defects detected during these tests will be repaired according to procedures defined in solicitation, offer and award/contractual provisions.

xiii. Visual Inspection

The post-delivery inspection is similar to the inspection at the contractor's plant and will be conducted with the vehicle in a static condition. Any visible delivery damage will be identified and recorded during the visual inspection of the vehicle.

xiv. Vehicle Operation

The road tests for total vehicle operation are similar to those conducted at the contractor's plant. Operational deficiencies of the vehicle will be identified and recorded.

xv. Acceptance

Within fifteen (15) calendar days after arrival at the designated point of delivery in SCTDD the vehicle shall undergo SCTDD post-delivery inspection and test. If the vehicle passes this inspection and test, acceptance of the vehicle by SCTDD occurs on the fifteenth (15th) day after delivery. Acceptance may occur earlier if SCTDD notifies the contractor of early acceptance or places the vehicle in revenue service. If the vehicle fails the inspection test, SCTDD reserves the right to either have the contractor make the required repairs or make the repairs itself. If SCTDD makes the repairs they will be handled in accordance with the Warranty Provisions.

50. DESTINATION SIGNS

Space shall be provided in the front of the trolley, for an outside-facing display sign, an interior passenger facing display sign, and a right-side, outside facing display sign befitting the following dimensions:

NOTE: Display signs that will be used are proprietary sourced, and thus not included in this RFP. However, the position and sizing of these signs, the cabling conduit, power provisioning, and other such items are identical to the industry and will be included in this RFP.

Front Sign:

- Space provided for a 7.25-inch-high, 29-inch-wide LED display sign
- 12v Battery Power, 12v Ignition Power, and Grounding Block (or wire) provided through conduit

Side Sign:

- Space provided near the front of the trolley, near the boarding door, for a 7.25-inch-high, 26-inch-wide LED display sign
- 12v Battery Power, 12v Ignition Power, and Grounding Block (or wire) provided through conduit

Interior Sign:

- Location to mount a 2-inch-wide, 4.5-inch-high, 26-inch-wide LED display sign
- 12v Battery Power, 12v Ignition Power, and Grounding Block (or wire) provided through conduit

SIGN ENCLOSURES:

All Signs shall be enclosed in a manner such as to inhibit entry of dirt, dust, water and other contaminants during normal operation or cleaning. Access shall be provided to clean the inside of the Bus window(s) associated with the Sign and to remove or replace the Sign components. Access panels shall be mounted for ease of maintenance/replacement. The vehicle manufacturer shall comply with the Sign manufacturer's recommended mounting, mounting configuration, and installation procedures to assure optimum visibility and service accessibility of the Sign System and System components, which shall be provided by SCTDD to winning recipient.

INTERCONNECTING CABLING:

Data Communication	Single twisted pair (two conductors) cable
Power Cabling	Three conductors connecting to the switched and un-switched (battery) power and a return (battery).

51. Laptop Computer and Engine Diagnostic Software

- a. Contractor will furnish each trolley bus with one laptop computer with at a minimum the following:

Laptop computer with minimum 15.6” high-definition display

Intel Core i5 or i7 processor

6GB DDR3 SDRAM memory

640GB hard drive

Multiformat DVD / CD drive

6 cell lithium-ion battery

AC power cable, power cord

2 high-speed USB ports

7-in-one media reader

Built in Intel wireless networking

Microsoft Windows 7 operating system

6-12 months of anti-virus protection

Laptop will be supplied with latest version of Cummin’s “**Insite**” engine diagnostic software and service paid for 12 months.