

**ATTACHMENT H**  
**STATE OF SOUTH CAROLINA TECHNICAL SPECIFICATIONS FOR**  
**PURPOSE BUILT ADA VEHICLES**

**A. Chassis**

1. 8,550 GVWR minimum, with all standard equipment as specified. The dimension is designed to keep the basic units below the CDL-Certified Driver's License requirements.
2. Engine Type – V-6 Gas No Standard Features shall be deleted. Each Proposal shall include a listing of all Standard Features, Safety and Security Features and Accessibility Features to be provided as standard on this contract.
3. 6-speed automatic minimum
4. Spare tire and wheel (shipped loose)
5. ~~An Alternative Fuel Engine, which is the OEM standard for this size vehicle considering components and accessories proposed, must be provided as an alternative fuel option. Manufacturer shall propose engine horsepower and torque. Proposer shall provide company name(s) and contact information for alternative fuel engine equipment manufacturer(s) and installer(s). Only OEM approved upfitters are authorized to convert engine and components. No plug and play components unless authorized by the OEM.~~

**B. Dimensions**

1. Wheelbase 130" to 148"
2. Overall Length 205" to 264"
3. Overall Width 70" to 82" excluding mirrors
4. Inside Width 64.5" to 91"
5. Overall Height 75" to 110"
6. Inside Height 67.5" to 77"
7. Fuel Tank shall remain in the OEM Location and OEM fuel system no drill zones shall be followed in accordance with the manufacturer and Equipment Mounting manual.
8. The drive shaft will be rated capable of transmitting the power units to the drive wheels. Safety guards are required as necessary to prevent a broken drive shaft from touching the ground or contacting any part of the frame.
9. The vehicle shall be equipped with curb-side exhaust terminating at the right no closer than three (3) feet to the rear bumper
10. The OEM driver's door will be equipped with a running board assembly with splash guard. The running board will be reinforced to accommodate heavy daily use. The construction should be diamond plate aluminum or perforated steel or aluminum.

**C. Electrical**

1. Wiring shall be 12-gauge copper strand or equivalent. All wiring shall be color-coded, numbered for identification. All wiring shall be run inside the body in a protected area. Any wiring that is exposed to the elements shall be in non-metallic loom and securely clipped for maximum protection. Clips shall be rubber or plastic coated to prevent it from cutting through the wiring insulation. Protective grommets shall be installed at all points where wiring penetrates metal and other materials. A separate panel for all add-on components shall be located in an accessible area inside the vehicle. Circuit breakers and electrical panels shall be installed at easily accessible locations. The bidder shall provide a complete laminated wiring diagram showing the original wiring and the added wiring for the vehicle. This is to be mounted at a location convenient for service personnel. No lock wire connectors will be allowed. Insulated stake-on spade terminals or equivalent shall be used. Grounding of components shall be through polarized shielded terminals wired to main structural ground points. All exterior connections shall be weatherproof covered with heat shrink tubing or screw type plug wire connector (Amphenol plug) lock type plug. **Approval and acceptance of manufactures different gauges of copper wires or equivalent.**
2. All accessories and electrical equipment, except head and parking lights, emergency flashers, and wheelchair lift shall be wired through the vehicle ignition switch so as to be operative only with switch in ON or ACCESSORY position.
3. Vehicle shall be equipped with a self-contained strobe lamp with a minimum rating of ten (10) joules and double flash and maximum height of six inches (6"). The strobe lamp flash tube shall be warranted for a minimum of twelve (12) months. All other components shall be covered for the full warranty period. The strobe lamp shall be mounted on the roof centerline within thirty-six inches (36") from the rear of the vehicle. This light shall be wired to operate with the ignition switch and a manual switch on the control panel and shall be protected by a circuit breaker so that a short at the strobe lamp will not adversely affect any other component. A protective guard shall be constructed of stainless steel at a minimum of one and one-quarter inch (1-1/4") in diameter, angled from the front. This guard shall be designed and installed to utilize strobe light mount allowing limbs or low hanging objects to ride over the lamp. There will be two (2) extra wires pulled for the strobe light connection on the roof to panel. All vehicles shall be equipped with a center mount red LED brake light.

4. Backup Alarm: Minimum sound rating of 95 decibels.
5. Power wire to wheelchair lift shall be securely clamped to lift and protected by in-line circuit breaker
6. ~~When applicable~~ a separate battery system must provide for auxiliary power to the wheelchair lift. Wheelchair battery will have two (2) connections to isolate the battery from the main battery and a separate system for the lift. Fast idle control box will be installed to maximize charging during lift operation and long-operating times with equipment, A/C, lighting, wheel-chair operating, etc. A 220-amp alternator is standard
7. Interior – Passenger entrance door controllers will be protected from moisture and water buildup. Access to controller and mechanism will be through an access panel. Rear heater will be mounted as far rear as possible

#### **D. Body**

1. Standard van body shall meet all stated specifications, State, Federal, FMVSS, and ADA. The body of the vehicle shall remain OEM with minimal modification.
2. Vehicles shall meet all applicable requirements of the Americans with Disabilities Act (ADA) as set forth in CFR 37 and 38, issued September 6, 1991, with respect to the body structure.
3. The body shall be OEM with only minimal modification.
4. The vehicle may be a Uni-body or Frame Structure construction.
5. The body shall be insulated with a minimum 1” cotton weave blanket or approved equal or other fire- resistant insulation material to prevent heat loss in cold weather, and cool air in hot weather. Material must be R11 or greater. The interior shall be finished with OEM walls and headliner.

#### **E. Roof**

1. The roof shall be OEM standard mid roof consistent with 1.2.6 above.
2. Center aisle height range shall be 67.5” not to exceed 77”.

#### **F. Side Passenger Entry Door**

1. The side passenger entrance door shall be a slider type and shall have a lowered step (minimum of 2 steps below construction of floor level) constructed of corrosion resistant 16-gauge (minimums) steel or aluminum. Step shall be treated with a rustproof coating. All components are to be welded construction.
2. The ground to first step shall not be less than 11” and no higher than 13”. No protrusions on the step that interfere with a clear passage shall be permitted.
3. Steps shall be fully recessed, enclosed, and protected from weather and other adverse conditions. The width of the lowered stepwell shall not extend more than 2” beyond the widest point on the vehicle body.
4. The tread surfaces of the front service entrance steps shall be covered with hard fire-resistant, slip-resistant, vinyl covering. The vinyl shall be at least 2.2 mm thick. The vinyl covering shall be permanently bonded to the metal step surfaces and shall be properly sealed to prevent moisture from getting underneath. All necessary moldings will be provided. All step edges and thresholds shall have a band of yellow running the full width of the step edge.
5. Step well area shall have at least 2-foot-candles of illuminations when engine is running or not.

#### **G. Door Opener**

1. Standard Van Door Opener – Shall be manually operated, door must be sealed to prevent air, water, or other elements. Minimum opening of 36” with a clearance height of 56”. Door must be capable of opening from the inside.

#### **H. Windows**

1. OEM standard windows in the OEM doors and windshield on the basic chassis shall be retained. Glass shall be OEM safety tinted.
2. Windshield shall be OEM safety glass and uniformly tinted.
3. Van shall be ordered with OEM rear window package.
4. All windows, except windshield, front doors, and rear emergency door, shall be tinted (minimum of 35%) with OEM privacy tint.
5. All windows (including windshield) and tinting shall meet all applicable Federal and State Motor Vehicle Safety Standards.

#### **I. Side and Rear Doors**

1. OEM Rear doors shall be retained for wheelchair lift access door on all extended length high top vans.

#### **J. Bumpers**

1. OEM front and rear bumpers shall be provided. Reflective safety tape shall be mounted on the rear bumper so as to provide night visibility for motorists behind the bus. Signs saying: “THIS VEHICLE STOPS AT ALL RAILROAD CROSSINGS”.

## **K. Exterior Body Lighting**

1. Exterior body lighting shall meet all State and Federal Regulations. Where applicable LED lighting will be provided.
2. Lighting requirements for the front entry and lift door areas must meet ADA requirements.

## **L. Exterior Mirrors**

1. OEM Side Review power mirrors shall be provided.
2. Heated motorized remote outside right and left side view mirrors shall be provided. Mirrors shall be approx. 15" x 8" in size and constructed of anodized aluminum, chrome plated or other non-corrosive materials. Bottom of mirror, approximately 3", shall be convex mirror. Lucerix, Rosco mirrors or approved equal shall be provided.

## **M. Finishing Procedures**

1. All bare metal components shall be painted with primer sealer and finished with enamel paint to match the vehicle according to OEM standard to prevent corrosion. All welded areas should have particular attention.

## **N. Undercoating**

1. The entire underside of the vehicle body, including the undersides of fenders, shall be coated with a fire-resistant asphalt base rubber base, or equivalent.

## **O. Exterior Color**

1. All OEM standard white paint colors shall be available.
2. Any metal body extensions shall match bus body OEM standard paint colors.
3. The body shall match the chassis OEM standard paint color, unless specifically requested by the project that the roof be white with a contrasting body color.

## **P. Interior**

1. Interior finish shall complete in a professional manner. Panels shall fit together without any gaps. Interior colors shall be color-coordinated and complimentary to the van's OEM front interior color.
2. All sharp edges, sharp corners, and/or protrusions shall be eliminated for safety reasons. Any fastenings or other objects that can catch a passenger's clothing or cause injury shall not be permitted. No abrasions, marks, or cuts will be acceptable on any of the interior walls or seats. An OEM inside mirror shall be mounted for the driver to see the passengers.
3. Vehicles shall meet all applicable requirements of (ADA) as set forth in CFR 37 and 38, issued September 6, 1991, with respect to the vehicle interior.
4. The Chassis OEM rear passenger ejection mitigation bags behind the Chassis OEM "B" pillar must be retained.
5. Interior paneling shall be OEM or equivalent. If interior finish is not OEM bid bidder must provide pictures to show that interior finish is completed in a highly professional manner. Interior color shall be color-keyed to the bus's exterior color
6. All rivets, screws, snaps, etc., in paneling shall present a finished look. All joints in the interior paneling shall be covered by trim strips or molding.
7. All interior panels, materials, and treatments shall meet all federal motor vehicle safety standards.

## **Q. Insulation**

1. The vehicle body shall be fully insulated in the roof and all body panels, including all extended top and bottom door panels to deaden sound and reduce vibrations and heat transfers.
2. A minimum R11 value insulation shall be provided behind the interior walls and headliner.
3. The OEM 6 airbag ejection mitigation system must be retained in all models and all configurations to include "high roof" with electric bus doors. See attached illustration.

## **R. Flooring**

1. Floor shall be flat design from rear engine hood, rear of driver, to rear of van. The sub-flooring shall be made of metal or at a minimum 5/8" thick exterior A-C marine grade or equal, waterproof plywood securely fastened to the under structure. All edges, cutouts, notches, etc., shall be properly sealed after cutting to prevent moisture from entering between the plies.
2. Floor covering shall be slip resistant vinyl flooring, constructed with aluminum oxide, silicon carbide, quartz and multiple colored PVC chip blended throughout a high-quality vinyl wear surface for better depth perception for sight impaired (top coating is not acceptable). Bacteriostats will be incorporated providing all exposed surfaces with excellent anti-bacterial properties. Minimum floor thickness of ~~2.2~~ 2.7 millimeters (combination of flooring and backing material will not be accepted) or approved equal.
3. The whole floor will be a uniform thickness throughout the vehicle, eliminating the need for ribbed surfaces, while exceeding the ADA minimum slip resistance standard rating of .06 static coefficient of friction under dry or wet

conditions. Coving material is to be installed to support floor when rolling floor covering up the sidewall of vehicle

4. Seams are to be heat welded to provide a permanent waterproof seal against water penetration leading to premature sub-floor failure or curling leading to possible tripping hazards.
5. Landing area and step edgings are to be yellow safety vinyl edging. Edging is to be heat welded to the main floor and step tread to provide for a long-lasting seam. Step tread and riser are to be a one continuous piece construction eliminating seam at the back of the step. Tread to be supported at the upward bend at the back of the step and up the riser by coving material.
6. The entire passenger area floor shall be sealed at all points where moisture may enter and be ADA compliant
7. Flooring shall be heavy duty 2.7mm thick or greater excluding backing material (thickness of vinyl only).
8. Flooring shall contain aluminum trioxide and silicon carbide for superior slip resistance and quartz rock to prevent wear, blended throughout a high-quality vinyl wear layer.
9. Manufacturer is required to provide batch-testing results upon request on each production run of the flooring product used on this procurement to ensure compliance to the specification. This includes providing written documentation that a PTV pendulum test-rating equal to or greater than 36 is achieved.
10. Flooring shall be an easy to clean, smooth safety floor providing a non-skid walking surface that retains consistent slip resistance, regardless of wet or dry weather conditions, for the life of the bus.
11. All installations and transitions shall be smooth and fully supported from main floor and including to any wall positions, presenting no tripping hazards and minimizing debris accumulation.
12. All seams shall be heat welded to prevent moisture migrating to the subfloor per manufacturer's specifications. Flooring shall have a standee line minimum of 2.5 in. wide and extend across the bus aisle behind the driver compartment.
13. All stair edging shall be marked with a bright yellow or white contrasting strip a minimum of 2.5 in wide.
14. Flooring shall carry a 15 year non prorated warranty.

## S. Seating

1. OEM driver and passenger seat shall be provided in the van.
2. Three (3) 2 passenger fold-away driver side seats and one (1) single passenger fixed passenger side forward facing seat. Standard seat shall be the GO-ES with 3pt. restraint.
3. Upholstery material shall be 36 oz./sq. yd. minimum, transit vinyl, ALL passenger seats shall be treated with a spray on moisture barrier treatment or have a plastic moisture barrier between the seat fabric and the seat foam. Seats shall key to the vehicle's interior panels and exterior color. **Vinyl seating can be standard; cloth seating will require a moisture barrier.**
4. Knee room 10" – 12"
5. Aisle width 10" – 14"
6. Foam padding shall be high density (4.5 pcf) non-deformable foam. Load bearing values in excess of 45 ILD. **The State has accepted PCF 3.1- 3.2 and the load bearing values ranges from 32-65 ILD**
7. All seating shall meet or exceed all applicable FMVSS requirements.

## T. Passenger Restraint System

1. Each seat position shall be equipped with 3-pt restraint belts with push button release and heavy-duty under seat retractors must meet all applicable FMVSS regulations. 3 PT belts shall be integrated into the back of the seat. Minimum of two (2) seat belt extenders to be included. Seat belt and extenders must be provided by the same manufacturer and work together in unison.
2. Seat belts shall be securely attached to structural members of the seat at three points. Attachment to vehicle under flooring is acceptable when a 3" washer is used. Belts shall be attached to and become an integral part of the bench seat and the bidder must provide that the seat has been tested to meet applicable FMVSS requirements 207/210 test.

## U. Lighting

1. The interior of the vehicle shall be adequately illuminated. Interior dome lights shall be LED.
2. Adequate light shall be provided for the instrument panel, with intensity controlled by an instrument panel switch.
3. When applicable all door lights and the front passenger door/step well shall illuminate automatically when doors are opened. Step well light type and location shall be provided so as to not be a hazard to boarding passengers.
4. Lift lighting shall be provided and required to illuminate on the lift, as well as on the street surface outside the lift door, to meet ADA requirements.

## V. Instrument Panel, Dash, and Other Controls

1. Dash shall be color coordinated with interior trim color. ~~Black will not be an acceptable color.~~ An engraved or etched **or screen printed onto a plastic panel**, plate will be installed in site view of the driver's position stating the overall height clearance.
2. OEM driver's sun visor and interior rear-view mirror to be provided.

3. Operator instrument panel and console shall be equipped with the following controls. All controls and switches shall be within easy reach of the driver. Need switches with indicator lights, all switches and controls shall be lit.
  - a. General Interior Lights
  - b. Brake Lock/Lift Over-ride
  - c. Ventilator Fan in the Roof Hatch
  - d. A/C Rear
  - e. Entrance Door
  - f. Rear Heater
  - g. Lift Door Ajar
  - h. Rear Door Ajar w/ Light and Audible
  - i.
4. Instrument panel and dash shall be equipped with the following OEM instruments, gauges, and controls. All controls and switches shall be within easy reach of the driver. No overhead switches or controls are permitted. Lights in lieu of gauges are not acceptable except as noted.
  - a. Speedometer with odometer and trip odometer
  - b. Oil pressure gauge
  - c. Ammeter
  - d. Engine coolant temperature gauge
  - e. Fuel gauge
  - f. Upper beam head lamp indicator (light)
  - g. Directional signals (light)
  - h. Parking brake on (light)
  - i. Headlight switch
  - j. Inside hood release
  - k. Controls for heater, defroster, and air conditioner
  - l. 12-volt power source
  - m. Standard OEM AM/FM push button radio or a high-quality aftermarket AM/FM/CD radio, with digital clock or equal
  - n. Windshield wiper and washer two speed, intermittent type
  - o. Emergency flashers

## W. Heating and Cooling

1. Front heater and defroster shall be OEM with the maximum BTU rating available.
2. Front, high capacity, air-conditioning shall be provided. OEM in-dash unit shall be supplied with the maximum BTU rating available. The dash unit shall be separately controlled from any auxiliary system.
3. A heater system with minimum of 35,000 BTU's available shall be included. The heater shall provide a maximum amount of comfort for vehicle passengers. The unit shall be located in the rear under seat. Blower shall be controlled by a three position and OFF positions.
4. A rear A/C evaporator, dual split compressor system, shall be industry standard or equal 45,000 BTU; however, the auxiliary floor heater shall remain the same as specified for the rear in
5. 3.10.3. OEM front dash installed evaporator shall be provided.
6. Air circulation shall be high volume with low velocity to provide draft-free comfort.
7. There shall be a shut-off valve(s) if the heater piping is located near the engine and easily accessible to permit the water circulation to the heater to be shut off during hot weather.

## X. Stanchion and Grab Bars

1. Stanchions and grab bars shall be of stainless steel or equivalent, a minimum of 1-1/4" in diameter. Padding ~~shall~~ **is optional, but must** be permanently bonded to stanchions and grab bars. **Yellow powder coating may be added at no additional charge at the agencies request.** All stanchions shall be mounted, structural main members.
2. Vertical stanchion bars shall be provided for both sides of the front passenger entrance. A grab bar shall extend from the left stanchion, rear edge of the step well, to the vehicle sidewall at an appropriate height to provide passengers some support while climbing the steps.
3. Bonded anti-vandal grab bars shall be located on both the ~~top~~ of each forward-facing permanent passenger seat and on interior ceiling.
4. A passenger assist grab bar shall be provided on the passenger door area. Material can be the same that is used on the stanchions

## Y. Priority Seating Sign

1. Each vehicle shall contain a sign which indicates that the seats in the front of the vehicle are priority seats for people with disabilities.
2. Each wheelchair station location shall be designated as such.

3. The signs shall be in compliance with CFR 38, subpart 38.27 and the Appendix to it.

## **Z. Emergency and Safety Equipment**

1. Fire extinguisher dry chemical type, multipurpose, Class ABC, 5lb, rechargeable with gauge, UL approved, shall be provided. To be mounted securely in the best area to ensure easy access in the case of an emergency.
2. First Aid Kit – 16 unit (1-15 persons) Ever Ready First Aid Kit or equivalent shall be provided, seat belt cutter, body fluid, and blood pathogen kit.
3. Warning Kit – Three (3) portable warning reflectors, which can be mounted on stands, shall be furnished in a kit or box. Kit shall be mounted in an accessible location.

## **AA. Wheelchair Lift System**

1. Vehicles shall meet or exceed all applicable requirements of the ADA as set forth in CFR 37 and 38, issued September 6, 1991 or any subsequent updates, with respect to mobility aid accessibility. The contractor is solely responsible for any additions, deletions, omissions, or interpretations of ADA, as it relates to the construction of said contracted vehicle(s).

## **BB. Wheelchair Station**

1. A single Wheelchair station is to be provided on all vehicles having wheelchair lifts. Each wheelchair station shall consist of usable floor area in which a passenger in a wheelchair may be positioned and where wheelchair occupant restraint systems and wheelchair securement devices are to be installed.
2. All wheelchair station shall be designed to secure wheelchairs in a forward-facing position.
3. Each wheelchair station shall provide adequate room for a standard size wheelchair. No obstructions shall hinder a wheelchair from being rolled into place. Each wheelchair station shall have a clear floor area of 30" in width and 48" in depth. Not more than 6" of required clear floor space may be accommodated for footrests under another seat provided there is a minimum of 9" from the floor to the lowest part of the seat overhanging the space.

## **CC. Wheelchair Securement System**

1. A four-point track/belt tie down system shall be provided at each wheelchair station to securely hold the wheelchair in a forward-facing position. Securement systems shall be in vehicle tested to meet ADA and FMVSS regulations. The lap and shoulder belt needs to be retractable.
2. This system shall be composed of the following components, four separate belts, lengths of track with all necessary buckles, hardware fittings, and other parts to make it a complete ADA wheelchair securement system. L-Track or equivalent system shall be standard.
3. The wheelchair lift/ramp system shall be a system which permits persons confined to a wheelchair to enter and leave a vehicle while in a wheelchair, without difficulty. The base vehicle wheelchair lift/ramps shall be Braun. Bidder shall submit manufacturer's specification for approval with bid.
4. 4.0.3 In certain wheelchair station arrangements, shared floor track may be used, provided that adequate belt securement slots are furnished. Adequate length of track should be provided to accommodate various sizes of wheelchairs within each wheelchair station.
5. The recessed track shall be securely mounted into the vinyl flooring.
6. When not being used for securement, the securement system shall not interfere with passenger movement, shall not present any hazardous condition, and shall be reasonably protected from vandalism. Track size shall be the appropriate length so that all belts of the system can be attached. Location for mounting the track may be on sidewall or behind modesty panel; however, the location must be easily accessible.
7. Literature describing and giving instructions on the use of the wheelchair securement system shall be provided with each wheelchair lift equipped bus. One hour of wheelchair securement training given by a certified ADA trainer shall be given at the time of vehicle delivery.

## **DD. Wheelchair Occupant Restraint System**

1. A three-point restraint system consisting of a lap and shoulder belt combination shall be provided for each wheelchair station. The shoulder belt shall be a minimum of 86" in length and the lap belt shall be a minimum of 43" in length. Belt connection around wheelchair occupant shall be button release and comply with all Federal and State Motor Vehicle Safety Standards and Regulations.
2. The shoulder attachment point shall be secured in a structural member of the sidewall. The lap belt shall be secured by inserting into the floor track **or be secure to the retractor assembly** provided for the wheelchair securement system. The shoulder and lap belt shall connect at the buckle portion of the restraint. Restraints shall be designed and installed in such a manner that the restraint belts transfer crash forces to the hips and upper torso portions of the skeleton and shall not transfer these forces to the abdomen section of the passenger. The attachment shall comply with all Federal and State Motor Vehicle Safety Standards and Regulations.
3. Shoulder belts shall be retractable at the wall connection or removable and shall not hand loose or interfere with movement in bus when not in use. Restraints belts that are removable from floor and wall shall be stored in same track or other storage area as provided for in wheelchair securement system. Restraint belts permanently fixed to

- the floor will not be acceptable.
4. The wheelchair occupant restraint system shall be independent from the wheelchair securement system. Restraint system shall not be attached to the wheelchair.

## **EE. Wheelchair Lift/Ramp**

1. The wheelchair lift/ramp system shall be a system which permits persons confined to a wheelchair to enter and leave a vehicle while in a wheelchair, without difficulty. The base vehicle wheelchair lift/ramps shall be Braun. Bidder shall submit manufacturer's specification for approval with bid.
2. Wheelchair lift/ramp shall be electro-hydraulic or electro-mechanical powered designed.
3. If applicable a lift shall require an independent power source. The lift shall operate on the vehicle's existing heavy-duty electrical system as specified in 1.3.6. The lift shall have separate wiring and the lift interlock switch shall be mounted on the hinge side of the lift door.
4. The frame and platform design shall have been tested to a static load of 2,400 lbs. The lift shall have 1,100 lb. tested lift capacity and a 1,000 lb. continuous lifting capacity.
5. The design for lift mechanical load bearing components shall have a safety factor of at least 6; all other structural parts shall have a safety factor of 3. The design factor shall be defined as the ratio of the failure load to the design load.
6. All hardware that will be subjected to wear, corrosion, or other adverse action that would reduce the safety of the lift/ramp, and items requiring periodic maintenance shall be provided with easy inspection access.
7. Placement of the lift/ramp or the method of attachment shall not significantly diminish the structural integrity of the vehicle or cause a hazardous unbalancing of the vehicle either by its weight when the vehicle is moving or by its weight and load when the vehicle is stopped, subject to the vehicle manufacturer's recommendations.
8. If applicable all fasteners for joining parts or attaching the lift to the vehicle shall be specified by the lift manufacturer and be able to withstand operating vehicle and lift vibrations without loosening.
9. Shear areas or pinching action mechanisms of the lift/ramp shall not be readily accessible to occupants, passengers, or operators during normal operation of the lift. In the event that readily accessible shear areas of pinching actions mechanisms are unavoidable, the safety of occupants, passengers, and operators shall be provided for by physical barriers, safety-stop switches restricting the operating force of the equipment below that which cause injury or other recognized safety methods.
10. Where applicable all exposed edges or other hazardous protrusions on the lifts/ramps which are stowed inside the passenger compartment shall be equipped with padding of a thickness to the manufacturer's recommendation. Padding shall be of an energy absorption material capable of minimizing injury- producing forces and shall extend to within 3" of the vehicle floor.
11. Where applicable all exposed edges or other hazardous protrusions on the lifts/ramps which are stowed inside the passenger compartment shall be equipped with padding of a thickness to the manufacturer's recommendation. Padding shall be of an energy absorption material capable of minimizing injury- producing forces and shall extend to within 3" of the vehicle floor.
12. All protrusions or moving parts of the lift/ramp mechanism which could snag clothing shall have a guard or shield to protect passengers and/or operator.
13. Interior padding shall be provided above the door opening for the lift to avoid injury during loading and unloading of passengers. Padding shall extend the entire width above the door opening and shall also be provided along the interior roof-ceiling mating edge, and at all other locations where sharp or potentially hazardous edges occur.
14. All through-body fittings shall be on non-corrosive materials.
15. All wiring and cords for an interior mounted lift shall be able to withstand adverse weather conditions, extreme heat, and cold. Protective covering for wiring and cords shall be provided, if necessary.
16. Vendor shall re-undercoat with an automotive type undercoating, and otherwise seal all through-body fittings from moisture. The reapplication of undercoating is only required for through-body fittings.
17. An operational manual shall be provided with each vehicle to include at a minimum, normal and manual lift operations, and preventive maintenance schedule, use of wheelchair restraint and seat belt system, lift trouble shooting and parts listing. One hour of lift operation and safety training shall be provided at the time of delivery with each vehicle. If the training is not possible at the time of vehicle delivery, the training must be scheduled on a later date. Evidence of such training must accompany other documents such as invoice, etc

## **FF. Lift Platform**

1. Platform surface shall be slip resistant material and shall be free of any protrusions over ¼" high that might cause injury to operator and passengers. The platform construction shall be of expanded metal mesh, to allow for driver vision through any portion that overlaps a window when in a stored position.
2. The platform shall have a minimum clear width of 32", a minimum clear width of 34" measured from 2" above the platform surface of 36" above the platform, and a minimum clear length of 54" measured from 2" above the surface of the platform to 36" above the surface of the platform.
3. A transition or bridge plate shall be hinged designed and mounted as an integral part of the bus so as to provide a

- smooth transfer from the platform to the interior of the vehicle. The transition plate shall be mounted in such a manner that the sides of the plate do not make contact with inside rails of the platform. The transition plate shall be secured so as not to interfere with the operation or storage of the lift platform or the placement of wheelchairs.
4. When the platform is at vehicle floor height, gaps between the platform edge and the vehicle floor shall not exceed ¼”.
  5. Platforms shall be equipped with a movable barrier or inherent design feature shall prevent a wheelchair from rolling off the edge closest to the vehicle until the platform is in its fully raised position.
  6. Platforms shall be equipped with permanent vertical side plates at least 2” higher than the surface of the platform.
  7. An automatically actuated roll-off barrier across the full length of the loading-edge or entrance ramp of the platform shall be provided. The barrier shall be of sufficient height when closed to prevent a power wheelchair from riding over the barrier. Outboard barrier shall be automatic spring-loaded automatic. Lift will not operate if inboard and outboard barrier are not locked and in full upright position ensuring extra safety for the wheelchair occupant. The barrier shall automatically close and remain closed when the lift rises 3” above the ground surface or “Front Roll Stop”. The entrance ramp shall not exceed a slope of 1:8, measured on level ground, for a maximum rise of 3”, and the transition from ground to ramp may be vertical without edge treatment up to ¼”. Thresholds between ¼” and ½” high shall be leveled with a slope no more than 1:2.
  8. The basic bid shall be on an automatic interior lift that provides a self-locking, rattle free mechanism to secure the lift when stowed.
  9. Platforms shall be capable of being raised and lowered with no sudden acceleration, deceleration, or jerking motion. The lift shall be equipped with a mechanism to allow manual adjustment of the platforms descent and ascent speed.
  10. The platform shall not move at a rate exceeding 6 inches/second during lowering and lifting an occupant, and shall not exceed 12 inches/second during deploying or stowing.
  11. Platforms, when in the raised horizontal position, shall not deflect more than 3 degrees in any direction between its unloaded position and when loaded with 1000 lbs. applied through a 26” X 26” test pallet.
  12. The platform shall be capable of lowering a minimum of 1.5” below the reference ground line, enabling it to be used in a condition where the ground level is lower than the vehicle standing level.
  13. Handrails shall be provided on two sides of the platform and move in tandem with the lift. Handrails shall be graspable and provide support. Handrails shall have a usable component at least 8” long with the lowest portion a minimum 30” above the platform and the highest portion a maximum 38” above the platform. The handrails shall be capable of withstanding a force of 100 lbs. concentrated at any point on the handrail without permanent deformation of the rail. The handrail shall have a cross-sectional diameter of 1-1/4” to 1-1/2”, or shall provide an equivalent grasping surface. Handrails shall not interfere with wheelchairs entering or leaving the vehicles. Handrails in the stowed position shall not extend in the vehicle’s passenger area more than 5” and shall be secured in such a manner to keep them from rattling and prevent them from becoming a hazard to passengers. All lift platforms must include a safety restraint belt as standard equipment. Restraint belt should enable lift operation when engaged.

## **GG. Lift Controls**

1. Operating controls shall be of heavy-duty commercial type and shall be designed for hand-held operation with adequate cord extension to allow operation of the lift by the operator standing outside the vehicle at a position behind or at the side of the lift platform. A method for storing and securing the controls when not in use shall be provided. All lift configurations are required to mount and fastened excess lift control cord securely to the lift and lift door.
2. The controls shall be designed to be used safely without adverse effects to the operator or to the controls in all weather conditions.
3. Lift controls shall be easily understood by the operator and shall not allow automatic sequencing of the lift from one mode to another that would jeopardize the safety of the wheelchair passenger.
4. Operation switches shall require continuous force from the operator for functioning.
5. Lift controls shall allow for instant direction reversal at any point in the cycle.
6. In addition to the normal operating power, a manual backup system for unloading wheelchair passengers and returning the lift to the stowed position shall be provided in the event of electrical failure. The backup system shall be mounted on the interior of the vehicle and in a location that will not interfere with passenger loading and unloading.
7. Lift platforms stowed, or when occupied shall have provisions to prevent it from deploying, falling or folding any faster than 12 inches/second or it from dropping of an occupant in event of a single failure of any load carrying component.
8. The lift controls shall be inoperative unless the vehicle’s emergency brake is activated.

## **HH. Lift Door**

1. Lift door opening shall meet all ADA requirements.
2. The lift door opening shall be a minimum of 43” X 68”. Trim panels can be screwed, but all other components



- shall be of welded construction.
3. Door shall be equipped with a device to prevent doors from closing when the lift is in motion. If single door is provided, a T-Latch is required.
  4. Door(s) shall be securely attached and shall not leak. Door shall include an upper fixed glass window.
  5. A light shall be installed inside and above the lift door. The light shall operate automatically when the lift door is opened and provide at least 2-foot-candles of illumination measured on the entrance area and the lift platform.
  6. The same light in 4.8.5 or other lights mounted outside the lift door shall provide at least 1-foot-candle of illumination on the street surface for a distance of 3 feet from all points on the lift platform. Such light shall be located below door level and shielded to protect the eyes of entering and exiting passengers.

## **II. Raised Roof**

1. The raised roof shall be part of a unitized body constructed Chassis OEM vehicle.
2. Minimum of 77" interior center aisle height.
3. The raised roof shall be the Chassis OEM High Roof Option.
4. A dual purpose manually opened and electric operated roof ventilator/emergency exit with power fan shall be installed in the raised roof of the vehicle at approximately the center of the passenger compartment. The hatch shall be 23" X 23" minimum and shall be installed so that fresh air can be circulated in the vehicle. A model like Transpec would be acceptable. The hatch shall meet all Federal Safety Standards. No warning devices may be installed.

## **JJ. Passenger Entrance Door (High Roof)**

1. Vehicle shall be equipped with a double leaf front entrance door, located behind the passenger door. Purpose Built Vans can be sliding OEM door and Purpose-Built High-Top Vans can have electric bus outward opening doors. Door shall be of the pivot swing out type and shall be driver operated electric.
2. The door shall provide a clear entry height of a minimum at least 72.5". Clear entry height is measured by using a plumb bob to achieve a true vertical. By placing the line at the top of the door opening, where the bob falls is the "true vertical". OEM curb side slider doors are acceptable
3. The door when extended open shall have a clear opening width of at least 33".
4. Padded head bumpers shall be installed over the entrance door, wheelchair lift and emergency door.
5. Door shall be flush with outside of the bus when in a closed position. Suitable weather stripping shall be used to provide a water and weather tight seal.
6. An 18" grab rail (minimum of 1-1/4" in diameter) shall be mounted at an angle to the door on each side to provide additional support while loading and unloading.
7. When the front entry door is open, a light shall provide at least 1-foot-candle of illumination on the street surface for a distance of 3' from all points on the bottom step tread. Such light shall be located below window level and shielded to protect the eyes of entering and exiting passengers.
8. The passenger entrance steps shall be 9" rise x 9" run to protect passengers from a tripping hazard. **Approval of 8" rise X 8" run has been approved.**
9. Cutting or welding OEM chassis structural boron steel during the installation of the passenger entrance shall not be allowed.
10. The exterior of Passenger entrance shall be surrounded by ABS panels or approved equivalent molded to follow the contour of the van body. Using body filler or not following the contour of the body will not be accepted.

## **KK. Opener – "High Top Van**

1. An electric, driver operated bus-type extended door opener with positive locking control shall be provided to open and close the front door. The emergency switch shall be an interlocking compression-type and located in the header. Interior passenger entrance door controllers will be protected from moisture and water buildup. Access to controller and mechanism will be through an access panel. Bidder shall submit door opener drawing
2. The door opener switch shall be placed on the console or steering wheel, but not overhead, and within reach of the seated driver and not to interfere with the boarding passengers.

## **LL. Miscellaneous Requirements**

1. Driver Warning- The engraved vehicle height clearance warning sign shall be posted in clear view of the driver. (ref:3.9.1)
2. Vehicles shall meet all applicable requirements of the American with Disabilities Act (ADA) as set forth in 49 CFR 37 and 38, issued 9/6/91; and 49 CFR 571, FMVSS 403 and 404, issued 12/27/02 with respect to the body structure.

## **MM. Options**

1. Optional equipment items not included in this specification are listed in the attached spreadsheet for each vehicle class. The "Optional Equipment Additions" should NOT be included in the base price of the vehicle. Any "Optional Equipment Deduction" should be included in the base price of the vehicle.

2. Using Governmental Units will adjust their purchase orders by adding any “Optional Equipment Addition” to or deducting any “Optional Equipment Deduction” from the base price of the vehicle.
3. Using Governmental Units may wish to add optional equipment not listed in the attached spreadsheet. Pricing for said items will be at dealer cost plus no more than 10% markup. See section VIIB “Optional Items” for more details.
4. The state wishes to obtain pricing for the Angle Trax brand of “In Vehicle Recording Systems”. The Angle Trax brand is intended to be an add-on camera system to existing Angel Trax recording systems when those systems are already in use by the Using Governmental Unit. **Standard number of the cameras depends on the size of the vehicle. Standard is (3) three cameras interior and (3) three cameras exterior.**

## **NN. Additional Requirements**

1. In addition of these specifications, lifts and all related equipment shall be designed, built attached and operated in accordance with all applicable safety codes and design standards. Examples of some to the applicable codes and standards are:
  - a. Society of Automotive Engineers (electrical components and wiring, hydraulic components, fasteners)
  - b. American National Standards Institute (chain drive and wire rope components)
  - c. American Welding Society (welding code and recommended practices)

## **OO. Basic Provisions**

1. **WARRANTY REQUIREMENTS:** Warranties in this document are in addition to any statutory remedies or warranties imposed on Contractor. A description of the local dealer warranty process shall be included in the Purchasing Agreement package including information on how warranty issues are tracked. The Contractor warrants and guarantees to each end user that each complete vehicle, and specific subsystems and components as follows:
2. **COMPLETE VEHICLE** The vehicle is warranted and guaranteed to be free from defects for a minimum of Thirty-six (36) months or thirty-six thousand (36,000) miles, whichever comes first, beginning on the date of acceptance of each vehicle. During this warranty period, the vehicle shall maintain its structural and functional integrity. The warranty is based on regular operation of the vehicle under the operating conditions prevailing in the purchaser's locale.
3. **SUBSYSTEMS AND COMPONENTS** Specific subsystems and components are warranted and guaranteed to be free from defects and related defects for the period as outlined by the OEM.

## **PP. Delivery**

1. Dealer shall be responsible for delivering vehicles that are properly serviced, clean and in first class operating condition. Pre-delivery service, at a minimum, shall include the following:
  - a. (SCDOT requirements) Correct and repair all deficiencies noted in the SCDOT vehicle inspection report conducted on each individual vehicle at the purchasing agency location.
  - b. Check all fluid levels to insure proper fill levels.
  - c. Ensure engine is in proper operating condition.
  - d. Inflate tires to proper pressure.
  - e. Check to insure proper operation of all components, accessories, gauges, lights, and mechanical and hydraulic features.
  - f. Cleaning of vehicle, and removal of all unnecessary stickers, markings and debris.
  - g. 7. Ensure all ADA features are in first class operating condition.