



MISSOURI DEPARTMENT OF TRANSPORTATION
ADULT PASSENGER MODIFIED RAISED ROOF VAN
WITH REAR MOUNTED WHEELCHAIR LIFT VEHICLE SPECIFICATIONS

1. The intent of these specifications is to describe a standard width type vehicle that will be modified, restructured and assembled by using best quality materials, components and workmanship in accordance with sound engineering principles and manufacturing practices to provide safe and reliable transportation for ambulatory and non-ambulatory adult passengers.

SHODDY AND INFERIOR QUALITY MATERIALS AND WORKMANSHIP WILL NOT BE ACCEPTABLE.

MoDOT reserves the right to conduct in-plant inspections.

2. Acceptable Makes and Models:

2014 or 2015 Chevrolet or GMC model 3500 extended van with 155" wheelbase, or approved equal.

2014 or 2015 Model Ford E350 Cargo or Window Super Van with 138" wheelbase, or approved equal.

2014 or 2015 Ford Transit cargo or window passenger van with 148" wheelbase, or approved equal.

60% domestic content, final assembly processes and final assembly point in USA

3. GVW Rating, Minimum 9,000 lbs.

4. Body, Exterior: Shall have manufacturer's standard items for the grill; grill frame, hubcaps, moldings around windows, doors, lamps, etc. Drip rails shall be installed above all doors to prevent water leakage into van. Each vehicle will be thoroughly water tested before delivery.

5. Body, Interior: Standard comfort and convenience items shall be all manufacturer's standard items and equipment, plus all additions or substitutions listed. If special option package is required with minor items not specified, include in your bid price.

Headliner or Ceiling - Shall be full length for driver and passenger area. Headliner shall have longitudinal and cross member supports where needed to prevent flexing and vibration. The supports shall not be visible from the interior.

Paneling and Trim - Complete on all doors, walls, ends and corners.

Doors, walls, ends, corners will be covered with quality installed trim and panels. Only trim similar to OEM quality is acceptable. The material shall be fire resistant, sanitary and easily cleaned. There will be a full-length headliner (smooth surface) located above driver and passenger compartments.

Floor and Floor Coverings - The entire floor, except driver's area, is to be made level with plywood or fiberglass re-enforced a minimum of 1/2" thick securely placed over the metal floor by glue, screws or a combination of methods that will assure a permanent fitted floor. The subfloor shall be covered with a minimum of 2.2 mm thick vinyl transit type floor covering. All seams will be heat welded. Heat welding only applies when mating of similar surfaces. Rear wheel housings will have carpet or rubber installed on them to deaden exterior sound from road debris. Any sound deadening material is acceptable.

The entranceway and aisle will be non-skid type and under the seats. The aisleway will be made of high visibility yellow or white vinyl flooring.

Aisles, steps, and floor areas must be slip resistant. [49 CFR Part 38.25(a)]

Floor covering color shall be contrasting to the vehicle interior, including seat-covering material.

Step edges, thresholds, and the boarding edge of ramps or lift platforms, when equipped, must have a band of color that contrasts with the step/floor surface. Typically, white or bright yellow is used to contrast against dark floors. [49 CFR Part 38.25(b)]

All exposed edges around the wall, doors and entranceways shall be trimmed with a metal molding securely screwed or glued in place. The driver area shall have insulated floor covering and mat. Meeting point of wall and floor will be properly trimmed with metal, ABS or rubber material and have a quality waterproof seal between floor and wall junction.

Insulation - The entire interior dash firewall, engine cover, lower panels, doors, floor, sidewalls, ceiling, headliner, etc. shall be insulated with 1" fiberglass. Insulation shall be 1" thick fiberglass or polyurethane. OEM insulation is acceptable for OEM retained components.

Insulation must be completely enclosed by the ceiling, wall panels, window moldings, etc.

Grab Rails and Stanchions - A floor to ceiling stanchion shall be installed near the aisle immediately left of the entrance door. This stanchion shall be connected to the vehicle right hand sidewall by a guardrail. This panel shall be padded on the side facing the passenger seating positions.

An upright supporting type stanchion or handle shall be installed from the floor to the ceiling at the right of the entrance door, within easy reach of boarding passengers to provide passenger assist.

There will also be a floor to ceiling stanchion guardrail installed directly behind the driver's seat. This stanchion and guardrail will not affect the adjustment of the driver's seat.

There will be an exterior grab handle securely mounted to the left door pillar by the driver's entrance door. Approximate length to be 9".

All stanchions shall be securely attached to the ceiling and floor with at least two screws at top and two at the bottom. These screws will go into some substantial material to reduce the chance of becoming loose. The stanchions and guardrail shall be tubular, bright finish metal.

Handrails and stanchions shall be provided in the entrance area and through the fare collection area to assist persons with disabilities as they enter and pay a fare. Some portion of this handrail/stanchion system must be able to be grasped from outside the vehicle to assist persons as they start to board. Handrails shall have a cross-sectional diameter of 1 1/4 to 1 1/2 inches, shall provide a minimum of 1 1/2 inches of "knuckle clearance," and shall have eased edges with corner radii of not less than 1/8 inch.

Handrails and stanchions shall also be provided to assist with on-board circulation, sitting and standing, and exiting the vehicle. [49 CFR Part 38.29(b)]

Certification - All materials including insulation used in the interior shall be the latest fire resistant type that meets or exceeds all State and Federal requirements on the date of manufacture. (FMVSS 302) A certification shall be fixed to the vehicle and be plainly visible. FMVSS 302 compliance includes but is not limited to items such as raised roof, headliner, insulation, and plywood sub-floor.

6. Seats, Seating Arrangement and Seat Belts: This arrangement shall provide seating as listed below and shown on the appropriate diagram.

If there is a conflict between the written specification and the floor plan diagram, the written narrative controls.

Floor Plan E - This seating arrangement shall provide (2) two-passenger forward facing folding seats on the left side, three (3) 1-passenger seats on the right side and (2) two forward facing wheelchair positions: both covered with a folding two-passenger seat. Total capacity 7 ambulatory and 1 wheelchair, or 3 ambulatory and 2 wheelchairs.

The driver's seat shall be an electric power fully adjustable high back bucket type with HD clothe covered full depth foam padded seat cushion and backrest. Seat will have folding armrest on RH side.

Floor Plan E will have at least three seating positions that meet the FMVSS 225 latch system requirements for child safety seats. They may be located on either fixed or folding seats and must be designated as safety seat locations. The preferred location of these positions will be on the aisle side of the two-passenger seats.

Fold A-Way Seat Requirements

Fold-A-Way type seats shall meet all dimensional, structural, and testing requirements of the standard seat specification.

All seats shall be forward facing for ambulatory passengers and fold against the wall when wheelchair space is required.

In the folded position, the seat may extend into the bus no further than 10" installed at 90 degree to maximize space for wheelchair loading and positioning.

In the down, fixed position, the seat may not extend into the aisle more than 36".

Fold-A-Way type seats shall be Braun Series 5, Freedman 3 step Fold Away, C.E. White model 35, American seating E-Z fold, or approved equal.

The (2) two-passenger seats shall have a minimum width of 35"; the (1) one-passenger seats shall have a minimum width of 17".

All seats shall have a minimum depth of 16"; the backrests shall have a minimum depth of 2".

All passenger seat cushions and backrests shall be covered with HD Level 3 vinyl material. Seat cushions and backrests shall have full depth foam padding. The seat cushion padding shall have a density (4" minimum) sufficient to support occupants without bottoming. Seating material will be a minimum of 36 oz.

All seat frames will be painted or powder coated finish to prevent corrosion.

Seats will be placed to allow adequate shoulder room for passengers sitting next to the wall. The walk-through aisle between right and left hand seats shall be a minimum of 10". (When measured between cushions.)

Seat spacing shall be a minimum of 30" centers and/or 30" hip to knee room.

Fixed Seats

Fixed seats shall be a Freedman 3 PT, or approved equal (wall mounted shoulder harnesses are acceptable). The driver and all passenger-seating positions shall have seat belts and shoulder harnesses properly located and easily accessible. The driver and all passenger seating positions shall have equal length, (2) two-piece belts and retractors with a minimum usable extension of 60", adequate to encircle and secure at the hips from the smallest to the largest size passenger that will be expected to use the belt, regardless of where the belts are anchored. The belts shall latch at the points as described in FMVSS 208. Shoulder harnesses are required for all passenger seats. All front seats shall be designated as priority seating. Include three (3) 8" seat belt extenders that will work with all the belts on the vehicle.

At least one set of forward-facing seats must be designated as priority seats for persons with disabilities. Signs identifying these as priority seats must be provided. Characters on these signs shall have a width to height ratio between 3:5 and 1:1 and a stroke width to height ratio between 1:5 and 1:10. Minimum character height (using a capital X) shall be 5/8 inch. Wide spacing shall be used (generally the space between letters shall be 1/16 the height of upper case letters). Letters must contrast with the sign's background color. [49 CFR Part 38.27(a), 49 CFR Part 38.27(c)]

7. Roof: The standard roof shall be removed and replaced with a steel, aluminum or fiberglass raised roof or roof and side panels. The replacement roof will be 24" high. The raised roof or roof and side panels shall be completely joined and be integral with the basic body and front and rear ends, side panels, and underbody structure by welding, riveting or bolting, or combining these methods to prevent separation at any point between the modification and basic body. Sheet metal screws will not be allowed.

Restructure and modification must be done in a manner that will not destroy the structural integrity of the vehicle. The material used and construction method must prevent vibration and drumming. Vehicle must meet FMVSS 220 for rollover protection.

All exterior and interior surface edges shall be turned, rounded or closed off and all protrusions must be either eliminated or adequately padded.

The roof must be supported and reinforced by a collapse resistant steel rollover protective structure (ROPS) that will be an integral part of the complete body.

The roof and ROPS structure must be capable of supporting the fully loaded vehicle if overturned. This structure must encompass the entire driver and passenger compartment.

The installation must provide complete weather and dust proofing.

Special attention should be given during construction and assembly to prevent corrosion.

The interior height from floor to ceiling for the entire van, within 12" approximately from each side, shall be a minimum of 68".

The exterior roof height, while providing maximum interior headroom, must not cause the vehicle to be top heavy and unstable. The roof should be aerodynamically designed to allow for minimum wind resistance.

8. Roof Ventilator/Emergency Exit: A dual purpose manually operated roof ventilator/emergency exit shall be installed in the extended 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 when it is open and the vehicle in forward motion fresh air will be provided inside the vehicle. The hatch shall be a Transpec Inc. Model 1000 regular profile, Transpec Model 1075 Low profile, or an approved equal. Econo Model not acceptable.

9. Windshield and Window Glass: Safety plate windshield and window glass.

RH and LH front side door drop glass.

RH dual side load doors vent glass and vent glass on opposite side. Fixed glass in each rear quarter panel. OEM glass is acceptable.

Standard factory installed windows requiring no body modifications are the only acceptable windows.

All windows will have inside latches and locks for security.

The windshield and front door glass will be tinted; all other windows will have privacy sunscreen type glass. (Approximately 30% light transfers on passenger windows). Only factory sunscreen will be acceptable on OEM windows.

10. Doors:

Front - Drivers side (LH) standard van door with roll down window.

Passenger Side (RH) Operation - Modified standard van entrance door with roll down window. Door control arms shall not interfere with window operation. No opening device will interfere with window operation. Control arm will be adjustable to allow proper door sealing. A transit style bi-fold service door is acceptable (power operated).

This door shall provide high entry headroom with a minimum of 72" entrance height from the top of the first entrance step to the door headliner. The top of the door entrance shall be fully enclosed and protected from weather and other elements; it shall have adequate width at top and protective padding to prevent head injury when entering or exiting. Door will meet ADA requirement 49 CFR 38.25.

Aisles, steps, and floor areas must be slip resistant. [49 CFR Part 38.25(a)]

Step edges, thresholds, and the boarding edge of ramps or lift platforms, when equipped, must have a band of color that contrasts with the step/floor surface. Typically, white or bright yellow is used to contrast against dark floors. [49 CFR Part 38.25(b)]

This door shall have a below floor level entrance stepwell, with a minimum of (2) two steps. These steps shall be stationary; corrosion resistant steel adequately braced and be an integral part of the basic structure. The distance from ground to top of first step will be a maximum of 12 1/2" and a minimum of 10". Additional step heights will be a maximum of 9", the tread depth shall be a minimum of 8" and tread width a minimum of 12". All of the steps shall be level and the risers shall be vertical and not angled. Steps will meet ADA requirement 49 CFR 38.25.

Each step and riser will be covered with molded rubber or vinyl. The step covering will be non-skid type tread with white or yellow nosing. The riser shall be covered, painted, or coated with scuff resistant material. Galvanized steel is acceptable.

These steps will be fully recessed, enclosed and protected from weather and other elements. The bottom of the door can angle out to accommodate any steps that extend out beyond the van. Metal under covered step may be galvanized steel.

The stepwell light shall be provided and automatically operated by door control.

Lighting of at least 2 foot-candles, measured on the step treads or lift platform, shall be provided in the step well or doorway immediately adjacent to the driver. Lighting shall activate when the door is opened. [49 CFR Part 38.31(a)] Other step well and doorways shall have similar lighting at all times. [49 CFR Part 38.31(b)]

The entire outer edge of the door shall be weather stripped to provide a water and airtight seal. This door will have an emergency release to allow it to be opened from either the inside or outside in the event of a rollover or other emergency. This handle will disconnect the door arm to allow it to be opened in the conventional manner. Outside access may be gained by breaking window glass.

The door opening, top and lower door extensions shall be structurally reinforced to have the same structural integrity as the original door and opening.

All OEM doors must retain factory exterior and interior locks and handles.

Powered Ambulatory Door Operator Specifications

The powered door operator shall be modular bolt-together design providing rigidity, proper alignment and operation.

The door operator shall be integrated with the OEM vehicle dash and front passenger door and latch mechanism.

The door operator shall have been dynamically tested to a minimum of 10,000 cycles.

The power supply shall be a 12-volt automotive electrical system driving a 12-volt gear motor. The gear motor shall be operable via handheld pendant control or dash mounted switch.

The control system used to regulate the open and close movement shall provide one (1) hand operation. A color-coded paddle switch shall be required and be permanently stamped with the appropriate function legends.

The door operator shall be designed to allow ease of troubleshooting, maintenance, and replacement, if needed, and may be center mounted.

The operation of the door drive unit shall provide a smooth articulation of the front passenger door throughout the open and close cycle. The door operator shall be integrated and sequenced with the OEM door latch via solenoid and timer to provide automatic unlatching. Disabling the OEM door latch or lock is not acceptable.

A manual backup system shall be provided to allow ingress and egress in case of electrical or mechanical failure. All controls that are removed should be able to be stored out of the way.

All fabricated components shall be finished with a baked-on powder coating, which will meet a salt spray test of 1000 hours.

There will be keyed switch located on the RH side of the vehicle to allow the operator to open and close the passenger entrance door from the outside.

Rear Dual Loading Doors - These doors shall be dual swing-out type with fixed glass. Replacement doors are acceptable provided they meet OEM quality.

The doors shall be modified and the height extended from the floor to the top of each door to allow for wheelchair entry. The minimum door height shall be 56" from floor to top of door opening. These doors shall be extended, weather proofed and padded in the same manner as specified for the front passenger entry door. Doors will have exterior mounted catches to hold them open while loading wheelchair clients (elastic cords). These doors will meet ADA requirement 49 CFR 38.25.

The height of doors at accessible entrances and the interior height along the path of travel between accessible entrances and securement areas shall be as follows:

- For vehicles less than 22 feet, the overhead clearance must be at least 56 inches.

[49 CFR Part 38.25(c)]

Interior handrails and stanchions should not interfere with the path of travel of a common wheelchair from the accessible entrance to the securement areas. [49 CFR Part 38.29(a)]

Lighting of at least 2 foot-candles, measured on the step treads or lift platform, shall be provided in the step well or doorway immediately adjacent to the driver. Lighting shall activate when the door is opened. [49 CFR Part 38.31(a)] Other step well and doorways shall have similar lighting at all times. [49 CFR Part 38.31(b)]

RH Side Loading Doors - These doors shall be double type with pop-out glass.

All doors will have factory installed position hold and check arms.

All doors will have factory installed exterior and interior handles and locks.

The interior step will need to be covered with a suitable metal to allow (1) one-passenger seats to be securely mounted.

The RH side door must have an inside handle and lock, conveniently located and will remain functional to be used as an emergency exit. This door will have lighting and labeling that meets FMCSR 393.92.

11. Instrument Panel and Instruments: Full width pad with speedometer, odometer and needle type gauges for fuel, oil pressure, water temperature, etc.
12. Mirrors, Rearview: Interior, Day-Night type. Exterior LH and RH below eye-line type. (Approximate size 6" x 9"). Also include left-rear mounted convex mirror to allow driver view directly behind the vehicle. (Mirrors will be approximate 8" in diameter). This mirror will have a telescoping post to facilitate adjustment. A 6" x 12" interior mirror will be located above driver's area to facilitate view of the passenger area.
13. Hood Release Lock: In cab operated.
14. Windshield Wipers and Washers: Electric, (2) two-speed intermittent.
15. Miscellaneous Interior Items: Armrest for front driver door and padded sun visor for driver, ashtray for front driver area and cigar lighter.
16. Radio: AM-FM, chassis manufacturer's standard or body modifier's standard.
17. Lights and Signals:

Exterior - High and low beam headlights, parking, tail, stop, backup, front and side marker lights or reflectors, license plate, hazard warning flashers, self-canceling directional signals, daytime running lights and back up warning beeper.

Wheelchair landing area light will be mounted so it cannot be easily torn from rear bumper. There will also be (2) two red strobe type lights mounted on rear of van that are visible from

the rear when both rear doors are open. They will be at least 6" in diameter.

Lighting of at least 1 foot-candle shall be provided outside all doorways to illuminate the street surface for an area up to 3 feet perpendicular to the bottom step tread outer edge. Lighting shall be located below window level and shall be shielded to protect the eyes of entering and exiting passengers. [49 CFR Part 38.31(c)]

Two rear mounted / rearward facing red strobe lights will be activated only by a dash-mounted switch with a pilot light to indicate activation.

The add-on roof will be marked with 2" wide x 6' long Diamond Grade reflective sheeting in the following manner;

- A. Across the top rear - Red/White.
- B. Along both sides - center - white.

Interior - Instrument panel, front and rear overhead lights, and all doors. Overhead lighting, activated by a dash-mounted switch, shall provide lighting intensity at a reading level. All door lights and RH front door stepwell shall illuminate automatically when doors are open.

All interior lights shall be adequately recessed as not to be a hazard to occupants. Interior light fixtures shall be operable with or without engine running. All interior lighting will operate on its own circuit.

Lighting of at least 2 foot-candles, measured on the step treads or lift platform, shall be provided in the step well or doorway immediately adjacent to the driver. Lighting shall activate when the door is opened. [49 CFR Part 38.31(a)] Other step well and doorways shall have similar lighting at all times. [49 CFR Part 38.31(b)]

All interior wiring shall be insulated and covered. A schematic of the installed wiring shall be furnished with each vehicle.

Each vehicle will be equipped with a reverse alarm. This alarm will be mounted in a location that will be protected from road debris.

18. Wheelchair Lift: Mounted in Rear of Van (Interior)

The lift shall be an electrohydraulic type providing power-up, power or gravity down and power or automatic fold. The power source shall be the vehicle 12-volt electrical system. The lift will be mounted within the body with access through the rear doors. Modifications for the lift installation must not affect the structural integrity of the basic vehicle.

The lift shall have a minimum rated working load capacity of 800 lbs.

The design load of a lift must be at least 800 pounds, per MoDOT specifications. Working parts must have a safety factor of at least six Non-working parts shall have a safety factor of at least three [49 CFR Part 38.23(b)(1)]

The lift will have no dirty or greasy surfaces, which will contact the wheelchair occupant during normal operation.

The lift platform shall be constructed of expanded metal with a minimum usable width of 33" and a minimum depth of 51".

The platform must be at least 33 inches wide (note - 28 1/2-inches wide is ADA minimum) measured at the platform surface and at least 33 inches wide (note - 30 inches wide is ADA minimum) measured from 2 inches above the platform surface to 30 inches above the surface. It must also be at least 48 inches long measured from 2 inches above the surface to 30 inches above the surface. [49 CFR Part 38.23(b)(6)]

Gaps between the platform surface and any barrier can be no more than 5/8 inch. Semi-automatic lifts can have a handhold in the platform that measures no more than 1 1/2 inches by 4 1/2 inches. [49 CFR Part 38.23(b)(7)]

Step edges, thresholds, and the boarding edge of ramps or lift platforms, when equipped, must have a band of color that contrasts with the step/floor surface. Typically, white or bright yellow is used to contrast against dark floors. [49 CFR Part 38.25(b)]

When in the fully raised position, the platform surface must be vertically within 5/8 inch of the finished floor and horizontally within 1/2 inch of the finished floor. [49 CFR Part 38.23(b)(7)]

The platform must not deflect more than 3 degrees in any direction when a 600-pound load is placed on the center of the platform. [49 CFR Part 38.23(b)(9)]

The platform must raise or lower in no more than 6 inches per second. The platform must be stowed or deployed in no more than 12 inches per second. Horizontal acceleration can be no more than 0.3 g. [49 CFR Part 38.23(b)(10)]

Components of a lift must be designed to allow boarding in either direction. [49 CFR Part 38.23(b)(11)]

The lift shall have the following:

A manual override to lower, and raise and an emergency platform release for use in the event of power failure shall be provided. Manual override will function without interference by interior obstructions.

A platform device that locks in an upward position acting as a curb before the

platform has departed ground level and pivots downward upon ground contact, acting as an entry ramp. There will also be this similar safety barrier located on the inboard side of the lift platform. Each barrier will be at least 6" in height.

Door activated power cutoff device to prevent movement of the lift when vehicle doors are closed.

Two (2) handrails for use by the wheelchair occupant or standee. These rails shall automatically fold up or down with platform movement and shall fold flat against the platform during transport.

Must be equipped with two handrails that move in tandem with the lift platform. Handrails must be 30-38 inches above the platform surface and must have a useable grasping area of at least 8 inches. Handrails must be capable of supporting 100 pounds, must have a cross-sectional diameter of 1 1/4 to 1 1/2 inches, and must have at least 1 1/2 inches of "knuckle clearance." [49 CFR Part 38.23(b)(13)]

An automatic down pressure cutoff device shall stop downward movement of the platform upon contact with any obstruction or the ground.

The lift shall have automatic controls to perform all functions. Controls shall be hand held, cord mounted console type, with sufficient cord length to allow operator to control the lift from inside or outside the vehicle.

These lifts will have nine interlocks as defined in FMVSS 403.

Controls must be interlocked with the brakes, transmission, or door so that the vehicle cannot move unless the interlock is engaged. [49 CFR Part 38.23(b)(2)(i)]

Controls must be "momentary contact type" (meaning they require constant pressure) and must allow the up/down cycle to be reversed without causing the platform to "stow" while occupied. [49 CFR Part 38.23(b)(2)(i)]

Lifts must be equipped with an emergency backup system. The emergency backup system shall be capable of being operated both up and down without the platforms "stowing" while occupied. [49 CFR Part 38.23(b)(3)]

Must be designed so that in the event of a power failure, the platform cannot fall faster than 12 inches per second. [49 CFR Part 38.23(b)(4)]

Any part of the lift assembly protruding into the body that could be hazardous must be properly padded for passenger protection. This includes the lift end barrier. Manufacture's flexible end barrier meets padding requirements.

Must have an inner barrier or inherent design feature to prevent the mobility aid from rolling off the side closest to the vehicle until the platform is in its fully raised position. [49 CFR Part 38.23(b)(5)]

Side barriers must be at least 1 1/2 inches high. [49 CFR Part 38.23(b)(5)]

The "loading-edge" (or outer) barrier shall be sufficient to prevent a power wheelchair from riding over or otherwise defeating it. If this barrier is automatic, it must close when the platform is no more than 3 inches off the ground. If the outer barrier is to be driver operated, it must have an interlock or inherent design that prevents the platform from being raised until the barrier is closed or other system is engaged. [49 CFR Part 38.23(b)(5)]

The platform surface must be slip resistant with no protrusions over 1/4 inch. [49 CFR Part 38.23(b)(6)]

Lifts may be marked to identify the preferred standing position. [49 CFR Part 38.23(b)(12)]
Note – these standing position markings are not specified by MoDOT, but are acceptable, if provided.

The electrohydraulic lift system shall have a monitoring device requiring no tools to allow for a quick and easy fluid level check.

Both types of lift systems and mechanisms must be easily accessible for repair and maintenance without dismantling and removal from vehicle.

The lift may be a Ricon S-5510 Series, S2010 series; Maxon WL-7, Braun Millennium or Century Series 2, or approved equal.

Descriptive literature and detailed specifications for lift must be included with your bid. Lift must meet all requirements of ADA 49 CFR 38.23.

The lift must provide either a safety belt occupant restraint system inter-locked to lift operation or an outside end barrier that locks in place before the lift platform leaves the ground more than 4". Both systems are to reduce the chances of a lift passenger falling or rolling off the lift platform during lift operation.

19. Wheelchair Securement Area for All Units: All Located in Rear Portion of Vehicle

Wheelchairs and mobility aids must be oriented as follows:

- For vehicles 22 feet in length or less, the one required position can be either forward or rear facing. Note - MoDOT only specifies forward facing securement positions.

[49 CFR Part 38.23(d)(4)]

Securement systems must have the following design loads:

- For vehicles with a GVWR of less than 30,000 pounds: 2,500 pounds per clamp/strap and 5,000 pounds per mobility aid.

[49 CFR Part 38.23(d)(1)]

A sign must be provided which indicates that the securement area is to be used by persons who use wheelchairs and mobility aids. Characters on these signs shall have a width to height ratio between 3:5 and 1:1 and a stroke width to height ratio between 1:5 and 1:10. Minimum character height (using a capital X) shall be 5/8 inch. Wide spacing shall be used (generally the space between letters shall be 1/16 the height of upper case letters). Letters must contrast with the sign's background color. [49 CFR Part 38.27(b), 49 CFR Part 38.27(c)]

Securement area must be located as close to the accessible entrance as possible. [49 CFR Part 38.23(d)(2)]

A clear floor area of 30 inches wide by 48 inches long must be provided for each securement area. This can include an area up to 6 inches under a seat as long as there is a vertical clearance of at least 9 inches. If flip-seats are utilized, they cannot obstruct the required floor area. The required floor area can overlap the access path (the path of travel from the accessible entrance to the securement area). [49 CFR Part 38.23(d)(2)]

The securement system must accommodate all common wheelchairs and mobility aids (any mobility aid not exceeding 30 inches in width and 48 inches in length and weighing no more than 600 pounds when occupied) and be operable by someone with average dexterity that is familiar with the system. [49 CFR Part 38.23(d)(3)]

Securement systems must keep mobility aids from moving no more than 2 inches in any direction. [49 CFR Part 38.23(d)(5)]

The securement system must be located to be readily accessed when needed but must not interfere with passenger movement or be a hazard to passengers. It should also be reasonably protected from vandalism. [49 CFR Part 38.23(d)(6)]

Positive fastening wheelchair lock-in devices shall be provided for each wheelchair position.

Each securement device will meet 30 mph/20 g test criteria.

Securement locations will consist of a four point, belt hold down system complete with all belts, hardware and fittings.

All securement devices will be easy to attach to floor or mobility aid with mobility aid in place.

Retractable Wheelchair Securement System

The wheelchair securement tie down belts shall be retractable into a protected steel housing and eliminate the need for belt cleaning and storage. The belt housing and mechanical retractor shall be designed for a minimum of five (5) year life. Belts will incorporate a S-hook or J-hook design to secure belts to the mobility aid.

The location of the rear belts shall be positioned to allow the driver to secure the wheelchair frame between the rear wheelchair wheels. The retractable belts shall feature positive locking mechanisms. The belts shall be equipped with a release tab to release tension on the belts when unfastening the wheelchair and to take up the excess belt when securing the wheelchair.

The retractable belts shall feature positive fully automatic locking mechanisms with knobs. Once the front belts have been attached to the wheelchair frame, a tension knob attached to the belt housing shall be applied to bring the wheelchair passenger and chair into a state of securement. The front belts shall be designed for a minimum life of five (5) years. Sure-Lok Titan or Q Straint Deluxe tie-downs are “approved equals”.

All wheelchair securement L-tracks will be attached to the floor with Grade 5 or higher bolts that go through the floor. These tracks will be securely attached with nuts and washers to meet all requirements of ADA 49 CFR 38.23 and will run the entire width of the securement area(s). Tracks will be a minimum of 44” apart, center to center. If there are two wheelchair positions, there will be four tracks so the center points will not share one track.

There shall be provisions for storing all of the hardware and belts in a pouch on the inside rear wall of the van. Floor mounted, durable metal or plastic boxes will be acceptable.

Easy to secure and release seat belts and shoulder straps which will encompass both the wheelchair and occupant shall be included. Easy to secure and release torso pads which encompass both the wheelchair and occupant shall be included for each wheelchair position. Include four (4) 16” “quick straps”, or approved equal for each securement location. The lap and shoulder belts will encompass any size individual.

A seat belt and shoulder harness must be provided for each securement position. The seat belt and shoulder harness must be separate from the securement system for the mobility aid. [49 CFR Part 38.23(d)(7)]

Include on set of the following: Sure Lok AL700842, FE 200637-020-05 and FE 200732, Q-Straint 6325AT, or approved equal for one wheelchair position.

All bolts used in wheelchair securement modification shall be a grade 5 or higher. All wheelchair securement devices and installation will meet ADA requirement 49 CFR 38.23.

20. Air Conditioning, Heating and Cooling: Front and Rear

Chassis Manufacturer's Optional

Front integral high-output cooling, heating and defrosting unit with integral auxiliary rear cooling and separate heating for rear passenger area. The three-position speed controls for front and rear operation shall be front mounted easily accessible to driver and adjustable. Unrestricted modification air flow outlets are to be located front and rear providing heating and cooling throughout the driver and passenger compartments. Heaters are to be floor mounted and air conditioning is to be roof mounted. Air conditioning to be adequately padded to prevent injury, and rear heaters to be mounted behind rear wheel wells. Rear a/c ducts will be fully adjustable to provide airflow to passengers located directly below rear unit. Include a two-speed (off, low, high) 6" diameter fan in driver's area.

There shall also be a skirt-mounted air conditioner condenser to attain the required BTU cooling output. This condenser will be adequately protected from damage by rocks, mud and other material thrown by tires. Those protective shields must be rust proof with (2) two; (1) one for the front and (1) one for the rear of the condenser. The condenser unit will be mounted horizontally and installed flush to the lower body panel. This will be accomplished by cutting a hole in the lower panel.

The supplier must guarantee that the heating and cooling system proposed to will provide passenger and driver comfort. Rear air conditioning will have a minimum capacity of 32,000 BTU's. Front A/C will have a minimum capacity of 12,000 BTU's. Rear heater capacity will be a minimum of 30,000 BTU's.

If, for modification purposes, a different type of heating and cooling system is required, the reason must be fully explained and the system proposed be described and this explanation and description included in your bid.

Include, with the bid, all information regarding the air-conditioner and heating system to be installed (make, model number, BTU output, etc.)

21. Chassis Requirements:

Include a Power Group Option. This option package must include power windows/locks, keyless entry, and power mirrors.

Engine - Gasoline V8 or V10, minimum 240 HP, providing necessary horsepower and torque at governed R.P.M. for road speed and grade ability. The engine shall have a full flow replaceable or spin on type oil filter and meet all current emission standards.

Trailer Towing Package or equal. Delete hitch assembly.

Cooling System - Heavy duty or maximum cooling radiator with overflow recovery reservoir and permanent type anti-freeze installed to protect the vehicle to at least 20 degrees F below zero.

Transmission - Automatic, minimum 4-speed overdrive with auxiliary exterior oil cooler.

Alternator - Minimum of 190 amperes.

Chassis is to be equipped with a Pentax automatic or InterMotive AFIS fast idle control solenoid (or approved equal). Fast idle shall be automatic, and activated when a low voltage situation is detected and the transmission in park.

Battery - HD with adequate CCA and reserve capacity for operating van electrical options (minimum 600 CCA).

Steering - Power - include tilt wheel and cruise control.

Brakes - Power

Axle, Front - Minimum of 4,000 lbs. capacity.

Axle, Rear - Minimum 6,000 lbs, capacity, ratio approximately 4.00 to 1. Include Roll Guard, or approved equal.

Drive Shaft Guard - Minimum of one shaft guard per drive shaft section (FMCSR 393.89).

Springs, Front - Heavy-duty coil with a front stabilizer bar.

Springs, Rear - Heavy duty, leaf type with "Roll Guard" or approved equal.

Shock Absorbers - Heavy duty, front and rear.

Fuel Tank(s) - Minimum capacity 31 gallons.

Tires and Wheels - Will be factory installed. Acceptable tire makes will be those listed as being available in the tire section of chassis manufacturer's Truck Data Book on specification date.

Tires - Tires will be a major brand (not Firestone), and meet manufacturer's specifications. Five (front, rear and spare), minimum size 245 x 75 R16, steelbelt radial, blackwall tubeless, all season tread. Spare tire and wheel are to be factory mounted under vehicle.

Wheels - Five 16" x 6.5", 8 stud disc.

Tire Changing Tools - The jack will be of the best quality and have adequate capacity to raise a loaded vehicle and be the type that will allow for easy removal of wheel and tire from under the raised vehicle. The wheel wrench will be the best quality tool of sufficient length to permit removal of wheels in the safest manner. Adequate and safe storage will be provided.

Bumpers - Front and rear. Manufacturer's Standard.

Undercoating - The entire body understructure shall have a heavy, long lasting undercoating material. Automotive quality undercoating is not acceptable. Undercoating will meet FMVSS 302 for flammability.

Running Boards - Vehicle will be equipped with (1) one 8" wide by 36" long aluminum running board mounted at the driver's door location. It will be a minimum of 1/8" thick and will have a diamond embossed or other anti-slip design on the footing area. This running board will be securely mounted with at least 3 braces that are made of galvanized steel. A non-skid expanded metal will be installed on the entire step surface to prevent slipping. Diamond embossed only is not acceptable.

Safety Equipment - Unit(s) to have all the latest standard safety equipment as required by law and regulations.

This equipment shall include a five (5) pound 10 BC Class fire extinguisher, seat belt cutter, standard size 16-unit first aid kit containing an assortment of bandages and medications suitable for the care of minor cuts and burns, and three reflective bi-directional triangles, securely mounted in the driver's area. Include 3 LED warning light (Tri Alert or approved equal). Also, include an assortment of spare fuses for use in the vehicle chassis and conversion electrical systems.

Each vehicle will have a blood borne disease kit including the following items: latex gloves, CPR mask, goggles, apron, disinfectant wipes, absorbent and scoop, I.D. tag and red plastic bag. All first-aid and bloodborne disease kits will be packaged in durable metal or hard plastic cases.

The following must be furnished and included with your bid:

- All bidders must describe and furnish a complete listing of the vehicle, requested drawings, modifications and literature of the equipment to be furnished.
- A detailed drawing, showing interior floor plan, dimensions and seating arrangements shall be included.
- A guarantee that the chassis manufacturer's warranty will be in effect at the time of delivery and acceptance (36 months, 36,000 mile minimum).
- A copy of the warranty on the body air conditioning, heating, wheelchair lift, and alternator. Warranty terms on these components to be a minimum of 2 years, or 24,000 miles.
- Priority seating signs that meet ADA requirement 49 CFR 38.27.
- Detailed literature/specs on lift system.

- Heat and cooling certification.

The bidder must also supply with the bid, the following items (A. through J.):

- A. An itemized list of domestic produced parts or components used in the manufacturing of the vehicle.
- B. The estimated cost for each item listed.
- C. The estimated total percent of domestic components used in manufacturing of the vehicle.
- D. Buy America final assembly point and final assembly activities at that location
- E. A Statement of FMVSS compliance
- F. A statement of FMVSS 210 seats
- G. A description of A/C, heating/defrosting system and BTU output.
- H. Complete Altoona Bus Test report, if applicable.
- I. A guarantee that the chassis manufacturer's warranty (minimum 3 years or 36,000 miles) will be in effect at time of delivery and acceptance.
- J. A copy of the warranty on the body air conditioning, heating, Wheelchair lift, and alternator.(minimum of 2 years and 24,000 miles on these components)

To be furnished with each vehicle at time of delivery:

- A. An operator's manual for the basic chassis, body and other systems.
- B. A parts book and maintenance manual for add on equipment used in modification.
- C. Documentation of front end alignment or alignment check
- D. MSO and title application will be provided at delivery.
MoDOT will be lien holder and end user agency will be owner.
- E. An as built schematic of any installed wiring must be furnished with each vehicle at the time of delivery.
- F. A documented leak-free water test performed prior to delivery

22. Color:
Exterior – White – chassis and roof.
Interior - The interior trim, upholstery, seat belts, visors, etc., will be color keyed to exterior color.
23. Advertisements – A dealer identification decal no larger than 20 inches square in area may be displayed on the back of the vehicle and/or under the hood in the engine compartment of the vehicle.
24. If a 2014 Model cannot be supplied, then a 2015 Model must be supplied at the quoted price. This will only be exercised in the event of the successful bidder received a purchase order in time to order a 2014 Model year vehicle and fails to do so.
25. Bidder guarantees that any paint applied during van modification will not show through with rust for 3 (three) years from date of delivery.
26. Include as an option on all floor plans. Safety Vision SV 5000, Backing Vision BV 1350, (or approved equal) backing vision system.
27. Include as an option on all floor plans. An overhead storage shelf (with netting) located above the seats on the driver's side.