



**MISSOURI DEPARTMENT OF TRANSPORTATION**  
**ADULT PASSENGER MODIFIED RAISED ROOF VAN**  
**WITH CURB SIDE/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. Chassis Types:

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

2014 or 2015 Ford E-350 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.

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

3. Body, Exterior: Shall have manufacturers 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.
4. Body, Interior: Standard comfort and convenience items. They shall be all manufacturers 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. This headliner shall have longitudinal and cross member supports where needed to prevent flexing and vibrations. The supports shall not be visible from the interior.

Side and End Panels - To be complete on all doors, sidewalls, ends, and corners. Only side panels and trim similar to OEM quality will be acceptable.

The ceiling interiors shall be of metal, fiberglass or similar type material. The material shall be fire resistant, sanitary and easily cleaned. Home type wall paneling or carpeting will not be acceptable.

Floor and Floor Coverings - The entire floor except driver's area, is to be made level with plywood or fiberglass re-enforced plywood 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. The rear wheel housings will be covered with a quality type of carpet or rubber to help deaden sound from road debris. Any sound deadening material is acceptable.

The entranceway and aisle will be smooth with anti-skid properties. Flooring under the seats will have anti-skid properties. The aisleway will be made of a high visibility yellow or white aisle surface.

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

The 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. The meeting point of the wall and floor shall be properly trimmed with metal, ABS, or rubber material. A waterproof seal between floor and wall junction is acceptable.

Insulation - The interior dash firewall, engine cover, lower panels, doors, floor, sidewalls, headliner, etc. shall be insulated. Insulation shall be 1" thick fiberglass or polyethylene. 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 and 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 grab handle shall be installed from the floor to the ceiling at the right of the entrance door, within easy reach of boarding passengers. This supporting stanchion shall provide passenger-boarding assistance. This grab rail can also be mounted to the door opener, if desired.

There will also be a floor to ceiling stanchion and modesty panel installed directly behind the driver's seat. This stanchion and modesty panel will not interfere with the adjustment of the driver's seat. This modesty panel may be deleted if there is a fold-a-way seat directly behind the driver.

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

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

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)]

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.

On vehicles 22 feet in length or longer which have fare collection systems, a horizontal assist shall be provided across the front of the vehicle to allow a person to lean against the assist while paying a fare. [49 CFR Part 38.29(b)]

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.

5. Seats, Seating Arrangement and Seat Belts (See Floor Plans C and D) - This arrangement shall provide seating as listed below and shown on the appropriate exhibit. If there is a conflict between the written specification narrative and the floor plan diagram, the written narrative controls.

**Floor Plan C** - This floor plan will provide permanent ambulatory seating capacity for four adults and two wheelchair positions. Both wheelchair positions will be an interchangeable arrangement between wheelchair tie downs and two, 2-passenger folding seats. The hardware for mounting the seats will be sufficiently recessed to eliminate the possibility of tripping or stumbling. Note seat spacing in diagram.

**Floor Plan D** – total capacity 8 ambulatory passengers with no wheelchair or 2 ambulatory passengers with 3 wheelchair positions. There will be 3 fold-a-way seats on driver's side and two single seats on curbside.

The driver's seat shall be an electrically power adjustable high back bucket type with cloth covered full depth foam padded seat cushion and backrest. Include a folding armrest on RH side.

**Fold-A-Way Seat Requirements:**

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

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

Two-passenger seats shall be a minimum width of 35"; one-passenger seats shall be a minimum width of 17".

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

All passenger seat cushions and backrests shall be covered with 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.

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, providing adequate adult knee room. All seat frames will be painted or powder coated to prevent corrosion.

**Fixed Seats**

All two-passenger seats shall be a minimum depth of 16", the backrests shall be a minimum thickness of 2". All one-passenger seats shall be 17" wide and shall be on minimum 29" centers (Mid back height). All seats frames will be painted or powder coated.

All two-passenger seat cushions and backrests shall be covered with a minimum level 3 grade vinyl materials. 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. Mid-back style seats manufactured by the Freedman, C. E. White Seating Company, American Seating, (or approved equal) will be preferred type. All seats will meet or exceed the requirements of FMVSS 210. Wall mount shoulder harnesses are acceptable.

The driver and all passenger seats shall have best quality seat belts and retractors properly located and easily accessible. The driver's seat belts shall have minimum usable length of 60" measured from the seat cushion to the buckle. All seat belts on the vehicle will have the same size male and female ends. The passenger seat belts will have to be designed to encircle the largest of individuals (minimum usable length of 60"). All seating positions will have 60" seat belts with under seat retractors (no traveling retractors). The permanent front seats will be designated as priority seating. Include three (3) 12" (minimum) seat belt extenders that will connect to at least two of the belt styles installed on ambulatory seating.

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)]

Floor Plans C and D will have at least three (3) seating positions that meet the FMVSS 225 latch system requirement for child safety seats. They may be located on either fixed seats, or folding seats and must be designated child safety seat locations. The preferred location of these positions will be on the aisle side of two-passenger seats.

6. 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 30" 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 basic vehicle. The material used and construction method must prevent vibration and drumming. Vehicle must meet FMVSS 220 for rollover.

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.

The interior height from floor to ceiling for the entire van, within approximately 12" from each side, shall be a minimum of 72".

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.

7. 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 a forward motion fresh air will be provided inside the vehicle. The hatch may be a Transpec Inc. Model 1000 regular profile, Transpect Model 1075 Low profile, or approved equal. Econo Model not acceptable.

8. Windshield and Window Glass - Safety plate windshield and window glass all around.

RH dual side load doors FMVSS safety glass in the upper half. Fixed glass in each rear quarter panel. OEM glass is acceptable.

Standard factory installed windows requiring no body modifications are the only acceptable windows. (Except in aftermarket doors)

All windows will have inside latches and locks for security.

RH side service door will have FMVSS safety glass in the upper and lower portions.

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

9. Doors

Front – Driver’s side (LH) standard van door with roll down window.

Entrance RH – Curb side lift models only - Standard OEM door will be removed and replaced with a Transit style single or double forward folding, in-out or out-out opening type. This door shall provide no stoop entry headroom with a minimum of 80” entrance height from the top of the first entrance step to the door headliners. The minimum width shall be a 23”. The top of the door entrance shall be fully enclosed and protected from weather and other elements. It shall have protective padding to prevent head injury when entering or

exiting. Door will meet ADA requirements 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)]

All vehicles will have an electrically operated door. The door will be forward folding, in-out or out-out opening type. A switch in the driver's area will operate this door. The door and control arms will be located above the door area, or center mounted.

Door shall have a below floor level entrance stepwell, with a minimum of two steps. These steps shall be stationary, corrosion resistant steel, adequately braced and be an integral part of the basic structure. The height from ground to top of first step of empty vehicle will be a maximum of 13-1/2" and a minimum of 10". Additional step heights will be a maximum of 11"; the head depth for all steps shall be a minimum of 8". All of the steps shall be level and the risers shall be vertical and not angled. Step width will be a minimum of 24".

Each step 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. Metal under covered step may be galvanized steel.

Steps will be fully recessed, enclosed and protected from weather and other elements.

A stepwell light shall be provided and automatically operated the by door control switch.

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 door shall be weather stripped to provide a water and airtight seal. The door edge seals will be the over-lapping type to provide maximum sealing ability. Sweeps will be installed on the lower edges of door.

The door opening shall be structurally reinforced to have the same structural integrity as the body.

RH side lift door or doors – Standard cargo doors will be removed and replaced with single or dual swing-out type door or doors (single preferred). Positive exterior latches will be provided where doors can be opened back against the body. For those doors that either open past the rearmost corner of the vehicle or open into passenger doors, then such doors shall be held open by a gas cylinder.

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 door(s) height and width shall provide adequate clearance for the wheelchair entry. (60" minimum height and 40" minimum width)

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 per ADA, however, MoDOT specifies 60" minimum height.

[49 CFR Part 38.25(c)]

This entranceway will be located forward in the right hand side of the body, across from the wheelchair securement area along the curbside. Lift door will meet all requirements of ADA 49 CFR 38.25.

The entranceway shall be protected from weather and other elements and be padded to prevent head and other injuries to passengers when exiting or entering.

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)]

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 Door - This door shall be double type with fixed glass and will remain fully functional. This door will be lighted and marked as an emergency exit. After market doors are acceptable as long as they meet OEM quality.

The rear door must have an inside handle and lock, conveniently located.

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

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

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

10. Instrument Panel and Instruments – Standard panel with speedometer, odometer and needle type gauges for fuel, oil pressure, water temperature, etc.

11. Mirrors, Rearview - Interior, Day-Night type. Exterior LH and RH below eye-line type power adjusted. Approximate size 6" x 9". Also include left-rear mounted convex mirror to allow driver view directly behind the vehicle. (approximate 8" in diameter). This mirror will have a telescoping post to facilitate adjustment. Include a 6" x 12" interior rear-view mirror

above the driver to facilitate a better view of the passenger area.

12. Hood Release Lock - In cab operated.
13. Windshield Wipers and Washers - Electric, two-speed intermittent option.
14. Miscellaneous Interior Items - Armrest for front driver door and padded sun visor for driver, 12 volt accessory socket (cigar lighter type), tilt steering wheel and cruise control.
15. Radio - AM-FM, chassis manufacturer's standard or body modifier's standard.
16. 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, directional signals, daytime running lights and back-up warning beeper. No exterior lights will be mounted that could be torn off during normal operation. There will be two red strobe type lights mounted on the rear end cap of the van that will be visible when both doors are open. They will be 6" in diameter. The strobe lights will be activated only by a dash-mounted switch with a pilot light to indicate activation.

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)]

The add-on roof will be marked with 2" wide by 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 or a type that will not be a hazard to occupants. Interior light fixtures shall be operable with or without engine running. All interior lights run on their 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.

Any conversion electrical access panel will be mounted in a convenient location.

Each vehicle will be equipped with a reverse alarm or backing alarm. This alarm will be mounted in a location that will protect it from road debris.

17. Wheelchair Lift

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 right side load door. 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 that 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 51 inches long (note - 48 inches long is ADA minimum) 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 or raise plus an emergency platform release for use in the event of power failure. Manual override by handle will be able to function without interference from interior obstructions.

The platform device shall lock 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 a similar safety barrier located on the inboard side of the lift platform. Both of these barriers will be a minimum 6" in height.

There shall be door activated power cutoff device to prevent movement of the lift when vehicle doors are closed.

Two 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. The control shall be a hand held, cord mounted console control, with sufficient cord length to allow operator to control the lift from inside or outside the vehicle.

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)]

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

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 will include 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 electro hydraulic lift system shall have a monitoring device requiring no tools to allow for a fluid level check.

The lift system and mechanism must be easily accessible for repair and maintenance without dismantling and removal from body.

The lift will be a S-5510, S2010, series Ricon, Maxon W-L7, Braun Millennium or Century Series 2, or approved equal.

Descriptive literature and detailed specifications must be included with your bid. The 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.

18. Wheelchair Securement System and Area

Wheelchairs and mobility aids must be oriented as follows:

- For vehicles 22 feet in length or less, the position can per ADA may be either forward or rear facing, however, 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.

All securement devices will be easy to attach to floor with mobility aid in place and will meet 30 miles per hour 20g impact test criteria.

Each securement device will consist of a four point, belt hold down system complete with all belts, hardware and fittings required to make a complete wheelchair securement device.

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 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 locking fully automatic 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 securement. The front belts shall be designed for a minimum life of five (5) years. Floor tracks shall be a minimum of 44" apart (center to center). Sure-Lok Titan or Q Straint Deluxe tie-downs are "approved equals".

The four belts will attach to the wheelchair frame and to a series of L-tracks securely attached to, and recessed into, the floor of the van. Each track will have evenly spaced slots for adapting to any size wheelchair. All wheelchair securement 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 adequate nuts and washers to meet all requirements of ADA, 49 CFR 38.23 and will run the entire width of securement area(s).

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

On floor plans with two or more wheelchair positions, there will be two tracks next to each other to avoid having to "share" a track.

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.

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 one set of the following (or combination of to make one complete occupant restraint set) 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 installation shall be a grade 5 or higher. All wheelchair securement devices and installation will meet ADA requirement 49 CFR 38.23.

19. Air Conditioning, Heating and Cooling - Front and Rear

Front integral deluxe high-output cooling, heating and defrosting unit with integral auxiliary rear cooling and separate heating for rear passenger area. Three-position speed controls for front and rear operation shall be front mounted accessible to driver and adjustable, unrestricted by air flow outlets that are to be located front and rear providing heating and cooling throughout the vehicle. Heaters are to be floor mounted and air conditioning is to be roof mounted. Roof mounted air conditioning to be adequately padded to prevent injury, and rear heaters are to be mounted behind rear wheel wells. Rear a/c unit is to have vents so passengers sitting directly below can receive cool air. Include a 6" two-speed (off, low, high) auxiliary fan mounted in the driver's area.

There shall also be a skirt-mounted air conditioner condenser to attain the required BTU cooling output. There will be two rust proof shields provided to protect condenser from rocks, etc. thrown from tires, one located at the front and one located at the rear of the condenser. This unit is to be horizontally mounted and installed flush within the lower body panel. This will be accomplished by cutting a hole in the lower body panel.

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

The vendor must certify that the heating and cooling system proposed will provide passenger and driver comfort. Rear air conditioning will have a minimum capacity of 32,000 BTU's. Front A/C is to have a minimum capacity of 12,000 BTU's. Rear heater capacity will have a minimum capacity of 30,000 BTU's. Include with the bid all information regarding the air-conditioning and heating system to be installed. (i.e. make, model number, BTU output, etc.)

20. Chassis Requirements

Include a Power Group Option. This required option package will include power windows/locks, remote 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 with overdrive and auxiliary exterior oil cooler.

Alternator - Minimum 190 amperes.

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

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

Steering – Power steering with tilt wheel.

Brakes - Power

Axle, Front - Minimum 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 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.

Shock Absorbers - Heavy duty, front and rear.

Fuel Tank or Tanks - Minimum capacity 31 gallons.

Tires and Wheels - The tires and wheels will conform to the tire and rim association standards. They will be factory installed by the truck manufacturing company. Acceptable tire makes will be those listed as being available in the tire section of manufacturer's Truck Data Book on specification date.

Tires - Tires will be a major brand (not Firestone), factory installed, and meeting manufacturer's specifications. Five (front, rear and spare), minimum size 245 x 75 R16, steel belt 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 wheels

Tire Changing Tools - The jack will be of the best quality and have adequate capacity to raise a loaded vehicle and 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. Adequate and safe storage will be provided for these tools.

Bumpers - Front and Rear

Undercoating - The entire body and chassis understructure shall have a heavy, long lasting undercoating material meeting FMVSS 302. Automotive quality undercoating will not be acceptable.

Running Boards - Vehicle will be equipped with (1) one 8" wide by 36" long aluminum or galvanized steel running board mounted at the drivers 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 made of galvanized steel to resist rust. A non-skid expanded metal will be installed on the entire step surface to prevent slipping. Diamond embossed only will not be acceptable.

Safety Equipment

This equipment shall include a 5 pound 10 BC Class fire extinguisher, a standard size 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 that are securely mounted in the driver's area. These triangles will include 3 LED lights (Tri Alert or approved equal). Also include an assortment of spare fuses for use in the vehicle and an emergency seat belt cutter.

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 for 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 seat compliance
- 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.  
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

21. Color

Exterior - Standard available solid white – chassis and roof.

Interior - Interior trim, upholstery, seat belts, visors, etc., will be color keyed to exterior color.

22. 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.

23. 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 failed to do so.

24. Bidder guarantees that any paint applied during van modification will not show through with rust for a minimum 3 (three) years from date of delivery.

25. Include as an option on all floor plans. Safety Vision SV 5000, Backing Vision BV 1350, (or approved equal) backing vision system.

26. Include as an option on all floor plans. Overhead storage shelf (with netting) located above the seats on the driver's side.