

**APPENDIX B  
STATE OF MICHIGAN  
PUBLIC TRANSPORTATION**



**ACCESSIBLE PASSENGER VEHICLE (APV) SPECIFICATIONS**



**Bureau of Passenger Transportation  
Bus Acquisition & Intercity Transportation Section**

REVISED 08/03/2010

**STATE OF MICHIGAN**  
**Accessible Passenger Vehicle (APV) Specifications**

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**STATE OF MICHIGAN**  
**APPENDIX B - SPECIFICATIONS**  
**ACCESIBLE PASSENGER VEHICLE (APV)**

March 11, 2010

MODEL-2010 CURRENT NEW

In these specifications any required approvals shall be made by the State. Wherever brand, manufacturer, or product names are used, they are included only for the purpose of establishing a description of minimum quality of the item. This inclusion is not to be construed as advocating or prescribing the use of any particular brand or item or product. The State must be able to determine whether the bidder's offered product is or is not equal to the product described in the specifications from information (technical data, test results, and the like) contained in the bid. All detailed descriptions and specifications provided in the bid must match the product offered for use in the bid.

**I. PURPOSE OF SPECIFICATIONS:**

These specifications are setting forth the minimum requirements for a two-axle commercial vehicle equipped with a commercial wheelchair ramp. The vehicle must be capable of providing public transportation for a minimum of three (3) ambulatory passengers while accommodating two (2) passengers seated in mobility aids, in addition to the driver. Maximum ambulatory capacity (without a passenger in a mobility aid) is six (6) passengers using fold-a-way seating. As a minimum, vehicles must meet all applicable Michigan Motor Carrier Vehicle Codes, all applicable Federal Motor Vehicle Safety Standards (FMVSS) and the Americans with Disabilities Act (ADA).

Any successful bidder supplying these vehicles shall quick title and deliver the vehicle and the title to the location specified by the State of Michigan, Bureau of Passenger Transportation. Chassis serial number, body number, axle ratio, gross vehicle weight rating (GVWR), seating capacity and paint codes shall be imprinted on a permanent decal(s) or stamped on a metal plate(s) and affixed in the driver's area of the vehicle (location to be approved by the State).

The bidder shall be capable of handling final inspection and corrections required by the State prior to acceptance of the vehicles after a contract is awarded. The successful bidder must be capable of providing parts and service for a period of seven years after the vehicles have been placed in service throughout the State of Michigan. The successful bidder must be able to supply body replacement parts within five working days of a request by a transit agency unless the bidder notifies the transit agency that the part is not available for shipment and provides the shipping date when the part will be available.

Regardless of options and seating plan ordered, the successful bidder shall be responsible for certifying that all vehicles delivered shall not exceed the GVWR

of chassis as bid (determined by engineering calculated loaded vehicle axle weights). Manufacturers shall comply with the chassis company's quality vehicle manufacturing program such as Ford's Quality Vehicle Modifier (QVM).

## **II. CHASSIS SPECIFICATIONS:**

### **A. Chassis:**

#### **i.) Modified Chassis:**

The base vehicle for the modification shall be a front-wheel drive, commercial minivan (Suggested Source: Dodge Grand Caravan SE with Dodge's Load Level and Height Control Suspension Package). Conversion of a vehicle by modifying the existing sidewalls and floor shall require equivalent construction that maintains OEM structural integrity. All metal components that are added shall be welded by qualified operators and made corrosion resistant fully undercoating with a non-flammable material or the use of stainless steel material for the service life of the vehicle.

The floor shall be lowered from the front of the dashboard to the rearmost passenger seat to meet minimum ADA door opening height requirement (56") with a minimum of 58" at the vehicle center of the interior roof. The width of the floor shall extend from side doorsill to side doorsill. There shall be no modification to any portion of the vehicle roof in meeting the ADA door opening requirement. The floor deck may be integral with the basic structure or mounted on the structure securely to prevent chafing or horizontal movement. Suggested Sources: Braun Commercial Entervan, Eldorado National Amerivan, Vantage Mobility.

#### **ii.) Purpose Built Chassis:**

The vehicle shall be a rear-wheel drive, purposely-built with a body-on-frame architecture to meet or exceed the Americans with Disabilities Act (ADA) vehicle guidelines, along with the modified vehicle specifications (Section II, A, I – Modified Chassis). Suggested Sources: Vehicle Production Group MV-1.

### **B. Wheelbase:**

Wheelbase shall be 121", minimum

### **C. Engine:**

- i) Modified chassis – 3.3L V-6 (E-85), minimum
- ii) Purpose built chassis – 4.6L V-8, minimum

D. **Transmission:**

- i) Modified chassis – Six (6) speed automatic transmission
- ii) Purpose built chassis – Four (4) speed automatic transmission with overdrive

E. **Tilt Wheel / Power Steering:**

Vehicle shall be equipped with power steering and a tilt steering column. The steering column shall be adjustable for various up and down positions. The steering gear shall be a full hydraulic assist type.

F. **Alignment:**

The vehicle shall have a four wheel alignment at final point of inspection, just prior to delivery.

G. **Gross Vehicle Weight Rating (GVWR):**

Chassis GVWR: 6,000-lb, minimum

H. **Alternator:**

Vehicle shall be equipped with heaviest duty alternator available.

I. **Battery:**

Vehicle shall be equipped with heaviest duty battery available:  
12 Volt, 600 Cold Cranking Amp (CCA), minimum

J. **Brakes:**

Foundation brakes shall be a power-actuated four wheel disc type or a disc front/drum-type rear, anti-lock braking system. The system shall be the heaviest-duty available for stop and go operation. Brake system shall include a low brake fluid warning system provided by chassis manufacturer.

K. **Fuel tank capacity:**

Vehicle shall be equipped with the largest available from manufacturer. Tank, fuel lines and hardware must meet all current FMVSS, including FMVSS 301, as well as all current EPA requirements. Fuel level remaining in tank shall be calibrated with the OEM dash fuel gauge.

L. **Hazard Flasher:**

The vehicle shall be equipped with OEM hazard flasher switch.

M. **Speed / Cruise Control:**

The vehicle shall be equipped with OEM Speed / Cruise Control.

N. **Shock absorbers:**

The vehicle shall have gas filled shock absorbers front and rear, most heavy duty available from manufacturer.

O. **Suspension:**

i) **OEM Load Leveling and Height Control:**

The vehicle will retain the complete OEM front suspension and components. Rear suspension must be capable for the payload identified. Spacers may be added to front and/or rear suspension to maintain ground clearance and ADA requirements. There must be a minimum of five (5) inches clearance between the break-over angle position of the vehicle exhaust pipe and level ground.

ii) **Kneeling System:**

The vehicle shall meet all ADA requirements for entry when a ramp is utilized.

P. **Exhaust:**

Any modification to the exhaust system shall be made with stainless steel.

Q. **Wheels and Tires:**

i) **Wheels:**

The Vehicle shall be equipped with 16 x 6.5 wheels, minimum. Manufacturer standard mounting

ii) **Tires & Jack:**

(1) All tires (4) shall be from the same manufacturer and be all season, tubeless, steel radial blackwall. The tires shall be the largest size available from the vehicle manufacturer to meet the GVWR rating.

iii) **Wheel Covers:**

All vehicles are to be equipped with wheel covers.

R. **Windshield Wipers / Horn:**

Electric wipers shall be two speed, delay style, dual jet washers (electric), with OEM standard arms and blades.

(i) Wiper/washer-rear glass

(ii) Horn: OEM standard

S. **Radiator and Coolant System:**

The vehicle shall be equipped with the maximum size available from the OEM, including the heaviest duty radiator with anti-freeze protection, to - 30°F.

T. **Fluids:**

Fluids shall be checked and filled from inside front hood where applicable. Engine oil fill / check, transmission oil fill / check, and coolant fill / check shall be located for easy access.

**III. BODY AND EQUIPMENT SPECIFICATIONS:**

A. **Bumpers:**

The front and rear bumper shall be Original Equipment Manufacture (OEM) bumper.

B. **Doors and Locks:**

i) **Front Driver and Passenger Doors:**

The vehicle shall have standard OEM driver and passenger front doors and power locks.

ii) **Accessible Passenger Doors:**

(1) **Modified Chassis (Sliding Doors):**

The vehicle shall be equipped with manual driver and passenger side (mobility ramp) sliding doors extended to floor level providing 56" minimum entry height. The side passenger sliding door shall be equipped with an interlock system so that the door cannot be opened from the inside or outside when the fuel door is open. The mobility ramp door shall have a minimum usable width of 32 1/2", and a maximum of 12" floor-to-ground height. Door extensions shall be constructed of stainless steel. Both sliding doors shall have a mechanism to securely hold doors in open position when vehicle is on a hill. Sliding passenger door tracks must have reinforced guides with an added stop brace to prevent doors from sliding off track. Door tracks shall be reinforced or strengthened beyond OEM standards as needed in all areas of contact with sliding door arms. Reinforcement of the sliding passenger door arms and brackets components shall, at a minimum, be adequate to support the excess weight created by the door extensions. Under normal sliding door closure operations, there should be no evidence of door track flexing or wobbling.

**(2) Purpose Built Chassis (Standard Doors):**

The vehicle shall be equipped with a 36" wide by 56" high side, passenger door. The curbside, accessible, passenger door shall be hinged on the right and swing outward. The street-side passenger door shall be hinged on the left and swing outward. The driver and passenger side doors shall be standard.

iii) **Rear Door:**

The rear cargo door shall be provided with a quick release, manual override mechanism for opening the locked door from inside the vehicle for emergency exit. The locked cargo door override device shall be spring loaded and mounted on the inside of the rear door to prevent its accidental release. A decal shall be provided inside near the quick release mechanism depicting operating instructions.

**C. Ground Effects (Modified Chassis Only):**

Exterior lower body panels shall be added to both the driver and passenger sides of the vehicle. Panels to be constructed of formed plastic (or approved equal) and painted to match the exterior color of the vehicle

**D. Interior Panels:**

All interior panels shall be OEM or OEM equivalent. Panel fastening devices shall match the color of the panels. The interior shall provide a pleasant atmosphere, be aesthetically pleasing, and contain smooth

finishes without any unprotected sharp edges. The basic vehicle interior shall be gray.

**E. Interior Flooring:**

i) **Sub Flooring:**

The floor deck shall be a minimum of 3/8" A/B plywood of marine grade material, minimum, with sealed edges to prevent moisture intrusion. The floor deck upper surface shall have all cracks and voids filled and the whole surface rough sanded before installing the flooring material. A layer of sealer shall be installed between floor deck edges that butt against structural members and other deck sections to prevent dust and moisture intrusion. Passage holes provided for wiring and hoses in the floor deck shall be thoroughly sealed to prevent dust and moisture intrusion and be sufficiently protected to ensure against wear from friction and the elements. The floor deck, including the sealer, attachments, and coverings, shall be waterproof, non-hygroscopic, resistant to wet and dry rot, resistant to mold growth, and impervious to insects.

ii) **Vehicle Flooring:**

(1) The 1/8" thickness flooring shall be slip and oil resistant. Flooring adhesive shall be oil resistant. Suggested Sources: RCA Rubber Transit-Flor<sup>®</sup>, Rubber Solutions N.A., SMI SpecFlor.

(2) Color of all flooring shall be equal to RCA Rubber Transit-Flor<sup>®</sup> grey (#766) or tan (#777) as requested by the agencies

**F. Gauges:**

i) Chassis (OEM) gauges shall be used in the driver's instrument cluster.

ii) Engine oil pressure gauge / light.

iii) Engine coolant temperature gauge / light.

iv) Fuel gauge.

**G. Donation Box:**

A donation box shall be mounted and the location approved by the ordering agency. The lockable donation box shall be supplied with two keys. Suggested source: Main Farebox Model C91M

**H. Mud flaps:(if applicable)**

The vehicle shall be equipped with anti-sail type, when required, are to be plain, rubber 1/4" thick, without advertising on either side.

I. **Undercoating / Rust Proofing:**

The underside of the vehicle, exposed to the elements, shall be treated with an undercoating material except those areas of the OEM chassis where undercoating is not recommended. Suggested source: Tectyl 121-B.

J. **Interior Mirrors / Sunvisors:**

i) **Interior Mirror:**

The vehicle shall be equipped with the OEM standard mirror.

ii) **Sunvisor:**

Windshield sun visor system shall be standard (OEM) chassis visor(s). Suggested source: Manufacture's standard

K. **Exterior Mirrors:**

The vehicle shall be equipped with the OEM standard power remote controlled, heated mirrors.

L. **Seating / Seat Belts / Grab Handles:**

i) **OEM Seating:**

(1) **Driver and Passenger:**

The front driver and passenger seats shall be OEM. The seat base shall be adapted to permit easy roll out for mobility aid access and securement. The seat shall lock and unlock easily from the floor area

(2) **Third Row (Rear) Seating:**

The vehicle shall be equipped with a third row rear bench seat (or equal), must not have a power folding rear seat.

(3) **Material:**

The vehicle shall be equipped with grey OEM cloth seating.

ii) **Fold A-Way Seating:**

The vehicle shall be equipped with forward facing (double) fold-away seat with seat belts and shall be positioned in the wheelchair securement area. (Section IV, Wheelchair Securement Area). Seat locking/latching devices shall be of high quality and be easy to latch and unlatch. Seats must positively latch in the seated and folded position to prevent inadvertent folding or unfolding of the seat. Any support legs resting on flooring shall be non-marring or rest on metal plates flush mounted with flooring. The fold-away seat shall be able to pass FMVSS 210 without having to fasten additional latches or cables. The fold-away seat shall fold against the wall when wheelchair space is required (no further than 17" from wall in the vertical folded position). All seat backs and all seat bottoms of fold-away seats shall be covered with material matching seat cushion color and fabric. Suggested source: American Seating Horizon™ Mid-Back Series; Freedman 3 Point Fold-A-Way; Braun 325-02LW.

**(1) Seat Material:**

(a) Seats shall be covered with cloth-type or vinyl / leatherette material at the ordering agency's option. Cloth-type or vinyl / leatherette shall completely enclose the seat cushion and the seat back. Seat material shall comply with test and performance criteria of the Federal Register dated October 20, 1993 (see Section VII., table1). Seat colors shall match the OEM seats color.

(i) Cloth:

1. Cloth-type Woven Requirements (with flame resistant qualities):
2. Minimum weight 23 ounces per linear yard.
3. 50,000 minimum double rubs (ASTM-3597-77 Wyzewbeek Method).
4. Color fastness to light 300 hours minimum (AATCC-16-1977 Carbon Arc.)
5. Comply with California BLT-117
6. All cloth-type woven material except Holdsworth Wool shall be treated with a flame proofing solution following the manufacturer's specifications, No-Flame by Amalgamated Chemical Inc., or equal.
7. Suggested source: Flame Resistant Fabrics by Holdsworth Wool, or LaFrance Mills.

(ii) Vinyl / Leatherette:

1. Seat vinyl / leatherette shall comply with test and performance criteria of the Federal Register dated October 20, 1993 (see Section VII., table1).
2. Suggested source: Flame Resistant vinyl by CMI D-90 or Omnova.

iii) Seat Belts:

- (1) All seats shall be equipped with a 3-point restraint system for each designated seating position. Belts shall have:
  - (a) The latch end of the belt will have an emergency locking retractor. The retractor will be mounted underneath the seat to the seat frame. No lap retractors.
  - (b) A push button latch release mechanism.
- (2) Two universal "Buckle Up" decals approximately 3" by 3" shall be furnished loose with each vehicle. Decals shall indicate that seat belt use is recommended.

iv) Grab Handles:

Grab handles shall be installed on the "A" and "B" pillars. OEM grab handles are acceptable.

M. Lighting:

i) Exterior:

All vehicle lights shall be OEM

ii) Interior:

Overhead and lower lighting shall be installed in the interior center seat row of the vehicle that provides not less than two foot-candles of illumination at the entrance area. This system shall illuminate automatically when the vehicle front or accessible doors are open. All accessory vehicle lighting shall conform to ADA 49 CFR, Part 38, Subpart B. Suggest Source: OEM.

N. Radio:

The vehicle shall be equipped with an AM/FM radio with a minimum of four speakers (two front and two rear). Suggested Source: OEM.

**O. Safety Equipment:**

- i) All safety equipment provided by the manufacturer shall be secured to each vehicle.
- ii) The safety equipment shall be:
  - (1) One UL listed 5 pound, 2A-10BC dry chemical fire extinguisher. Fire extinguisher shall have a metal head, a gauge to indicate state of charge, and a bracket with strap for securement. Source: Manufacturer's Standard.
  - (2) One container of bi-directional emergency reflective triangles that meets FMVSS 125.
  - (3) One web cutter shall be provided from the supplier of the wheelchair securement belts for use in an emergency.
  - (4) Additional safety items to be provided on each vehicle:
    - (a) A 12-volt 97-db sealed solid state electronic warning alarm that is readily audible from outside the vehicle when transmission is in reverse. The alarm shall: be steam cleanable; have passed a 1 million cycle test; and meet SAE J994, OSHA, Bureau of Mines and all State Regulations. The alarm shall be mounted with bolts and properly grounded in a protected location in the rear of the vehicle (location shall be approved by the ordering agency). Suggested source: OEM standard.

**P. HVAC (Heating & Air Conditioning):**

- i) Heating:
  - (1) Heating unit shall be automotive in-dash type (OEM or equal) and shall be capable of delivering heat, fresh air ventilation, and air conditioning to the driver's area (maximum BTU rating available). The heater shall have a temperature control valve which can be regulated from the driver's area. The driver's area shall have air circulation in each mode of defrost, heat, fresh air ventilation, and air conditioning.
- ii) Air Conditioning:

- (1) The air conditioning system shall be integrated with a compatible in-dash driver's area evaporator unit and compressor (OEM) capable of delivering tempered air for windshield defrosting. The systems shall use refrigerant type R-134A and be warranted from in service date for one full year, minimum.

**Q. Windows:**

The vehicle shall be equipped with OEM standard tinted windows

**R. Painting and Paint Codes:**

**i) Painting:**

- (1) Standard paint color for all vehicles shall be the manufacturer's pre-finished white exterior panels (OEM white), with other OEM factory colors available upon request. Color scheme on all vehicles shall be provided at the time of ordering.
- (2) Pre-clean and metal prep, any bare metal surfaces prior to applying a compatible red oxide or zinc chromate primer.
- (3) When painting over a manufacturer's standard paint, metal prepping and primer may be omitted, provided an acceptable bond can be achieved

**ii) Paint Codes:**

- (1) Factory paint codes shall be furnished with all vehicles
- (2) After market painting - both the brand and paint code shall be furnished

**S. Mobility Aid Ramp:**

The vehicle shall be equipped with a manually operated, 80-degree swing-away mobility access ramp which stows vertically and folds and unfolds through the passenger side door. The fold and unfold motion of the ramp must be counter balanced so that the force exerted by the operator does not exceed 15 lbs. The installed ramp shall not obstruct the view of the driver through any vehicle window. The ramp shall have a minimum usable width of 30" and a slope meeting the requirements of ADA, 49 CFR. The ramp surface shall be continuous and made skid resistant through powder coating. It shall have no protrusions from the surface greater than 1/4" and shall accommodate both four-wheel and three-wheel mobility aids. The ramp shall have a capacity of 600 lbs. Each side of the ramp shall have protective barriers at least two (2) inches high to prevent mobility aids from rolling off of the ramp edge. The ramp doors shall be interlocked with the vehicle

emergency brake and or transmission to ensure the vehicle cannot be moved when the accessible passenger door is ajar.

**T. Electrical:**

- i) Wiring: All wiring passing through holes in metal or non-metal wearing surfaces, which could cause wear of the insulation, shall be adequately protected by rubber or plastic grommets, and/or non-metallic conduit. Ends of all wires shall be adequately anchored to prevent loosening.
- ii) Lift equipped vehicles shall have a circuit breaker with a manual reset in the lift feed circuit. The circuit breaker shall be mounted under the hood, with easy access, in the positive power cable leading to the lift power pack.
- iii) 12 Volt auxiliary outlet

**U. Equipment mounting:**

For equipment mounted on the vehicle cab and chassis, all holes shall be drilled or punched. There shall be no flame cutting or welding on the frame side rails.

**V. Keys:**

The vehicle shall be equipped with two (2) sets of keys with code numbers provided at delivery.

**W. Rear Defogger:**

The vehicle shall be equipped with the OEM standard.

**IV. WHEELCHAIR SECUREMENT AREA:**

- A. The wheelchair securement system shall be installed according to ADA requirements. Securement locations shall be located in two positions: one position shall be next to the driver (side passenger) and the second position shall be in the center of the vehicle behind the driver and passenger seats. The integrated securement system shall restrain the occupant and the wheelchair separately and securely.
- B. Wheelchair securement shall meet these minimum requirements:
  - 1. Forward facing wheelchair tie down and occupant restraint shall consist of four floor attachment points for the chair and a combination, lap

belt/shoulder restraint with manual height adjuster for the occupant per location.

2. Securement floor anchorage points shall be anodized aluminum, stainless steel or other non-corrosive metal construction and consist of aircraft type insert pockets that can be flush mounted with the rubber flooring (Flanged "L" style track with end caps – Suggest Source: Q-Straint Q5-6100-FPD, Sure-Lok 8663). Floor anchorage points for the rear securement space shall be spaced at a minimum of 50" from front to rear. Floor anchorage points shall be located no closer than 8" from a stationary wall or obstruction (forward or rearward) that would hinder an operator from attaching the securement system. Anchorage points can be used for the front tie downs, the rear tie downs, and can be shared by the center run of anchorage track. Width of anchorage track shall be no less than 30" wide allowing for the widest of mobility devices.
3. Securement wall anchorage point for shoulder restraint shall be stainless steel or other aircraft quality non-corrosive metal. Wall anchorage device shall provide vertical adjustment (approximately 12") for differences in height of the secured mobility aid. Wall anchor shall be permanently fastened to the body structure in the wall according to the belt assembly manufacturer's installation instructions.
4. The belt components shall be permanently marked to identify their location as follows: "floor", "lap", or "shoulder". The four belts that attach to the wheelchair from the floor anchorage points shall use a simple speed hook end ("J" or "S" style) for chair attachment and have automatic heavy duty retractors with a hard metal cover and manual knob control. One securement space shall have a fifth retractor to aid in the securement of scooters or difficult mobility devices. All floor attachment belts shall be the same and work in any of the four floor attachment points and be equipped with connector brackets for the lap belt assembly. Automatic self tensioning and self locking retractors with metal covers shall be part of the four floor belt assemblies for automatic belt tensioning. Belt ends with floor anchor attachments shall be easily identified for placement in the floor track.
5. All belt components shall meet ADA requirements and random static testing forces equal to:

|                        |                          |
|------------------------|--------------------------|
| Rear Belt Assembly     | 6,000 lbs. each, minimum |
| Front belt Assembly    | 2,000 lbs. each, minimum |
| Lap Belt Assembly      | 2,500 lbs. each, minimum |
| Shoulder Belt Assembly | 2,500 lbs. each, minimum |
| Floor Insert Assembly  | 6,000 lbs. each, minimum |

6. All components shall be installed to the securement manufacturer's recommended specifications.
7. An anchorage single point securement system is optional
8. Suggested sources: Q'Straint Model Q-8100-A1L, Sure-Lok's Retraktor™ Systems for L track: AL 712s-4c.

**C. Wheelchair restraint storage:**

1. Under Fold-away Seat Storage: The system shall be positioned under the fold-away seat at the wheelchair space. Storage system shall:
  - (a) Keep restraints clean
  - (b) Provide easy accessibility to restraints
  - (c) Restraints shall be stored securely to prevent noise while the vehicle is in motion.
  - (d) Restraint storage system shall be compatible with the installed securement system (L-Track or Single Point Securement System). Suggested Source: Freedman Tie-Down Storage System
2. Storage Pouch: A storage pouch shall be provided, for vehicles not equipped with a fold-away seat, so that the restraints can be stored off the floor in the vehicle when not in use. Location of storage pouch shall be determined at pilot model inspection.

**V. ALTERNATE QUOTES (OPTIONS):**

**A. Paint - Optional Designs:**

- i) The vehicle shall have a 3" belt painted stripe (no decals). An example would be: an OEM white vehicle with a 3" belt stripe.
- ii) The vehicle shall be painted a full body color, including the roof, other than OEM white. An example would be: a vehicle painted OEM red. Suggested Source: OEM provided colors.

**B. Smooth Anti-slip Flooring:**

- i) The entire passenger area including the wheelchair securement area shall be overlaid with smooth, slip resistant flooring material (in lieu of standard rubber flooring). The resilient sheet flooring system (2.2 mm thickness

minimum) shall be a high quality vinyl constructed with aluminum oxide , silicon carbide grains and PVC chips blended in a high quality wear layer with a non woven polyester/cellulose backing with glass fiber reinforced center scrim. Installation of flooring must be done strictly according to the flooring manufacturer's directions using the proper accessories, tools, and adhesives. Suggested sources: Altro Transflor™ Meta, Altro Transflor™ Chroma.

**C. Wheelchair Single Point Securement System:**

- i) A wheelchair single point securement system (in lieu of "L" track anchorage system) shall offer 360 degree directional usage "pucks" and shall be cast stainless steel with a 2 ½" bolt to be secured to the floor positions. The single point securement system shall meet the same requirements as listed in section (Section IV, Wheelchair Securement Area). except the pucks shall not be shared in the center run of anchorage points (i.e. separate single point securement systems for each wheelchair securement area) and one securement space shall have an additional anchorage puck as to aid in the securement of scooters or difficult mobility devices. This additional anchorage puck shall be centered between the rear anchorages of the largest securement space. Suggested Sources: Q'Straint Slide N' Click, Sure-Lok Solo Floor Anchor System.Restraint Storage System:

**VI. VENDOR/MANUFACTURER REQUIREMENTS:**

**A. Vehicle Information Furnished:**

Vehicle information in this section shall be reviewed at the pre-pilot model review meeting and at final pilot model production. Vehicle information identified by "\*" shall be supplied with each vehicle at delivery. All manuals shall be provided in a hardcopy and an electronic copy (CD or DVD). The vendor/manufacturer shall maintain record or proof that all vehicle information was supplied to the ordering agency.

1. Copy of manufacturer's statement of origin for a vehicle.
2. \* Warranty papers for chassis, body, and additional equipment with each vehicle.
3. \* As built drawings showing wiring schematics of all electrical circuits, body, and chassis with each vehicle.
4. \* Operator's manual for vehicle and all add-on equipment with each vehicle.
5. \* A complete set of repair manuals or equivalent (CD / DVD or latest technology) for the chassis and a manufacturer's parts manual for the body,

and auxiliary equipment for the first vehicle of each model year delivered to each transit agency.

6. \* Powertrain emission diagnosis manual (If available - for diagnosing drivability, emissions and powertrain control system symptoms) for the first vehicle of each model year and engine type delivered to each transit agency. Suggested Source: Helm Inc.
7. \* Maintenance and inspection schedule incorporating the required maintenance and inspection of the basic vehicle and its subsystems (i.e., wheelchair lift) with each vehicle.
8. \* Standard manufacturer's production option sheet(s)/decal(s) for chassis and body shall be installed in manufacturer's standard location, with no holes or rivets obscuring writing and numbers. Sheet shall include rear axle ratio. A paper copy of the service broadcast sheet for chassis shall also be provided with each bus
9. Certification that the seating floor anchorage and floor fasteners shall meet all applicable FMVSS including FMVSS 207, 208, 209, and 210.
10. \* Proof of vehicle suspension alignment (work order or bill) at final vehicle inspection and with each vehicle. Four wheel alignments shall include adjustments to front and rear suspension and steering parts so that axle alignment, camber, caster, and toe settings are within manufacturer's desired limits.
11. \* Proof of undercoating (warranty) at final vehicle inspection and with each vehicle.
12. \* Front end and rear towing instructions with each vehicle.
13. \* Wheelchair securement product instructions and training program.

**B. Manufacturer Quality Control:**

Vehicle contractor/manufacturer shall provide a plan for quality control during vehicle construction. Vehicle contractor/manufacturer shall also provide the name of the chief of quality control for vehicle construction.

The contractor shall establish and maintain an effective in-plant quality assurance organization. It shall be a specifically defined organization and should be directly responsible to the contractor's management and completely independent from production. The quality assurance organization shall exercise quality control over all phases of production from initiation of design through manufacture and preparation for delivery. The organization shall also control the quality of supply articles.

The quality assurance organization shall verify inspection operation instructions to ascertain that the manufactured product meets all prescribed requirements. The quality assurance organization shall detect and promptly assure correction of any conditions that may result in the production of defective transit vehicles. These conditions may occur in design, purchases, manufacture, tests or operations that culminate in defective supplies, services, facilities, technical data, or standards. The contractor shall maintain drawings and other documentation that completely describe a qualified vehicle that meets all of the options and special requirements of this procurement. The quality assurance organization shall verify that each transit vehicle is manufactured in accordance with these controlled drawings and documentation.

The contractor shall ensure that all basic production operations, as well as other processing and fabricating, are performed under controlled conditions. Establishment of these controlled conditions shall be based on the documented work instructions, adequate production equipment, and special work environments if necessary. A system for final inspection and test of completed transit vehicles shall be provided by the quality assurance organization. It shall measure the overall quality of each completed vehicle. A system shall be maintained by the quality assurance organization for identifying the inspection status of components and completed transit vehicle. Identification may include cards, tags, or other quality control devices. Inspection stations shall be at the best locations to provide for the work content and characteristics to be inspected. Stations shall provide the facilities and equipment to inspect structural, electrical, hydraulic, and other components and assemblies for compliance with the design requirements. Stations shall also be at the best locations to inspect or test characteristics before they are concealed by subsequent fabrication or assembly operations. These locations shall minimally include, as practical, under-body structure completion, body framing completion, body prior to paint preparation, water test before interior trim and insulation installation, engine installation completion, under-body dress-up and completion, vehicle prior to final paint touch-up, vehicle prior to road test, vehicle final road completion and presentation to resident inspectors. Tests shall be performed by the manufacturer to ensure that the unit is dustproof, water-tight, fumeproof, and that all vehicle fluids are per specifications. The quality assurance organization shall be responsible for presenting the completed vehicle to the resident inspectors. Sufficiently trained inspectors shall be used to ensure that all materials, components, and assemblies are inspected for conformance with the qualified design.

The State may be represented at the contractor's plant by resident inspectors. They shall monitor, in the contractor's plant, the manufacture of transit buses vehicles under this procurement. The contractor shall provide office space for the resident inspectors in close proximity to the final assembly area. This office space shall be equipped with desks, chairs, outside and interplant telephones, and other items sufficient to accommodate the resident inspector staff. Inspectors shall have lifting equipment available for raising vehicles for under vehicle inspections.

**C. Purchaser Inspection:**

The purchaser reserves the right and shall be at liberty to inspect all material and workmanship at all times during the progress of the work, and shall have the right to reject all material and workmanship which do not conform to the specifications or accepted practice. Where a resident inspector is used, upon the request to the quality assurance supervisor, the resident inspectors shall have access to the Contractor's quality assurance files related to this procurement. These files shall include drawings, material standards, parts lists, inspection processing and records, and record of defects.

**D. Warranty:**

Warranty shall become effective on the date the vehicle is placed into service based upon agency notice to contractor. Warranty service performed at the manufacturer's facilities at the manufacturer's request shall have all costs covered by the manufacturer. Warranty for the vehicle shall be the following as a minimum:

- (1) Three (3) years/36,000 miles on chassis.
- (2) Five (5) years/75,000 miles on powertrain.
- (3) Three (3) years on body structure, exterior and paint.
- (4) Eighteen (18) months on ramp.
- (5) Manufacturer's standard warranty of one (1) year 12,000 miles, minimum, on other add-on components and items.
- (6) The chassis, body, and all add-on components shall be warranted by the successful contractor.

**VII. BID DOCUMENTS:**

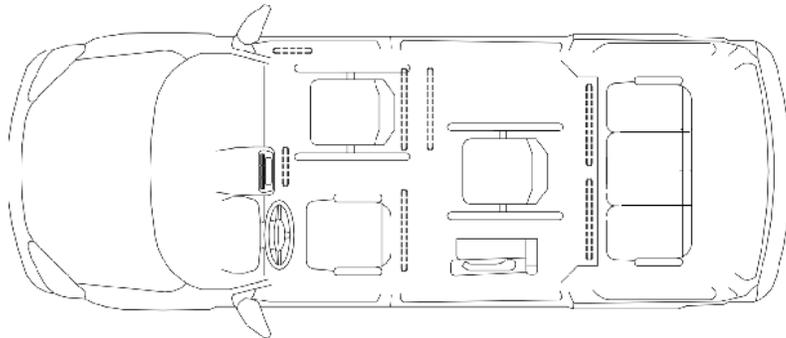
**The bidder shall supply a copy of the following documents with the bid quotation:**

- a) The Michigan Vehicle Cost Model / Evaluation Form completed in detail.
- b) A floor plan of the vehicle shall be provided indicating dimensions and showing the interior layout of the vehicle. The plan shall include wheelchair placement, engineering calculated loaded vehicle axle weights, and be drawn to scale for all configurations.

- c) A description of the manufacturer's chassis (specifications).
- d) All bidders – if applicable - must supply manufacturer's technical specifications for wheelchair lifts and wheelchair restraints. Manufacturer's sales literature is acceptable if it contains the technical specifications.
- e) The warranties for body, chassis, and drive train.
- f) The required Federal Transit Administration (FTA) clauses shall be attached to bid quotation.
- g) The technical data sheet including flammability and smoke emissions for the seat covering material supplied.
- h) Seat frame Salt Spray, humidity and impact resistance tests' results
- i) Certification test data showing that the seats, the seat belts, and the installation are in compliance with FMVSS-207, 208, 209, and 210 where applicable for the vehicle model being offered in this bid.
- j) Certification that the wiring and the switches for air conditioning and all add-on components are adequate to withstand transient loads expected.
- k) A copy of the dealer agreement between the Vehicle Conversion Manufacturer and the designated dealer.
- l) ALTOONA TEST REPORT: (If applicable) Modified chassis manufacturer only shall provide the Altoona test report of this vehicle at time of bid (4 years or 100,000 Miles).
- m) Modified chassis bidders must submit a description of the lowered floor material, design and construction.

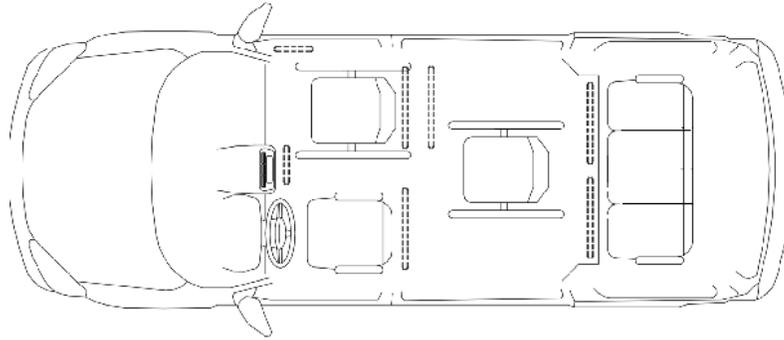
**VIII. FLOOR PLANS:**

A.



3+2 Accessible Passenger Vehicle with ramp and one double fold-away seat (cloth or vinyl).

B.



3+2 Accessible Passenger Vehicle with ramp (less double fold-away seat).