



COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA COMMERCIAL ITEM DESCRIPTION (PCID)

29' & 31' TRANSIT BUS, GVWR 25,500 LBS.

PCID NO. 1132
Eff. December 13, 2016

(Supersedes PCID 1132 eff. 18 April 2011)

This PCID covers requirements for a 29 and 31 foot in length, Gross Vehicle Weight Requirement (GVWR) 25,500 lb. transit bus with the motor and chassis manufactured by Freightliner.

The following shall indicate **MINIMUM** requirements including all genuine parts, accessories, equipment, and safety features considered standard, whether mentioned herein or not. The vehicle shall comply with all applicable Federal Safety Standards and ADA Requirements. **Nine (9) seating layouts will be defined in these specifications. Bidders must be able to supply all nine layouts. A weight analysis and manufacturer's floor plan layout shall be supplied with your bid. Failure to supply any of this information shall be cause for bid rejection. All required Federal Transit Administration's certification forms must be included in the bid proposal.**

Required Equipment

CHASSIS:

25,500 lb. GVWR.
220" minimum wheelbase and cab-to-axle compatible with specified floor plan.
Heavy-duty front and rear bumpers.
Heavy-duty suspension.

ENGINE:

6.7 Liter diesel engine.
Increased capacity cooling with coolant recovery system.
The exhaust shall exit on the driver's side of each vehicle behind the rear wheels within 6" of rear bumper.
Adequate access shall be provided for easy inspection and filling of the cooling system and oil dipstick without removing any other equipment.

TRANSMISSION:

Heavy-duty five (5) speed automatic.
Auxiliary transmission oil cooler.
Guards for each section of the propeller shaft are required to prevent any section of the shaft from entering the vehicle or striking the ground in case of failure.

FRONT AXLE:

GAWR compatible with chassis OEM.

Power steering.

Steering stabilizer

Front end alignment shall be done by the distributor prior to delivery with alignment sheet attached.

REAR AXLE/SUSPENSION

GAWR compatible with specified GVWR and application.

The suspension shall be strengthened as needed to prevent any listing or leaning to the side of each vehicle on which the wheelchair lift is located.

ELECTRICAL:

Minimum 200 amp total capacity alternator(s), OEM chassis (if available).

Gauge for water temperature.

12 volt maintenance free dual battery system/1,200 CCA @ 0 degrees F. with one battery mounted in the engine compartment if available from the OEM. A stainless steel rollout battery tray completely enclosed in a stainless steel vented battery box for all frame mounted battery.

A high idler device shall be provided which will help the charging system keep up with the load demand of each vehicle. The system shall be an InterMotive GatewayAI (example GTWY401G-A1) or InPower or approved equal with the manufacturer's decal applied.

Park Crank Only Module: The engine shall only start when the transmission is in Park. The controller shall be a fully automatic, solid state, microprocessor-controlled unit. The system shall be an InterMotive PCOM501 or approved equal.

Schematic for all added electrical equipment that shows where added equipment was electrically attached to existing factory electric power.

Daytime running lights.

Sidemarkers lights.

All exterior lights other than chassis OEM lights shall be LED.

Back-up lights shall be LED lights with a lifetime warranty and shall be 4" round and provide 13 foot candles of light at 50" distance. Dialight super bright series 47 LED light or approved equal.

Each vehicle shall be equipped with mid ship turn signals on the side of the body that come on with the flashers. The stepwell, curb and dome lights shall be activated when the front passenger door is open while the engine is running.

Step and door area to be illuminated by a high intensity, 300 lumen, LED strip light. Light to be low profile to facilitate a maximum clearance. Light to be door header or ceiling mounted near the door entrance mounted to meet ADA lighting requirements without additional lighting. Strip light to be covered by a lifetime warranty.

Dialight VSL 300 lumen or approved equal.

Curbside lights shall be LED and skirt mounted.

The driver's area shall have a LED swivel dome light with a minimum of 7 candle power to provide sufficient lighting in the steering wheel area during night operation and operated by OEM chassis light switch.

Guarded or recessed lighting shall be provided on all front marker lights.

WIRING

All wiring shall conform to the current applicable standards of the Society of Automotive Engineers and be of sufficient size to carry the required current without excessive voltage drop. The wire shall have adequate

mechanical strength for the application and be of a sufficient gauge size to carry the current without overheating. All wiring and related devices shall be installed in a quality workmanship manner and be mechanically and electrically secure.

All wiring shall be color coded, function coded or permanently and continuously numbered for ease of identification and must be continuously loomed. All wiring shall be adequately protected from water, solvents, road splash, stones, grease, oil, fuel, abrasion and chafing.

All wires and cables not installed by the OEM chassis manufacturer which are subject to extreme weather and heat shall be protected by shields where necessary to prevent premature failure.

All exposed parts of the wiring system shall be completely loomed with Weather-Pack or approved equal to adequately protected from corrosion.

Battery cables shall be heavy duty and adequate to carry current output of the electrical system.

Grounding wires shall not pass through hinged door or any other cover.

All harness and wiring shall terminate at appropriate junction terminals set in bakelite or molded plastic material.

All wiring and connectors shall be of the soldered insulated or machine staked type. All body circuits shall be protected by manual reset circuit breakers. All circuit breakers shall be clearly identified. Fuses and fuse blocks, if used, shall be clearly identified and easily accessible from inside each vehicle. Fuses shall be placed in a single block. The fuse block shall contain holders for spare fuses of each type.

Devices such as lamps and wiring requiring periodic checking and servicing shall be readily and easily accessible and serviceable. All exterior devices shall be sealed to prevent entrance of water.

There shall be not exposed or loose wiring in the driver or passenger compartment of each vehicle.

Any wiring installed as an after market installation that is subjected to vibration or other movement must be encased in continuous metallic tubing or be of the armored "BX" type. This requirement is necessary only when wiring is passed through or within body or chassis member.

Wiring, harnesses, and raceways shall be supported at regular intervals by "P" clamps, or by other supporting hangers where necessary, and routed in separate hangers from heater hoses or air conditioning hoses.

Un-dedicated constant hot and un-dedicated ignition hot with minimum 10 gauge wire in electrical compartment inside the vehicle.

"As built" wiring diagrams, build specific illustrations, part numbers and all body parts diagrams shall be provided by the body manufacturer for all body installed electrical components and parts on each vehicle.

FUEL TANK(S):

Fuel tank capacity, maximum available from the manufacturer of model bid (30-gallon minimum fuel tank).

WHEELS AND TIRES:

Wheels and radial tires compatible with specified GVWR.

All wheels shall be chassis OEM white on both sides.

Spare wheel and tire assembly as used on the bus shall be shipped loose.

OEM valve stems shall be provided.

BODY:

Interior width shall be minimum 90".

Interior height shall be a minimum of 72”.

Dual electric windshield wipers with intermittent feature.

Electric horn(s).

Two under hood lights shall be LED with a minimum of 50 lumens and shall include a high temperature len. Dual windshield washers including antifreeze type solvent.

AM/FM/CD radio with a digital clock, front driver speaker and dual 4 rear compartment speakers to be activated by fade feature of the radio and it shall be possible to listen in the front exclusive of the rear. The radio shall be a REI Model # 690514 with a 36,000 miles/ 3 year warranty or the OEM Chassis AM/FM CD player with digital clock.

All after market controls and instruments are to be within driver's arm reach with seat belt fastened. All switches are to be of uniform type, either push-pull, toggle or rocker type, mounted in convenient groupings in a panel near the driver.

Passenger seats shall be covered with Docket 90-A heavy-duty vinyl (36 oz. minimum) fully padded construction and color coordinated with interior and exterior colors, to be selected after receipt of purchase order.

Seats cushioning and upholstery shall meet all applicable FMVSS standards and must comply with requirements of FTA Docket 90-A regarding flammability and FMVSS 210 for seat belt anchorage.

Seat covering shall be fire resistant, shall not support combustion, and shall meet the requirements of FTA Docket 90-A (Recommended Fire Safety Practices for Transit Bus and Van Materials Selection). Seat cushions shall have no exposed foam top, bottom or side. Seat covering shall be same material top, bottom and side of seat cushion.

Foam material shall meet the requirements of FTA Docket 90-A with ILD ranges of: seat cushion 55 to 65; seat back 35 to 45. The thickness at which the foam should be tested to achieve these values shall be 4 inches.

Chassis OEM cloth high back captain's reclining driver seat with right arm rest and 6 way power pedestal or Adnick power pedestal with shroud.

Sun visor for driver.

T-Slider sash windows, to provide ventilation, which all shall be emergency egress, except for a maximum of one spacer window per side (if necessary).

Tinted AS2 glass in all body windows.

Doors shall be capable of opening from inside or outside the vehicle with exception of the front passenger entrance door.

Each vehicle shall be equipped with a manually operated anodized aluminum front double panel entrance door with stainless steel door jam. If exterior fasteners are used to secure the door frame, they shall be stainless steel fasteners. Meeting edges shall be equipped with 2" extruded rubber edges on each section that overlap for form a tight seal. The door shall not be provided by the original chassis manufacturer. The door-opening device shall be easily operated by the driver from the driver's seat.

Stepwells are to be of heavy duty construction of stainless steel, with coved or square corners and adequate reinforcement to prevent deflection. Where exterior fasteners are utilized, stainless steel fasteners shall be used. Stepwell treads shall be at least 8.5" deep. Individual risers shall not exceed 9" in height. All risers shall be approximately the same height. The distance from the ground to the first step of the entryway shall be $11" \pm 1"$. The first step height from street level shall not be more than 12 inches from the ground as measured to the top of the step tread when each vehicle is empty except for seats and normal equipment. Step width shall be a minimum of 29". Step nose shall be yellow in color.

The front entrance door shall have an unobstructed clear opening width of at least 29" and a full height of at least 72". The front entrance door shall also be equipped with a brush at the bottom.

Front entrance door shall be equipped with windows covering 80% on each panel and placed so as to allow the driver to see and judge curb location when stopping.

The structure of all doors, their mounting, inside and outside trim, and any exposed mechanisms shall be of durable, corrosion-resistant material which is rigidly reinforced. Positive stops to limit door travel in the open and closed positions shall be provided.

Lift and Emergency doors shall be equipped with a passive hold open device and shall not rattle in the closed position and shall have durable, firmly installed weather seals to prevent the entrance of air and water and to keep ice from binding the door shafts. The doors shall open to 90° or 180° and shall be secured with a stainless steel "T" latch or spring or gas shock in the open position.

Each vehicle shall be equipped with a rear outward opening, stainless steel or galvanized or anodized aluminum emergency door with stainless steel door jam equipped with an emergency quick-release system, with appropriate operating instructions clearly written and placed in a highly visible location inside each vehicle. The door shall be easily operated from both outside and inside each vehicle. Rear door shall have upper and lower window.

An inner barrel bolt style lock shall be provided in the emergency rear door that is interlocked to the ignition.

Twin rear windows shall be provided on each side of rear door.

All interior lights (driver dome light and 6 rear) shall be LED with a minimum of 7 candle power with switch on dash and door operated switches on all doors except driver's door.

Install interior and exterior lighting per NHTSA to enhance safety.

OEM Chassis interior rear view mirror.

Passenger view mirror, minimum 4" x 16", flat glass.

Corrosion-resistant fully adjustable low-mount or mid-mount mirrors shall be installed on each side of the vehicle. Mirrors shall provide an undistorted view of the rear corner of each vehicle.

Mirror brackets shall not obstruct the driver's field of vision. Outside mirrors shall contain a standard mirror and a separate convex mirror mounted below and within the same housing. Passenger side mirror shall be fender or A-pillar mounted and the driver side mirror shall be mounted on the A-pillar or door mounted. Rosco or Hadley fender mount or approved equal.

Handrails on both sides of steps at entrance door and shall be full length and parallel to steps for convenience of ambulatory passengers. If equipped with manual door, right side handrail need not be parallel to steps.

All handrails (including ceiling) shall be yellow dimpled Dura Diamond or approved equal. All guardrails and stanchions shall be 403 satin finish seamless stainless steel. Guardrails and stanchions that have exposed metal and are immediately in front of passengers shall be padded.

There shall be no less than 1 ½" of knuckle room clearance at stanchions, guard rails, and grab rails.

The passenger entryway shall have a right hand grab rail, two (2) steps with 9" risers. First step shall be electrically heated.

The driver's vertical stanchion shall be installed directly behind the driver's seat including a full length padded modesty panel with protected edges. The upper half of the modesty panel shall be a pexiglass driver barrier.

Necessary insulation shall be provided throughout the vehicle (ceiling and walls) to insure maximum heat and cooling efficiency.

Interior walls and ceiling shall be installed to cover openings and posts and shall be a minimum of 1/8" vinyl type hardboard or Fiberglass Reinforced Plastic (FRP) that is congruous to industry standards. Color shall be compatible with the color in driver's compartment.

The structural members (the steel cage structure, including walls, floor, and roof sections) of each vehicle shall be coated with an appropriate anti-corrosive material that will prevent corrosion failure throughout the expected life of each vehicle. The use of aluminized steel is not acceptable.

All body materials that are not inherently corrosion resistant shall be protected with corrosion – resistant coatings (such as zinc chromate or zinc phosphate prime paint). Examples of inherently corrosion resistant materials are stainless steel, galvanized or galvanealed steel. The use of aluminized steel is not acceptable.

When each unit is completed, the sections of the underside of each vehicle exposed to the elements shall be treated with an undercoating material except those areas of the OEM chassis where undercoating is not

recommended. All box type steel tubing (except stainless steel) used in the floor structure and wall structure below the window line shall have the interior of the tube coated with corrosion resistant material conforming to MIL-C-62218 as outlined in Federal Standard 297E (Rustproofing of Commercial Vehicles). Sections that are treated shall be properly cleaned to remove greases, oils, and residues before application of the corrosion-proofing material. All mechanisms (moving or stationary parts) that are affected or rendered useless by an application of sealant or insulation shall be cleaned free of sealant or insulation including vent canisters and drain pipes.

All exterior panels shall be attached to the framing by pressure laminated sidewalls. Vacuum laminated sidewalls and the use of two-sided tape is not acceptable. Panels shall be lapped unless continuously welded and the upper or forward panel shall form a watershed by being lapped over the following panel so that the sealing of the panels is not dependent on caulking alone. All exterior joints and seams shall be protected by the application of caulking compound. Body shall be thoroughly water tested and made tight to prevent leakage. Exterior panels of each vehicle shall be of galvanized or galvanealed steel. No wood or cardboard materials shall be utilized in any sidewall construction.

Metal roof gutters shall be installed over all windows and doors, including the driver's door.

All body materials that are not inherently corrosion resistant shall be protected with corrosion – resistant coatings (such as zinc chromate or zinc phosphate prime paint or approved equal). Examples of inherently corrosion resistant materials are stainless steel, galvanized or galvanealed steel or approved equal.

All nuts, bolts, clips, washers, clamps, and like fasteners shall be zinc or cadmium plated, or phosphate coated, or stainless steel to prevent corrosion.

Mud flaps shall be provided for all wheels. Mud flaps shall be sized to be effective to protect the body, and so that they can not be rubbed by the chassis tires or the ground. In the event the tires extend beyond the side of each vehicle, splash aprons and fenders shall be provided.

Back-up alarm system shall meet all ADA requirements.

Driver's side aluminum or stainless steel running board or tube step. Reference: Carr HD-18" 304 stainless steel (tube step), or approved equal.

Tilt steering.

Escape roof hatch with an audible alarm shall be provided that can be opened from inside and outside the bus.

All standard signage that is required by the Department of Transportation (DOT).

Rear center stop light.

The unladen clearance height plus two inches shall be marked on a sign or decal which is clearly visible to driver. The lettering shall be 1 ½" high.

AIR CONDITIONING/HEATER:

A combination front and rear air conditioning system shall have a total of 70,000 B.T.U. Manufacturer's recommended chassis combination air conditioning and heater unit shall be installed in the front section of the vehicle. An overhead evaporator with a minimum of 55,000 B.T.U. shall be mounted in the rear. A 45,000 B.T.U. passenger compartment heater with two (2) brass and/or stainless steel ball shut off valves on feed and return line. The supplier shall indicate on the interior seating/floor design drawing the actual location of the rear heater. The A/C control switch shall be a 3 speed rotary switch.

Two air conditioner compressors shall be driven off the main engine. One is the chassis OEM supplied compressor and is specific to the chassis OEM driver's area air conditioning system. The second compressor is for the passenger area air conditioning system, and is nominal 10 cubic inch displacement. The passenger area condenser (separate from the radiator) shall be skirt mounted with a minimum of three (3) fans and three (3) motors. The air conditioning system shall have a driver's evaporator and a rear ceiling evaporator to provide cooling air to the driver and throughout the passenger compartment. The driver's area air conditioning system shall utilize the chassis OEM supplied radiator condenser. The driver's area air conditioning system and the passenger area air conditioning system shall be completely independent of each other.

A low pressure safety cut-off switch shall be installed on the low pressure side of the air conditioning system. A high pressure safety cut-off switch shall be installed on the high pressure side of the air conditioning system. The block/expansion valve shall meet minimum core requirements.

All refrigerant hose assemblies shall meet SAE J2064 standards and shall be nylon veneer type or approved equal. All fittings shall be plated steel and utilize dual HNBR O-rings on the outer diameter of the hose barb surface. Crimping clamps shall be stainless steel. Refrigerant shall be current federal standard refrigerant. Refrigerant oil shall be consistent with compressor manufacturers' recommendations.

Air Conditioning condenser coil coating shall consist of an acrylic based or zinc plasma material or approved equal, which is applied to the entire condenser coil and tubing assembly. Coating to be specifically designed to have a minimal effect on heat transfer while providing maximum corrosion resistance. The coating shall also be applied to the condenser refrigerant fittings.

FLOOR:

Flooring shall be minimum 3/4" marine grade plywood throughout the passenger area securely fastened to the steel floor structure.

It shall be covered, wall-to-wall, with a non-skid type rubber floor covering, RCA Black Rubber or equal. Edges shall be sealed and caulked.

Cab area shall be rubber floor covering, no carpet.

White standee line to be placed on floor for "no standing forward of white line".

When the fuel sender is accessible, with modification, a stainless steel fuel sender access panel, 10" x 10" clear opening flush mounted, shall be provided directly over the fuel tank. The panel shall allow for the easy removal and replacement of the fuel sender without dropping fuel tank. The stainless steel access panel will have three (3) 2" strips of non-skid, black tape attached to the top of the plate. The connector for the fuel sender/fuel pump

shall be wire tied to the top of the fuel tank prior to installing the body to allow easy access from the access panel.

FIRE, FIRST AID AND EMERGENCY EQUIPMENT:

A mounted First Aid Kit in a hard shell case (Johnson and Johnson First Aid Kit #8172 or approved equal).

Five pound dry chemical type A-B-C fire extinguisher.

Emergency warning triangle and flare kit.

OSHA approved Body Fluids Clean-Up Kit in a hard shell case shall be provided.

These items shall be stowed or securely mounted in appropriate brackets provided by the manufacturer and installed in a location accessible to the driver; locations not to impede passenger traffic in the aisle way.

Two (2) each Belt Cutters shipped loose with self-adhesive Velcro tape.

An Auto Wallet (NAPA Brand) or approved equal with self adhesive shall be provided.

Layout Specific Equipment (to be referenced by Layout)

Double forward facing two stage fold down seat: Each seat shall include a seat mounted retractable seat belt for each person, aisle side arm rest and padded hand hold. Seat Width 17 ½", Depth 19" ± 2", Back Height 22" ± 2", Floor to top of seat cushion: Range of 17 ½" to 18 ½".

Single forward facing two stage fold down seat: Each seat shall include a seat mounted retractable seat belt, aisle side arm rest and padded hand hold. Seat Width 17 ½", Depth 19" ± 2", Back Height 22" ± 2", Floor to top of seat cushion: Range of 17 ½" to 18 ½".

Double aisle facing flip seat: Each seat shall include a seat mounted retractable seat belt for each person and arm rests. Seat Width 17 ½", Depth 19" ± 2", Back Height 22" ± 2", Floor to top of seat cushion: Range of 17 ½" to 18 ½".

Single aisle facing flip seat: Each seat shall include a seat mounted retractable seat belt and arm rests. Seat Width 17 ½", Depth 19" ± 2", Back Height 22" ± 2", Floor to top of seat cushion: Range of 17 ½" to 18 ½".

Double forward facing fixed seat: Each seat shall include a seat mounted retractable seat belt for each person, aisle side arm rest and padded hand hold. Seat Width 17 ½", Depth 19" ± 2", Back Height 22" ± 2", floor to top of seat cushion: Range of 17 ½" to 18 ½".

Single forward facing fixed seat: Each seat shall include a seat mounted retractable seat belt, aisle side arm rest and padded hand hold. Seat Width 17 ½", Depth 19" ± 2", Back Height 22" ± 2", Floor to top of seat cushion: Range of 17 ½" to 18 ½".

Single Panel Wheelchair Lift Door: Each vehicle shall be equipped with outward opening, single panel, stainless steel or galvanized or anodized aluminum side door equipped with window, including a stainless steel door jam, for installation of a wheelchair lift. The door shall open to 90° or 180° and shall be secured with a stainless steel "T" latch in the open position. Check arms, straps or equal devices shall be furnished to hold the lift door in the maximum open position. Positive latch or similar positive stops shall be installed on side paratransit door to secure door in an open position while loading or unloading wheelchair passengers. No bungee type door tie downs.

Double Panel Wheelchair Lift Doors: Each vehicle shall be equipped with outward opening, double panel, stainless steel side or galvanized or anodized aluminum doors equipped with windows, including a stainless steel door jam, for installation of a wheelchair lift. The doors shall open to 90° or 180° and shall be secured with a stainless steel “T” latch in the open position. Gas struts for 90° doors or “T” latch for 180° doors shall be installed on side paratransit door(s) to secure door(s) in an open position while loading or unloading wheelchair passengers. No bungee type door tie downs.

ADA Compliant Wheelchair Lift Package

Lift shall have been tested to a static load of 2,400 lb. and has an 800 lb. rated lifting capacity. Side loader shall be powered by electric or electric-hydraulic system, which shall operate off the chassis electrical system. Loader shall have a downward travel distance from the vehicle floor as required to properly load and unload wheelchair passengers. The platform shall be equipped with a stop to prevent the wheelchair from inadvertently rolling off the platform during loading and unloading. Platform shall power retract to a vertical position when not in use for storage inside the van. Control box or boxes to operate the lift shall be furnished and located for operation by an attendant or the wheelchair passenger from inside or outside the vehicle. It shall be equipped with a safety switch to prevent operation of the lift when door is closed. Lift must be capable of being manually raised and lowered to evacuate vehicle in case of emergency and shall be equipped with overhead handrails. The OEM interior light, all ADA lighting and a dedicated light illuminating the area where the lift platform will rest when lowered shall operate when the door(s) is (are) opened. Controls must be located so that the operation of the door(s) does not restrict access to the control switches. Placement of the controls must be accessible to the operator. Control boxes shall have an interior light to illuminate the switches and to be secured with a latch. A visual warning signal shall be located in the driver’s compartment for detection when side door(s) are not in a fully locked position. The lift shall comply with all current ADA requirements, and written documentation of full manually raised and lowered to evacuate vehicle in case of emergency. All Lift Interlock System devices shall be install on the vehicle and shall meet ADA Title 49 and NHTSA requirements. The system shall be an InterMotive GatewayAI (example GTWY401-A1) and lift activation kit (ILIS501-H1) or InPower or approved equal. Lift shall have a manual backup system that allows operation at rated capacity of all function in case of power loss. The lift shall meet NHTSA requirements for section 403 and 404. The lift shall be constructed and installed on the curb side of each vehicle with the minimum of structural body modifications. The cutting in front of chassis structural members is prohibited. All changes required to the basic body structure shall provide for adequate reinforcing and load distribution. The installation shall be adequate to withstand the stresses imposed by regular lift operation on a sustained basis. The lift shall be furnished with an armor cable for the lift cord.

The wheelchair lift package shall include all ADA required signage.

Reference:

Braun ADA Fully-Automatic, Millennium-2, Lift # NL919FIB-2: The wheelchair lift shall be a Braun ADA fully-automatic lift Model NL919FIB-2.

Braun ADA Fully-Automatic, Century -2, Lift # NCL919FIB-2: The wheelchair lift shall be a Braun ADA fully-automatic lift Model NCL919FIB-2.

Ricon S5510-ADA or Ricon S2010-ADA: The wheelchair lift shall be a Ricon Model S5510-ADA or Ricon S2010-ADA.

Wheelchair Securement and Occupant Restraint Systems: One (1) complete set of retractor wheelchair securement and occupant restraint system with retractable shoulder harness were applicable, shall be provided to securely hold the wheelchair and occupant in the wheelchair position. The retractor wheelchair securement and occupant restraint system shall meet the following requirements:

Each retractor wheelchair securement and occupant restraint system shall be in a forward facing direction.

The retractor wheelchair securement and occupant system shall comply with the following requirements:

- A.) Successfully tested to meet minimum impact forces of a 20 G, 30 MPH deceleration to simulate a frontal impact, as required by the SAEJ2249 standards.
- B.) 49 CFR Part 38 Americans with Disabilities Act (ADA).
- C.) CSA Z605 Mobility Aid Securement and Occupant Restraint Systems for Motor Vehicles (20G/30MPH impact test criteria).
- D.) ISO 10542 (proposed) Wheelchair Tiedown and Occupant Restraint Systems for use in Motor Vehicles (20G/30MPH impact test criteria).

When L Track is used it shall be made of aluminum alloy 6005-T5, 6061-T6, or 6351-T6. The track shall be flush mounted to the vehicle floor with end caps following manufacturer's specifications. The flush mount tracks shall have no gaps between the ends or sides of track and the flooring.

The track installation fasteners shall be made of high strength alloy steel as per ASTM F835 with sealant under the head to prohibit water accumulation between the fastener and the track mounting holes. The bolt shall be plated for corrosion resistance.

Four (4) each- Belt loops per wheelchair location.

One (1) each-Wheelchair Pouch mounted in approved location for seat belt/shoulder harness system.

Reference:

Sure-Lok L-Track System (Retractor) #AL712S-4C Titan: The wheelchair securement and automatic height adjustable occupant restraint system shall be Sure-Lok L-Track System (Retractor) Model #AL712S-4C Titan.

Sure-Lok L-Track System (Retractor) SOLO #AL760S-4C: The wheelchair securement and automatic height adjustable occupant restraint system shall be Sure-Lok L-Track System (Retractor) SOLO Model #L760S-4C.

Q-Straint DELUXE L-Track System (Retractor) #Q-8100-A1- L: The wheelchair securement and occupant restraint system set shall be Q-Straint DELUXE L-Track System (Retractor) #Q-8100-A1-L.

Q-Straint Slide'N-Click L-Track System (Retractor) #Q-8100-A1-SC: The wheelchair securement and occupant restraint system set shall be Q-Straint Slide'N-Click L-Track System (Retractor) #Q-8100-A1-SC.

Layout 1132/A-29: Option shall include all required equipment and specified layout specific equipment as indicated below.

Nine (9) double forward facing fixed seats.
Three (3) double forward facing two stage fold down seats.
Two (2) wheelchair positions.
Two (2) wheelchair securement and occupant restraint systems (Sure-Lok or Q-Straint as specified in purchase order).
One (1) ADA Compliant wheelchair lift package (Braun or Ricon as specified in purchase order).
One (1) wheelchair lift door (single or double panel as specified in purchase order).

Layout 1132/B-29: Option shall include all required equipment and specified layout specific equipment as indicated below.

Five (5) double forward facing fixed seats.
Seven (7) double forward facing two stage fold down seats.
Four (4) wheelchair positions.
Four (4) wheelchair securement and occupant restraint systems (Sure-Lok or Q-Straint as specified in purchase order).
One (1) ADA Compliant wheelchair lift package (Braun or Ricon as specified in purchase order).
One (1) wheelchair lift door (single or double panel as specified in purchase order).

Layout 1132/C-29: Option shall include all required equipment and specified layout specific equipment as indicated below.

Two (2) double forward facing fixed seats.
Ten (10) double forward facing two stage fold down seats.
Six (6) wheelchair positions.
Six (6) wheelchair securement and occupant restraint systems (Sure-Lok or Q-Straint as specified in purchase order).
One (1) ADA Compliant wheelchair lift package (Braun or Ricon as specified in purchase order).
One (1) wheelchair lift door (single or double panel as specified in purchase order).

Layout 1132/D-29: Option shall include all required equipment and specified layout specific equipment as indicated below.

Ten (10) double forward facing fixed seats.
Two (2) wheelchair positions.
Two (2) wheelchair securement and occupant restraint systems (Sure-Lok or Q-Straint as specified in purchase order).
One (1) ADA Compliant wheelchair lift package (Braun or Ricon as specified in purchase order).
One (1) wheelchair lift door (single or double panel as specified in purchase order).

Layout 1132/E-29: Option shall include all required equipment and specified layout specific equipment as indicated below.

Ten (10) double forward facing fixed seats.
One (1) double forward facing two stage fold down seat.
Two (2) wheelchair positions.
Two (2) wheelchair securement and occupant restraint systems (Sure-Lok or Q-Straint as specified in purchase order).
One (1) ADA Compliant wheelchair lift package (Braun or Ricon as specified in purchase order).
One (1) wheelchair lift door (single or double panel as specified in purchase order).

Layout 1132/A-31: Option shall include all required equipment and specified layout specific equipment as indicated below.

Eleven (11) double forward facing fixed seats.
Three (3) double forward facing two stage fold down seats.
Two (2) wheelchair positions.
Two (2) wheelchair securement and occupant restraint systems (Sure-Lok or Q-Straint as specified in purchase order).
One (1) ADA Compliant wheelchair lift package (Braun or Ricon as specified in purchase order).
One (1) wheelchair lift door (single or double panel as specified in purchase order).

Layout 1132/B-31: Option shall include all required equipment and specified layout specific equipment as indicated below.

Seven (7) double forward facing fixed seats.
Seven (7) double forward facing two stage fold down seats.
Four (4) wheelchair positions.
Four (4) wheelchair securement and occupant restraint systems (Sure-Lok or Q-Straint as specified in purchase order).
One (1) ADA Compliant wheelchair lift package (Braun or Ricon as specified in purchase order).
One (1) wheelchair lift door (single or double panel as specified in purchase order).

Layout 1132/C-31: Option shall include all required equipment and specified layout specific equipment as indicated below.

Four (4) double forward facing fixed seats.
Ten (10) double forward facing two stage fold down seats.
Six (6) wheelchair positions.
Six (6) wheelchair securement and occupant restraint systems (Sure-Lok or Q-Straint as specified in purchase order).
One (1) ADA Compliant wheelchair lift package (Braun or Ricon as specified in purchase order).
One (1) wheelchair lift door (single or double panel as specified in purchase order).

Layout 1132/D-31: Option shall include all required equipment and specified layout specific equipment as indicated below.

Fourteen (14) double forward facing two stage fold down seats.

Eight (8) wheelchair positions.

Eight (8) wheelchair securement and occupant restraint systems (Sure-Lok or Q-Straint as specified in purchase order).

One (1) ADA Compliant wheelchair lift package (Braun or Ricon as specified in purchase order).

One (1) wheelchair lift door (single or double panel as specified in purchase order).

OPTIONAL EQUIPMENT:

1. Rear Axle Limited Slip: Rear axle shall be limited slip Chassis OEM, aftermarket acceptable.
2. Air Brake System: An air brake system shall be installed on the chassis.
3. Front Entrance Electric Door: Optional front entrance electric door. A & M or approved equal.
4. Locking Overhead Storage Box: Overhead storage area above driver (if applicable).
5. Exterior Body Paint: Exterior one color of paint for entire bus other than the standard white with base coat and clear coat.
6. Exterior Body Paint: Exterior two colors (two tone) of paint for entire bus other than the standard white with base coat and clear coat with standard body line break.
7. Vinyl Graphics Decaling: Logo, stripping, and lettering with maximum of \$750.00. Vinyl material shall carry a standard warranty.
8. 1,000 lb. lift: Braun NCL1000(F)IB3451-2. The lift shall have been tested to a static load of 3,000 lb. and has a 1,000 lb. rated lifting capacity.
9. A.R.M. Wheelchair Securement and Occupant Restraint Systems (pricing should reflect cost to upgrade from Sure-Lok or Q-Straint to the A.R.M. module): One (1) complete set of retractor wheelchair securement and occupant restraint system with retractable shoulder harness were applicable, shall be provided to securely hold the wheelchair and occupant in the wheelchair position. The retractor wheelchair securement and occupant restraint system shall meet the following requirements:

Each retractor wheelchair securement and occupant restraint system shall be in a forward facing direction. The retractor wheelchair securement and occupant system shall comply with the following requirements:

A.) Successfully tested to meet minimum impact forces of a 20 G, 30 MPH deceleration to simulate a frontal impact, as required by the SAEJ2249 standards.

B.) 49 CFR Part 38 Americans with Disabilities Act (ADA).

C.) CSA Z605 Mobility Aid Securement and Occupant Restraint Systems for Motor Vehicles (20G/30MPH impact test criteria).

D.) ISO 10542 (proposed) Wheelchair Tiedown and Occupant Restraint Systems for use in Motor Vehicles (20G/30MPH impact test criteria).

When L Track is used it shall be made of aluminum alloy 6005-T5, 6061-T6, or 6351-T6. The track shall be flush mounted to the vehicle floor with end caps following manufacturer's specifications. The flush mount tracks shall have no gaps between the ends or sides of track and the flooring.

The track installation fasteners shall be made of high strength alloy steel as per ASTM F835 with sealant under the head to prohibit water accumulation between the fastener and the track mounting holes. The bolt shall be plated for corrosion resistance.

Four (4) each- Belt loops per wheelchair location.

One (1) each-Wheelchair Pouch mounted in approved location for seat belt/shoulder harness system.

Reference: American Seating Advanced Restraint Module (A.R.M.) & Dual Auto-Lok, Lok-It System: The wheelchair securement system shall be American Seating Lok-It comprised of the A.R.M. with Sure-Lok Retractors and the Dual Auto-Lok.

10. Fixed Route Service Package & Public Address System

Two (2) different tone chime cords with lighted "Stop Requested" sign, minimum 4"H x 17"W, for wheel chair package.

Fare box prep.

The PA amplifier/control head used in the Radio Engineering Industries, Inc. (REI) PA system (#769982) is an integrated Radio/CD Player/ PA system (REI #710053). The system shall be housed in a "DIN" sized chassis and easily installed where the "factory" radio would normally be located.

Dimensions: 7" W x 1-15/16" H x 6-5/16" D (DIN).

Power Supply: 12-volt nominal (11v-16v) negative ground.

Maximum Power Output: 50 watts x 4 channels (total 200w) @ 1 kHz.

Vendor will provide a credit for the AM/FM/ CD player in the base spec when this option is chosen.

11. Destination Signage

LED front and side destination signage to include programming resources to be provided to the agency, one unit per sign kit. Stainless steel "T" latch shall be provided to hold open the destination sign door. For maximum viewing the front sign shall be a minimum of 16 pixels high x 96 pixels wide with a minimum display height of 6.5"H x 37"W, The curb side sign to be minimum of 8 pixels high x 96 pixels wide with a minimum display height of 3.25"H x 37"W .

Transign LLC, Model: LED Destinator Series

12. Farebox: A two (2) vault fare box shall be provided and mounted on a stanchion with the trip handle toward the driver. Reference: Main Fare box-Model M4, Diamond Fare box or approved equal.

13. 2.2 mil vinyl flooring

14. RCA rubber floor

15. Amerex Fire Suppression System:

The engine compartment shall be equipped with an automatic fire suppression system. The system shall consist of a control panel, automatic discharge, manual discharge switch, extinguisher and nozzles as described below:

Control Panel – A control panel shall be located within the easy reach of the driver.

The control panel shall provide audible and visual indication to the driver for the following:

- SYSTEM OK [green]
- FIRE Detected [red]
- TROUBLE [yellow] (disconnected or faulty circuit, low voltage)

In addition, switches shall be provided for the following:

- Alarm Silence
- System TEST
- System RESET
- ENGINE SHUTDOWN OVERRIDE

Vehicle Interface – outputs shall be provided from the control panel that interface with the vehicles controls for:

- 1) Engine Shutdown
- 2) External Warning

Detection – A minimum of two thermal spot detectors shall be installed in the engine compartment. Sensor(s) shall be located to provide fast detection without false alarms for protection of the following fire threats:

- Alternator/generator
- Turbocharger (if applicable)
- Starter
- High current electrical cables
- Large wiring bundles (>1 inch diameter)
- Auxiliary engine heater (if equipped)

Manual Discharge Switch – A switch shall be located within easy reach of the driver that when pressed will immediately discharge the extinguisher. The switch shall be provided with a tamper proof seal and cover, safety pull pin or other means to prevent inadvertent discharge. In addition, the control panel shall provide a unique visual indication that the manual discharge switch has been activated. This indication shall require maintenance action to reset.

Extinguisher – A dry chemical extinguisher with a minimum 13 pounds capacity shall be provided. Gaseous-based agents, which require a given concentration, be achieved for

fire extinguishment shall not be used unless extinguisher capacity/discharge time compensates for un-closeable openings and coast-down. Engineering calculations shall be provided with the certification report.

Systems that utilize pressurized piping for detection and/or suppression are not acceptable.

The extinguisher shall be capable of being serviced/refilled within a 60 mile radius of the operator.

Nozzles – A minimum of two nozzles shall be provided for small buses (Cutaway/paratransit) and a minimum of 4 nozzles shall be provided for standard buses.

The automatic fire suppression system shall operate as follows:

FIRE detected

- A red indicator shall illuminate and an audible alarm shall sound on the control panel.
- The extinguisher release/engine shutdown 15 second timer shall initiate. The driver may reset the timer for additional time if necessary by pressing the ENGINE SHUTDOWN DELAY button on the control panel. It is also acceptable for the system to spray the extinguishing agent immediately when the fire is detected.
- Upon expiration of the 15 second timer, the extinguisher shall be activated and the engine shall be shutdown simultaneously.

Manual Discharge Switch activated – all of the above shall occur but there shall be no time delay.

Hose and Fittings – Fittings shall be galvanized malleable or ductile iron, black or galvanized steel, stainless steel, copper or brass. Cast iron fittings shall not be used. Hose shall be, at minimum, single wire braid, rubber hose conforming to and marked as

SAE 100R5 or SAE 100 R1 or greater. As an alternate to flexible hose, Type 304 or 316 Seamless Stainless Steel tubing conforming to ASTM-A-269 may be used if approved by the system manufacturer.

Backup Battery – A backup battery is required or other means to manually actuate the system in the event of loss of vehicle electric power.

Certification – The factory or factory representative shall certify the automatic fire suppression system design, operation, and installation for each unique engine compartment configuration. The certification shall include a statement that the entire system carries UL or FM approval. Any concerns and/or recommendations shall be addressed in the certification letter.

System Maintenance - The system shall be installed, tested and maintained at regular intervals in accordance with the manufacturer's recommendations. Only fully trained and factory certified individuals may install and maintain the fire suppression system. Maintenance records shall be retained by the vehicle owner for the life of each vehicle.

16. Brake Retarder: OEM Brake Retarder.

17. Energy Absorbing Bumper: Rear bumper, Romeo Rim or approved equal.

18. Remote Controlled and Heated Mirrors: Remote controlled and heated, dual low-mounted type exterior rear view mirrors, 40 square inch minimum. Remote controlled and heated for both flat mirror and convex mirror.

19. Supplemental Rubber Suspension System

The chassis Original Equipment Manufacturer (OEM) rear leaf spring type suspension system of each vehicle shall be modified by the addition of a supplemental rubber suspension system, MOR/Ryde RL suspension system or EZ Ride or Roll Guard or approved equal.

20A. Four (4) Camera On-board Digital Recording System

A four (4) camera mobile DVR system, Bus-Watch DBW6, Safety Vision RR4CSD, SerVision MVG400, Seon MX4, Apollo MRH4 Roadrunner, Zen-Tinel SD-VX or approved equal shall be installed in the vehicle. The supplier shall indicate on the interior seating/floor design drawing the actual location of the DRV system. The system shall have a 2.5 removable 160gig hard disk drive caddy with USB data output, MPEG 4 video compression, selectable 1-30 fps for full motion, locking BNC connectors, black & white, color, IR interior and exterior camera availability, video loss detection, accelerometer for documenting hard braking and erratic driving events. The DVR shall operate on a 12 or 24 volt DC power source. The DVR shall have a low voltage cut-off with automatic restart. The DVR shall be capable of recording real time images and sound at 30 frames per second with a display resolution of 720 x 480. The DVR shall record continuously for a minimum of 24 hours. An event trigger switch shall be installed and shall encrypt and digitally watermark the video for evidencery purposes. An extra removable hard drive shall be provided with the recording system. Audio to be disabled at time of delivery. All other functionality that does not conflict with the chassis computer and/or electrical system shall be turned on.

20B. Two (2) Camera, Windshield Mounted Recording System

A two (2) camera windshield mounted, video system shall be a continuous loop recording system with 8 hours of continuous recording with data stored on a removable solid state drive. Video and audio shall have the capability to replay on any computer without the need of special software. The camera shall be provided with a tamper resistant lockable security enclosure with an upgraded night night vision LED Module. No subscription of annual fee required. Rosco Dual-Vision DV101E, Zen-Tinel CFR-WM or approved equal.

20C. Eight (8) Camera On-board Digital Recording System

An eight (8) camera mobile DVR system, RoadRunner Mobile Digital Video System, Apollo MRH8 Roadrunner or approved equal shall be installed in the vehicle. The supplier shall indicate on the interior seating/floor design drawing the actual location of the DRV system. The system shall have a 3.5 removable hard disk drive caddy with USB data output, H.264 video compression, selectable 1-30 fps for full motion, analog audio/video RCA out terminals, black & white, color, IR interior and exterior camera availability, video

loss detection, accelerometer for documenting hard braking and erratic driving events. The DVR shall operate on a 12 or 24 volt DC power source. The DVR shall have a low voltage cut-off with automatic restart. The DVR shall be capable of recording real time images and sound at 30 frames per second with a display resolution of 720 x 480. The DVR shall record continuously for a minimum of 24 hours. An extra removable hard drive shall be provided with the recording system. An event trigger switch shall be installed and shall encrypt and digitally watermark the video for evidencery purposes. Audio to be disabled at time of delivery. All other functionality that does not conflict with the chassis computer and/or electrical system shall be turned on.

21. OEM Service Manuals, CD-ROM: A complete set of chassis OEM service manuals shall be provided, which shall include electrical, emissions and service. The chassis service manuals shall be on CD-ROM format, subject to availability.

22. OEM Service Manuals, Hardcover: A complete set of chassis OEM service manuals shall be provided, which shall include electrical, emissions and service. The chassis service manuals shall be hardcover manuals, subject to availability.

23. Two-Way Radio: The supplier shall provide and install a two-way radio, which shall not exceed the allowance of \$1,000 per unit. The purchasing agency shall choose the radio from what is available from the supplier.

24. Two-Way Radio Antenna Access Panel: A two-way radio antenna access panel shall be supplied in the front ceiling section of the vehicle, perferable above the driver. The access panel shall be centered between the driver side wall and the entrance door. This will allow for antenna mounting into the steel roofing and shall provide a conduit with a pull wire into the electrical distribution box.

25. Heated Back-Up Camera: The heated back-up camera system shall include weatherproof heated camera with night vision, seven inch high-resolution color monitor, intergrated audio, versatile mounting hardware, harness, accessories, and user manual. The camera system shall be installed by the supplier. Rosco Safe-T-Scope Color Back-Up Camera System Kit STSK7360 or approved equal.

26. Bicycle Rack: The bicycle rack shall be a Sportworks two-postion stainless steel rack DL2 NP or approved equal. All mounting hardware shall be provided and installed by the supplier.

27. Driver Seat: Recaro LXS seat with OEM seat base.

28. Longitudinal Full Length "L" Track: Four (4) 50" lengths of "L" track shall be installed in the floor lengthwise throughout the WC position. The two (2) inside tracks shall be spaced on 17" centers and the outside track shall be spaced on 30" centers. In addition to the floor tracks there shall be a 50" section of track installed above the windows in the same corresponding longitudinal locations as the floor track. The integrated lap and should belt shall be provided with "L" track fittings on the upper and lower mounting points for the occupant restraints. This track option will allow the operator to located a wheelchair at any point throughout the wheelchair position and provide the ability to relocate the occupant restraint at any point throughout the length of track. In the instance of multiple WC positions front to back the track will run continuous in the floor and above the windows. The amount of track for multiple positions shall 50" per position times the number of positions (example: three [3] front to back positions would require 150" of track; four [4] 150" sections in the

floor and one [1] 150" length above the windows). This option will allow the operator to locate an occupied wheelchair at any point throughout the length of multiple positions. The upper shoulder belt guide shall include an automatic height adjustable retractor mounted to an "L" track fitting and shall have a 131-degree bracket between the fitting and the retractor.

29. A/C Winterguard Protection Kit.

30. Fiberglass Exterior Skin

Material Master – No Material Master established for this commodity.

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