VEHICLE SPECIFICATIONS

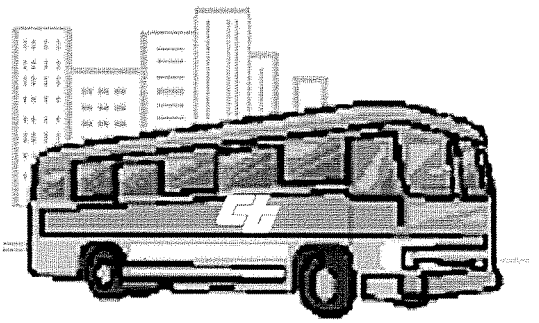
AND

BID REQUIREMENTS

FOR

MEDIUM DUTY

TRANSIT BUS



Department of Transportation
Division of Mass Transportation
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TECHNICAL SPECIFICATIONS-SHUTTLE BUS

1.0 SCOPE

1.1 The purpose of the specifications is to set forth minimum requirements for a Federal Transit Administration (FTA) minimum service life category of, 7 year 200,000 mile for Type 7 built on a Chevrolet 5500 chassis and 10 year or 350,000 mile category for Type 8 bus built on a Freightliner MB-55 chassis capable of seating ambulatory and wheelchair passengers. The buses are to be converted in accordance with this specification. The buses are to be used in a variety of applications including; fixed route, intercity bus service, deviated fixed route and paratransit service. Six line item awards will be made with three chassis length options available for each for each bus Type. No other chassis, fuel (unless offered by the OEM chassis/engine manufacturer), body lengths or wheelbases will be allowed unless specified in this technical specification.

1.2 The manufacturer must be ISO 9001:2000 certified for design, sale and manufacturer of customized buses and multipurpose passenger vehicles. A copy of the certification must accompany the bid submittals. All parts added, as a part of the modification process shall be new. The basic bus must be a current year factory production model that is catalogued by the manufacturer and for which manufacturer's published literature and printed specifications are currently available.

1.3 This specification is intended for use in the purchase of a complete vehicle unit and all equipment and accessories necessary for its operation. All parts, equipment, and accessories shall be completely installed, assembled and/or adjusted as required.

1.4 Each bus shall be designed to facilitate the disassembly, reassembly, servicing or maintenance thereof by use of tools and items that are normal and available as commercial standard items. The body and structure shall be designed for ease of maintenance and repair.

1.5 The interior noise produced by any one bus shall not exceed 83dbA in any mode of operation.

1.6 The chassis and body shall be designed using only prudent, proven engineering principles with all work performed only by professional established firms. The vehicle shall conform in all respects to the following standards, law and regulations at the time of bid award:

- Federal Motor Vehicle Safety Standards (FMVSS)
- Code of Federal Regulations, Title 49, Chapter V-National Safety Bureau
- California Code of Regulations (CCR), Title 13
- Americans With Disabilities Act (ADA) Accessibility Specifications for Transportation Vehicles, 49 CFR, Part 38, Subpart B-Buses, Vans and Systems
- State of California Vehicle Code
- California Health and Safety Code
- California Air Resources Board Regulations
- OEM Body Builders Book and chassis company quality vehicle manufacturing programs such as Ford's Quality Vehicle Modifier (QVM) program.
- NFPA 52 Standard on Compressed Natural Gas

3.0 SPECIFICATION REQUIREMENTS

3.1 **Basic Vehicle:** The production vehicle shall be a current Model Year, with the following components and/or options:

1 Chassis shall be heavy duty and the as-built, fully loaded Gross Vehicle Weight cannot exceed the Original Equipment Manufacturers (OEM) GVWR as identified in Table 1 (page 21). In no case shall the vehicle GVWR or the front or rear gross axle weight rating (GAWR) or any component therein, be exceeded, when the vehicle with all options installed is fully loaded with passengers (68 kg (150 lbs). per ambulatory passenger and driver, and 113 kg (250 lbs.) per wheelchair passenger, seated in the locations designated and offered. A weight distribution schematic and loading calculation must be included with bid submittal. For Type 8 a floor plan detailing CNG tank placement is required.

2 Engine shall be a California approved and meet specifications indicated in Table 1.

3 The front and rear springs shall have a ground load rating equal to or exceeding the GVWR of the vehicle. The Type 7 bus shall be equipped with rear Mor/ryde suspension system, the Type 8 shall have OEM rear air ride suspension.

4 Each chassis shall be equipped with front and rear, heavy-duty, double-acting gas filled shock absorbers, the highest rating available from the OEM.

5 Each vehicle shall be equipped with OEM power-assisted steering and power brakes. Steering shall incorporate an OEM factory installed tilt wheel and cruise control.

6 The fuel system shall meet the minimum requirements of Table 1 and be supplied by the OEM. Any chassis fuel system modifications shall be fully compliant with California Air Resources Board standards.

7 Protective metal guards for the driveline shaft shall be provided to prevent a broken shaft from touching the ground and preventing the shaft from contacting the floor of the bus.

3.2 Transmission

Allison Model 1000 for the Type 7 with a 19,500 GVWR and an Allison 2200 series transmission for the Type 7 with a 22,500 GVWR. Allison 2400 series automatic transmission is required for the Type 8. The transmission shall incorporate a heavy-duty OEM installed air-oil or water to oil auxiliary transmission cooler to maintain proper transmission temperature. The transmission shall have the capacity to perform in start and stop duty cycles.

3.21 Hubodometer

The bus shall be equipped with a hubodometer mounted at the curbside of the rear axle. The hubodometer shall have a capacity reading no less than 999,999 miles.

3.3 INSTRUMENT PANEL

The instrument panel shall have lamps sufficient to illuminate all instruments. All instruments shall be accessible for maintenance and repair and shall be mounted so that each instrument and all indicator lights are clearly visible to the driver. Chassis OEM gauges shall be used in the drivers instrument cluster. If OEM gauges are not available then VDO brand gauges or Stewart Warner gauges or equal shall be used. Lights in lieu of the listed gauges will not be acceptable. Each vehicle instrument panel shall be equipped with at least the following:

a. Ammeter or voltmeter
b. Oil pressure gauge
c. Fuel capacity gauge
d. Engine coolant temperature gauge
e. Speedometer
f. Emergency brake warning light
g. Transmission temperature gauge
h. Engine hour meter

3.4 BACK-UP WARNING DEVICE

Shall be waterproof equal to ECCO #530 that is readily audible outside each vehicle when the transmission is in reverse. The warning devise shall be mounted in the rear of each vehicle.

3.5 REAR OBSTACLE DETECTION

Intermotive, Hawkeye Reverse Assistance System, or equal, rear obstacle detection system integrated into the rear bumper (three stage variable tone) per manufacturers recommendations.

3.6 TWO-WAY RADIO/PA AND ANTENNA PRE-WIRE

AM/FM/CD radio with four flush mounted speakers, installed in passenger area. A two-way radio 12-volt DC supply, ground harness and cable conduit shall be installed in the driver's area. The conduit shall be a concealed thin wall plastic conduit, 5/8" I.D. The contractor shall also provide and install a public address system with hand held microphone. The system shall include a solid-state amplifier of sufficient power and quality that the operators voice can be clearly heard without distortion. The amplifier shall be firmly secured in a protective housing. A waterproof exterior speaker shall be installed. A power switch for the PA system shall be mounted on the dash to provide operation for the inside, outside and amplifier off. Any noise suppression due to alternator, lighting, engine or other source is required of the contractor.

3.7 MIRRORS

The roadside mirror shall be B & R manufacturing's, reference model S1110 for Type 7, remote adjustable 8"W x 18"H mirror. Mirror head shall be attached using a double tube steel arm powder coated flat black. The mirror design is a friction mount construction that allows for the mirror assembly to be folded during coach washing or when incidental contact occurs. The operator shall be able to adjust flat portion remotely while seated in the driving position. The control for the remote positioning of the mirror shall be a single switch or devise. The flat and convex shall be electrically heated with heater being energized whenever the operator's heater and/or the defroster is activated. A turn signal behind the

mirror surface led bulbs to create a distinct arrow, visible from the rear of the vehicle is required.

1 **CURBSIDE**

The curbside mirror shall be B & R Manufacturing's (Reference model S1043 for Type 7, S1121 for Type 8) remote adjustable 8"W X 18"H mirror. The mirror is to be constructed of

high impact ABS housing with a black finish. Mirror head shall be attached using a nitro-carbonizing ball and clamps into a cast aluminum arm powder coated flat black. The mirror arm shall be located on an auto return mechanism that allows for return of the mirror to a viewing position when incidental contact occurs and retracts or folds during coach washing operations. The operator shall be able to adjust flat portion remotely while seated in the driving position. The control for the remote positioning of the mirror shall be a single switch or devise. The flat and convex shall be electrically heated with heater being energized whenever the operator's heater and/or the defroster is activated. A turn signal behind the mirror surface LED bulbs to create a distinct arrow, visible from the rear of the vehicle is required.

2 **ROADSIDE**

The curbside mirror shall be B & R Manufacturing's (Reference model S1045 for Type 7, S1121 for Type 8) remote adjustable 8"W X 18"H mirror. The mirror is to be constructed of high impact ABS housing with a black finish. Mirror head shall be attached using a nitro-carbonizing ball and clamps into a cast aluminum arm powder coated flat black. The mirror arm shall be located on an auto return mechanism that allows for return of the mirror to a viewing position when incidental contact occurs and retracts or folds during coach washing operations. The operator shall be able to adjust flat portion remotely while seated in the driving position. The control for the remote positioning of the mirror shall be a single switch or devise. The flat and convex shall be electrically heated with heater being energized whenever the operator's heater and/or the defroster is activated. The roadside mirror is to be mounted lower than the curbside mirror, the height to be specified by the Procuring Agency after the bid award. A turn signal behind the mirror surface LED bulbs to create a distinct arrow, visible from the rear of the vehicle is required.

3 **PASSENGER**

A fully adjustable BDS convex mirror that is 6" x 9", BRC convex passenger view mirror mounted just above the windshield over the steering wheel area.

3.75 SUN VISOR

Windshield sun visor system shall be standard OEM chassis visor(s). Type 8 requires adjustable sun visors for the windshield and the operator's side window. Visors shall be shaped to minimize light leakage between the visor and windshield pillars. Visors shall store out of the way and shall not obstruct airflow from the climate control system or interfere with other equipment such as the radio handset or the destination control. Deployment of the visors shall not restrict vision of the rearview mirrors. Visor adjustments shall be made easily by hand with positive locking and releasing devices and shall not be subject to damage by over-tightening. Sun visor construction and materials shall be strong enough to resist breakage during adjustments. Visors may be transparent, but shall not allow a visible light

transmittance in excess of 10 percent. Visors, when deployed, shall be effective in the operator's field of view at angles more than 5 degrees above the horizontal.

3.8 BUMPERS

The rear bumpers shall meet the following: No part of the bus, including the bumper, shall be damaged as a result of a 5-mph impact of the bus at curb weight with a fixed, flat barrier perpendicular to the bus longitudinal centerline. The bumper shall return to its pre-impact shape within 10 minutes of the impact. The bumper shall protect the bus from damage as a result of 6.5 mph impacts at any point by the Common Carriage with Contoured Impact Surface defined in Figure 2 of FMVSS 301 loaded to 4,000 pounds parallel to the longitudinal centerline of the bus and 5.5-mph impacts into the corners at a 30 degree angle to the longitudinal centerline of the bus. The bumpers shall be installed per manufacturer's specifications. Bumper must have the HawkEye reverse assistance system integrated into the bumper and continue to operate after repeated 5-mph impacts. Equal to: Romeo RIM, HELP GARD.

The front bumpers shall be OEM standard.

3.9 EXHAUST

Exhaust system shall be aluminized steel exhaust pipe properly installed with heat shields, baffles and vibration mounts as required. Galvanized heat shielding shall run between the exhaust and the floor of the vehicle. Tailpipe shall exit the rear of the vehicle with a 90° turn down deflector on the street side of the bus body. The placement of the tailpipe shall not affect departure angle.

4.0 TIRES

Vehicle wheels shall be sized according to OEM chassis specifications. Steel or brass valve stems 1.5" in length shall be used on all wheels with elbow extensions on the inside rear dual for access. Stainless steel, or brass valve caps with an inner air seal shall be used. Wheels shall be OEM white where available. The combined load rating of the tires shall equal or exceed the GVWR of the vehicle. One mounted spare tire and wheel to match existing tires/wheels to be shipped loose.

1 MUD FLAPS

The vehicle shall have commercial grade anti-sail mud flaps/splash aprons behind the front and rear wheels and have no visible imprinted logo or advertising and shall extend to within 6" of the road surface at curb weight. Front mud flaps may be chassis OEM supplied. They shall be securely fastened with full width stainless steel trips and bolts and shall be installed by compressing the flap between bracket and metal strips. The mud flaps shall be at least 1" wider than the tire widths to stop splash at the rear of the wheel openings. Additional flaps/splash aprons shall be installed when necessary to protect bus equipment (A/C components, batteries, front wheel inner shield etc.)

2 WHEELHOUSING

The wheel housing shall be of sturdy heavy-duty construction and constructed of a minimum 14 gauge galvanized steel or stainless steel and provide ample tire clearance during all operating conditions. Fenders and splash aprons (underskirt) of durable construction shall be provided so as to provide maximum deflection of the wheel splash. There shall be sufficient clearance to enable easy removal of wheels mounted with inflated tires.

4.5 BRAKE RETARDER

Type 8: Telma model AC 51-00, or equal, low amperage magnetic driveline retarder properly sized for the chassis with four (4) stage foot controls.

4.6 ELECTRICAL REQUIREMENTS

1 WIRING

All wiring shall meet the requirements of SAE recommended practice J878a, Type SXL. Connections with 3 to 12 circuits shall be environmentally sealed high impact plastic connectors with pull apart locking tabs. All non-OEM connections containing one or two circuits shall be made with Posi-lock connectors. **NO BUTT CONNECTORS WILL BE ALLOWED**. Plastic wire ties are not acceptable. All added wiring shall be in a loom and securely clipped for maximum protection and routed in separate hangers from heater hoses or air conditioning hoses. Clips shall be rubber or plastic coated to prevent them from cutting the wiring insulation. All electrical wiring shall be automotive stranded and sufficient size to carry the required current without excessive voltage drop and shall be color, number and function coded at a minimum of eighteen (18) inch intervals. No electrical, stationary or mechanical device may block the removal of the engine cover inside the bus. All electric wiring passing through the body metal shall have anti-chafing grommets. Each vehicle shall contain a set of detailed system by system "as built" wiring schematics covering all electrical equipment and electrical circuits installed, complete with wiring codes for each vehicle ordered. Identification on the wiring diagram must tie the diagram to the bus.

Type 7: The electrical system shall be so designed to provide and safely distribute 12-volt DC power to all electrical components in the bus. All switches and wiring circuits shall be protected with either fuses or circuit breakers. All fuses and circuit breakers shall be labeled for identification and installed in one central location for easy access with a cover (metal or plastic). Inside the circuit box shall be a permanently mounted legend identifying each circuit and wire by color, number, function and location. The OEM Chassis electrical protection may not be altered or modified in any way. All contractor-installed switches shall be of heavy-duty design. No switches are to be installed on the engine cover and no electrical, stationary or mechanical device may block the removal of the engine cover inside the bus. There shall be no exposed wiring inside the vehicle. All wiring must meet SAE standards. All wiring shall be run inside the body in a protected area. Wiring that must be routed under the vehicle, as close to the chassis frame rails as possible, shall be attached to the sub-floor with rubber or plastic coated P clamps.

Type 8: The internal control device shall be a solid-state device, providing and extended life service cycle. Programmable time delay functions and integrated flasher capabilities shall be contained in the control module. The components of the multiplex system shall be of modular design, thereby providing for ease of replacement by maintenance personnel. The modules shall be easily accessible for troubleshooting electrical failures and performing system maintenance. Each module shall be shielded to prevent interference by EMI and RFI; and shall utilize LEDs to indicate circuit integrity and assist in rapid circuit diagnostics and verification of the load and wiring integrity. In conjunction with relays if necessary, each circuit shall be capable of providing a current load of up to 10 Amperes. The internal controls shall be a solid state device, providing an extended service life. Wiring for data bus and node module power shall consist of three, 22 gage or larger, UL approved, shielded,

twisted pairs. Ten percent (10%) spare input and output shall be provided at each I/O location. Wiring used for the multiplexing shall be stamped with the address of the corresponding I/O location. Protection to each individual circuit shall be provided. An automatic test system, integral to the multiplexing, shall be provided. The system shall be hosted on an IBM-compatible personal computer as well as a hand held field diagnostic unit capable of reading the network data, control function and address data, or function code. The mechanic shall be able to use either unit to check bus wire function. Reference I/O Controls model Dinex GZA

2 BATTERIES

Dual batteries are required. Battery cables installed in place of chassis manufacturer's battery cables shall be a continuous run and sized to match the electrical system's maximum current draw. Battery cables shall be color-coded and shall be sleeved with high abrasive resistant Packard Electric Flex-Guard loom and supported with lined steel clamps on a maximum 15" centers. Master battery disconnect switch shall be capable of carrying and interrupting the total load. The switch shall be located near the battery and shall be accessible through the access door and labeled Battery disconnect "Emergency Use Only".

Type 7: Batteries must be a minimum 700 CCA each and placed secured in tray as detailed in Type 8. Battery terminals are to be located to the outside of the tray to allow for easy access to jump-start the vehicle. The access door shall be a non-locking latch type.

Type 8: 8 D batteries shall be provided, with 2300 total cold cranking amps.
The batteries for Type 8 are to be mounted on a stainless steel pullout tray with battery hold down secured by bolts. The pullout tray shall be easy sliding and be supported with slides that are ball bearing equipped roller supports, all of which have the capacity to adequately support the weight of the battery equipment. The battery slide tray shall allow sufficient movement to allow the batteries to be serviced outside of the bus body. A support arm will be mounted to keep the access door open while servicing the batteries. The battery compartment shall be totally enclosed and shall be vented. The battery tray shall have a positive latch and the hinged door shall have flush pull-style latche(s). The battery compartment or enclosure shall be vented and self-draining. It shall be accessible only from outside the bus. All components within the battery compartment, and the compartment itself, shall be protected from damage or corrosion from the electrolyte and gases emitted by the battery. The inside surface of the battery compartment's access door shall be electrically insulated, as required, to prevent the battery terminals from shorting on the door if the door is damaged in an accident or if a battery comes loose.

3 ALTERNATOR

Type 7: Dual OEM alternators of the highest rating available are required with a minimum output of 105 amps each. If OEM dual alternators are not available then a single alternator rated at a minimum 200 amps hot as required for the Type 8 is required. If an upgrade (non-OEM) alternator(s) is used a permanent label shall be installed under the hood stating brand, model number, serial number, alternator output and belt manufacturer with part number.

Type 8 requires an alternator rated at a minimum 200 amps hot (200°). The alternator shall be high output low cut-in type producing a minimum of 95 amps at engine low idle. Reference Brand: Leece Neville. A permanent label shall be installed under the hood stating brand, model number, serial number, alternator output and belt manufacturer with part number.

4 HIGH IDLE

An OEM electronically controlled high idle system shall be provided. System is to be activated only when park brake is set and transmission is in neutral or park. The system shall automatically deactivate when vehicle is shifted into gear and when the vehicle brakes are applied. For gas engine on Type 7, Intermotive high idle model #AFIS 602G-81I, or equal.

5 EXTERIOR LIGHTING

All lights for taillights, brake light, turn signal, back-up, collision avoidance lights and clearance marker lights equal to Dialight, shall be voltage regulated Light Emitting Diode (LED).

A Taillights are to be recessed and not protrude more than 2" from the body and include a pair of amber combinational hazard and signal lights. Rear tail lamps shall also include a pair of red taillights and red stoplights, which may be combinational. (Equal to: Dialight 44121RB-Red, 41131AB-Amber)

B Side signal lamps shall be provided independently or be incorporated into the front and rear corners of the vehicle. (Equal to: Dialight 18001AB811)

C Clearance marker lights shall be installed surface mounted, facing the front and rear.. (Equal to: Dialight 1500RB, 1500AB)

D Center LED (equal to Dialight 87121RB) brake light center mounted below rear window.

E Two (2) LED (equal to Dialight model number 46001CB) back-up lights, one mounted on each side of the body rear cap, shall be provided.

F Step lighting shall be provided by LED Dialight (reference Dialight 70-81CB), mounted to provide light for the entire step-well and portion of the ground area outside the bus. The step lights shall be extinguished when the front door has closed.

5 INTERIOR LIGHTING

Lighting shall be ceiling cove mounted. Lighting fixtures shall be incandescent type mounted on each side of the vehicle interior from front to rear. A minimum of two foot-candles of illumination at reading level is required. A single drivers light fixture shall be provided with a separate switch.

6 DRIVERS AREA

The drivers area shall consist of an ergonomically designed molded dash console, located conveniently to the driver's seated position and in full view of the driver. Supplemental control panels mounted above the driver's head or above the windshield are not accepted. All switches are to be properly labeled and illuminated. The instrument control panel shall be painted or otherwise finished with non-reflective, anti-glare black finish.

7 GROUNDS

A ground, of the battery cable size, shall be installed between the engine and chassis frame. The vehicle body shall be properly grounded to the chassis frame in at least two places. Engine and body grounds shall be installed to handle subsystem electrical capacity. Grounding wires fastened to the frame shall use a bolt with nut installed in a proper sized

hole with dielectric compound applied to the cleaned surfaces, bolt, and cable end. Lift pump motor shall be grounded directly to chassis frame using a cable of the same size as the pump motor feed wire. All exterior lights and accessories added by the body manufacturer shall be grounded by an in harness ground attached at a fuse panel common grounding point. For all ground wire connections paint shall be removed at the grounding point to provide a surface, cable end, bolt, and nut where each positive or grounding cable is attached.

8 ENGINE GUARD

Shall be incorporated with the engine management system and shall be an electronically controlled engine shutdown system. Engine guard shall be incorporated with the engine management system and shall be an electronically controlled engine shutdown system. The system shall sense engine low pressure and high coolant temperature.

4.7 BODY MODIFICATIONS:

Type 7: Cutaway conversion bodies must be securely fastened to the basic vehicle structure and bolted securely through chassis rail flange at floor and with added reinforcing plates or comparable method. Method of attachment must conform to chassis OEM body builders' requirements. Attachments through bus side rails are not allowed. Welded securement to the basic vehicle structure is only acceptable in areas in front of the front suspension spring hanger and to the rear of the rear suspension spring hanger. No other welded securement to the basic vehicle structure will be acceptable.

Type 8: The lower exterior panels within 28 inches above ground level shall be equipped with removable resilient, impact resistant panels for protection against minor impacts and scratches. The panels must be reinforced and supported to withstand impacts and road vibration. All materials that are not inherently corrosion resistant shall be protected with corrosion-resistant coatings. All joints and connections of dissimilar metals shall be corrosion-resistant and shall be protected from galvanic corrosion.

5.0 STRUCTURE:

1 Roof Construction: The roof construction shall be of sufficient strength to prevent vibration, drumming or flexing. The roof is to be designed to prevent pooling of water on the roof. Roof panels must be contoured molded reinforced panels that are installed as a continuous single piece with structural caulking, double faced tape, rivets and moldings. A one-piece roof is required.

2 Static Rollover Protection: The entire unit shall be adequately reinforced and shall meet requirements of FMVSS 220. A current certification outlining test procedures and results shall be prepared by a registered Professional Engineer and/or test laboratory certifying compliance with the requirements and must be furnished with the bid. The test data shall indicate the model year, manufacturer's name and GVWR of the vehicle tested. The test results shall not be more than two (2) years old on the production model bid unless the structure has not been significantly modified as defined by 49 CFR 665.

3 Corrosion protection: Structure is to be thoroughly cleaned and prime treated prior to applying exterior or interior panels. All panels are to be caulked with paintable sealants prior to prime treatment.

Type 7: The vehicle body shall be constructed to provide maximum protection to passengers in case of rollover accident or a crash accident to the side or rear of the bus. The outside body

panels should be fabricated of contoured steel, fiberglass, fiberglass reinforced plastic with resin-hardened honeycomb, or aluminum. The frame shall be attached to the understructure and securely attached to the chassis so that the entire vehicle will act as one unit without any movement at the joints. The entire unit shall be adequately reinforced with structural steel to carry the required loads and withstand road shocks. The entire frame structure of bus body and attaching members shall have zinc chromate (or equal) applied prior to mounting the bus body. All exterior seams shall be constructed to shed water without leaking into the vehicle. Panels shall be lapped unless continuously welded and the upper or forward panels shall be lapped so as the upper panels are lapped over the following panels and the seam is not dependent on caulking alone. All exterior joints and seams shall be protected by zinc chromate caulking, butyl rubber tape, or approved (by the State) material. No water leaks in the body will be acceptable.

Type 8: The body frame structure shall be structurally fabricated using 1010/1020 low carbon steel rectangular tubing. The floor is reinforced rectangular steel tubing on a maximum of 24" centers and side doors and window openings are to be reinforced with gussets. The structure is to be thoroughly cleaned and prime treated prior to applying exterior or interior panels. Ziebart Type A or equal corrosion treatment to be applied to the inside of all tubular frame structures. The exterior panels are to provide a smooth and durable appearance. The sidewalls are to be .080 aluminum or alucobond continuous panels. Front and rear caps are to be contoured and aesthetically molded fiberglass.

6.0 INTERIOR BODY PANELS

All interior walls shall be paneled, including doors. All panels shall be the same color and coordinated with the interior colors of the vehicle.

Type 7: All interior panels below the window shall be a smooth resistant laminated melamine material light gray in color. Above windows and interior ceiling panels and front and rear trim panels are to be white and may be manufacturers standard vinyl-coated aluminum, textured paint on steel, or laminate/FRP finished material.

Type 8: The interior body panels shall be a smooth scuff resistant laminated melamine material that is color coordinated with the interior colors of the vehicle.

6.1 INSULATION

The vehicle body shall be fully insulated in the roof and all body panels to deaden sound and reduce vibration and heat transfers. Equivalent to 11.5" sprayed-in urethane foam with a minimum R-5value for a Type 8. and a minimum 1.5" of fiberglass insulation shall be used in Type 7. Insulation shall comply with all Federal requirements and shall pass the testing requirements specified in the Federal Transit Administration (FTA) Recommended Fire Safety Practices for Transit Bus and Van Materials Selection.

Type 7 Firewall and engine cover insulation to be OEM.

Type 8 Firewall shall be fabricated of a minimum 11 gauge cold rolled steel panel to provide a fire resistant barrier. The interior surface of the firewall shall be covered with a minimum ¼" thick Barryfoil sound barrier mat. This mat is to have a non-skid black surface. The engine cover shall be lined with a one-inch thick Barryfoil sound and thermo blanket. The engine side of the blanket is to be covered with a heat bonded Mylar foil, which provides a heat and sound reflective surface as well as a moisture barrier.

6.2 SEATING:

1 Passenger:

All passenger seats shall be individual modules Freedman Feather Weight Mid/Hi, or equal, one or two position bench type modules of not less than 17 inches in width. All seats shall be track mounted for easy removal, forward facing and have an individual cushion and equipped with folding back molded U. S. Arms, or equal, aisle armrest. All back cushions shall be contoured to provide full lumbar support. Upon request, the Contractor shall submit a sample of the upholstery and cushion material to the State for approval. The vehicle shall contain the number of seats as detailed in the floor plan. Seat material shall be compliant with Docket 90-A, FTA Recommended Fire Safety Practices for Transit Bus and Van Materials Selection which exceeds the requirements of FMVSS 302.. The seat fabric shall be a minimum 100,000 double rub woven material 100% polyester, anti-bacterial and anti-microbial and have available at no additional cost a minimum of four standard solid colors, blue, gray, green and maroon. The seat fabric shall have a moisture repellant treatment that prevents liquids from passing through fabric. Standard seat package are detailed in Table 1. All seats shall meet the following minimum requirements:

A Meet all applicable FMVSS requirements including FMVSS-207, 210, and 302 for **all** seats and seat belts to be installed in the bus. Seat testing must include testing the seats mounted in the bus being bid.

B Cushion and seat cover shall be of the slipcover type, removable and replaceable without removing the entire seat.

C Freedman USR, or equal, under seat retractable passenger seat belts shall be provided. Two 61 m (24") belt extender shall be provided with each vehicle. Seat belts shall meet or exceed FMVSS 209. The webbing must pull out a minimum of 70 inches as measured from mounting bolt hole to mounting bolt hole.

D All exposed metal surfaces shall be powder coated.

E All seats shall have not less than 27" hip to knee room spacing between seats. All seats shall have a minimum cushion depth of 43.18cm (17"), and a thickness of not less than 63.5 mm (2.5").

F All seats are to have molded energy absorbing grab handles at the top of each forward facing seat. The handles must be securely attached to a welded seat frame structure. Seats along rear wall do not require grab handles. All aisle seats must have an arm rest.

G Complete White Book testing.

H A minimum clear aisle of 16 inches. This width must be maintained with any optional seat chosen as well. There shall not be a mobility aid position blocking the aisle or directly in front of the mobility aid lift except when their is a rear lift. Random movement to any seat position for ambulatory passengers must be maintained.

I Folding seats must be equal to Freedman Notch Back, three step folding seat. Rear flip seats must be equal to Freedman Featherweight Mid High. The Bidder shall provide floor plan/seating arrangement drawings, which are to scale and meet passenger-seating requirements.

J Submittal of FMVSS 207 and 210 tests for all seats installed in the bus bid with the seat belts attached to the seat frame. The test must be conducted with the seats mounted in the bus being bid. Detailed seat installation instructions and test data must be submitted with the bid.

K Seated passenger capacity shall be according to Table 1 requirements and match floor plan drawings for each bus. The Bidder shall provide floor plan/seating arrangement drawings, which are to scale and meet passenger-seating requirements. Drawings, at a minimum, shall show the location and dimensions of all seating positions, drivers position, aisles, doors, modesty panels, stanchion, grab rails, tie down locations, and other passenger assists. In addition, all major body interior dimensions must be shown. Proposed seating arrangements plans must be approved by the procuring agency prior to production.

L A one-piece filler shall be provided in tracking between seat placements. Seat tracking shall not extend into areas where there are no permanent seats installed.

K Seats that require latch/child restraint hooks must meet FMVSS 225. Seats must look identical in appearance to other non-FMVSS seats in the vehicle

2 Driver Seat:

Seat to be Recaro Ergo Metro air suspension, or equal, drivers seat with seat fabric to match the passenger seating requirements.

6.5 WINDOWS:

A All passenger windows shall be OEM tinted to the darkest tint available and side windows vented where available from OEM. All windows must meet State and Federal safety regulations and meet the applicable provisions of FMVSS 217.

B The vehicle passenger windows shall be split upper transom slider transit type opening window. The slider section shall be no less than 6 inches high and 6 inches wide. The window area shall be a minimum of 800 square inches average. It is desired that a window provide a clear view to the outside from each seat position on both sides of the bus. Window sash shall be constructed of aluminum with a durable scratch resistant black finish. The windows or sash shall not rattle when in either the open or closed position. .

C The side windows shall be securely mounted to the main structural framing of the body and be easily replaceable without disturbing adjacent windows and shall be sized so that they are interchangeable to the maximum extent possible. All side windows shall be easily replaceable and shall be mounted so that flexing or vibration from engine operation or road is not apparent.

D Emergency push out window shall be installed on the passenger and curbside of the bus and the rear window. The windows are to be equipped with quick release latches.

A red illuminated light shall be provided at emergency exit windows and shall remain illuminated whenever the engine is running. Emergency escape windows shall be clearly labeled and operation instructions shall be clearly visible at each escape window.

E Side windows glazing material shall have a 1/4-inch nominal thickness laminated glass for Type 8 and 3/16" tempered safety glass for Type 7.

F Each window shall be installed in the upper and lower portions of the passenger door(s) and in the upper portion of the lift door panel in-line with the passenger side windows.

G The rear window shall be approximately 1200 square inches (opening approximately 20" by 60"). The rear window shall have a latching device for opening from the inside of the bus that may be quickly released but designed to offer protection against accidental release. The latches shall be lever-type and not blocked by floor plans that offer rear seats against the back wall or any object that restricts passageway to rear of bus and rear window.. The rear window exit shall have an audible alarm at the driver's area energized when the window starts to open and the key is on. All emergency exists shall be marked with instructions for proper use.

H The street-side (drivers side) rear most window shall be fixed to prevent exhaust fumes from entering the bus.

Type 7: Windshield and cab windows shall be OEM.

Type 8: Windshield shall be front body contoured two (2) piece ¼" thick, 73% single density, laminated safety float glass. Windshield shall be glazed with two (2) piece black ozone treated extruded lock and key rubber. Driver's side window shall be black painted, extruded aluminum sash with a lower section of single slider design. Window shall be glazed with 7/32" thick, 73% single density, laminated safety glass and include a minimum 4" tint at the top.

7.0 FLOOR:

A The sub floor shall have a minimum of 1.27cm (3/4") 7 ply APA certified exterior grade plywood of A-C plug grade with the A side facing up. All surface irregularities shall be filled and the sub-floor shall be sanded smooth, cleaned and prepared immediately prior to installation of the floor covering. Sub floor is to be pattern cut, edge sealed and installed with sealant caulking and securely fastened to the cross sills. All edges shall be properly sealed and undercoated with a nominal 1/8" thick application, prior to installation and after completion of the bus.

Type 7: Standard floor height below wheel wells.
Type 8: The floor is to be a flat floor design without wheel wells in the passenger compartment.

B The floor surface shall be covered with wall-to wall slip-resistant minimum 2.2 mm Altro Gray (Beta) Transflor Meta. All step edges shall have a band of bright yellow running the full width of each step. An isle width standee line of bright yellow contrasting color shall be in the aisle just behind stepwell. The flooring shall be securely bonded to the sub-floor with a waterproof adhesive. All edges shall be sealed to prevent water penetration. The flooring shall extend up the side walls to the seat

rail line and a minimum five inches up the rear wall and shall be coved with backing of molded plastic, fiberglass or extruded or press formed aluminum with a minimum 1" radius at the floor/wall joint to form a smooth water tight transition. The floor must be installed according to manufacturer's directions using proper tools, accessories and adhesives. .

C Drivers area to be a heavy duty transit rubber to match bus floor material for the Type 7 and Type 8. .

7.1 DOORS AND ENTRY STEPS

Two (2)-panel door design providing a minimum 32" x 80" clear opening. Door is located opposite of driver and electrically power operated controlled by the driver. Each door panel is actuated together by a single electric powered overhead actuator. Actuator is equipped with an emergency manual release lever. Vertical door shafts shall be an integral part of the door panels. The top portion of the shaft shall be designed to prevent the door panels from rotating out of alignment. Shafts shall pivot on a top-mounted, bronze thrust bushing and a lower stud-mounted alignment pivot, accommodated with a glass-filled molded bearing equal to A&M door actuator. Perimeter door edges shall be sealed with neoprene bulb seals. The center of the door assembly shall be equipped with overlapping neoprene 2" leading edge seals. Seals shall overlap front to rear to provide an air and watershed. Upper and lower edges of doors shall be tightly sealed against entrance of air drafts and water, including spray from commercial vehicle washing equipment and during operation.

Type 8 requires an air assist Vapor Door, or equal, actuator to power open and close of door.

A Sensitive door edges are required for Type 8.

B Upper and lower glazing is required on each door to provide the driver with maximized right side vision. The window shall be in proportion with passenger windows in size and placement.

C A cushioned door header pad shall be provided on the inside over the passenger entrance and covered with upholstery material that matches the interior color scheme.

D Exterior key switch for locking and unlocking the passenger entrance doors.

E Step assembly is to be cleaned, sealed, primered and undercoated.

F Steps shall be covered with flooring that is installed in the bus including all risers and sides.

7.2 MODESTY PANELS,

Modesty panels shall be attached to handrails with acorn internal nuts and star washers securely attached to stanchion and body side. Panels shall be attached to bottom extruded anodized aluminum or stucco aluminum rail, or approved equal, for stiffness. The modesty panel shall be constructed of a gray Formica laminate, or equal, with plastic edge molding, the color to match the interior. Modesty panels shall be installed in the following locations:

A At the rear of front stepwell in front of the curbside row of seats. This panel shall have adequate clearance from the front door, to prevent injury to passenger's hand(s) during the opening cycle.

B Rear of front mounted lift when a front lift is selected

C Behind driver

8 GRAB RAILS

A An entrance grab rail shall be provided at the dashboard, minimum height thirty-six inches (36"). It shall be properly located to allow installation of the farebox and access of wheelchairs.

B A handrail shall be installed on both sides of the entry door made of 3.175 cm (1.25") 304 stainless steel that can be used by passengers standing at ground level to aid in boarding the bus as well as those passengers that are deboarding the bus.

C One full length grab rail shall be mounted on each side of the aisle. They shall be no more than seventy-six inches (76") above the coach floor, and their ends shall terminate either in ceiling connections or in elbows.

8.5 STANCHION

A In the following locations, vertical stanchions shall be mounted between the floor or the modesty panel, and either the ceiling or the grab rail. All stanchions and handrails shall be securely fastened into structural members at all mounting points

(1) At the right rear of the driver's seat.

(2) On modesty panels

(3) At the inside rear corner of stepwell.

(4). A stanchion on which to mount the farebox shall be installed at the dashboard.

9 DRIVER'S BARRIER

A A smoked plexiglas panel, 3/8" thick shall be provided behind driver from top of driver's seat to within 6" of bus ceiling. Panel must not impair driver's seat adjustments. Panel may be incorporated into stanchion and guardrail behind driver and must provide cutout area for handhold and be shock mounted to prevent rattle. Cutout area for handhold must have no sharp edges and all corners shall be radiused.

9.5 PAINT AND TRIM

All exterior surfaces shall be smooth and free of wrinkles and dents. Exterior surfaces to be painted shall be properly prepared as required by the paint system supplier, prior to application of paint to assure a proper bond between the basic surface and successive coats of original paint for the service life of the bus. Drilled holes and cutouts in exterior surfaces shall be made prior to cleaning, priming and painting to prevent corrosion. The bus shall be completely painted prior to installation of exterior lights, windows, mirrors and other items that are applied to the exterior of the bus. Body filler materials may be used for surface dressing, but not for repair of damaged or improperly fitted panels. To the degree consistent with industry standards for commercial vehicle finishes, painted surfaces shall have gloss and orange peel shall be minimized. All exterior finished surfaces shall be impervious to diesel fuel, gasoline and commercial cleaning agents. Finished surfaces shall resist damage by controlled applications of commonly used graffiti-removing chemicals. Paint shall be applied smoothly and evenly with the finished surface free of dirt and the following other imperfections:

A. Blisters or bubbles appearing in the topcoat film.
B. Chips, scratches, or gouges of the surface finish.

C. Cracks in the paint film.
D. Craters where paint failed to cover due to surface contamination.
E. Over spray.
F. Peeling
G. Runs or sags from excessive flow and failure to adhere uniformly to the surface.
H. Chemical stains and water spots.

Type 7: The bus body finish shall be painted a high quality acrylic white enamel that matches the OEM paint scheme. If the bus body is fiberglass the color must match the OEM white cab.

Type 8: The entire bus shall be painted full body white paint.

10 PAINTING, DECALS AND MONOGRAMS:

All signs required by State and federal law shall be affixed to each vehicle exterior and interior. No decals or painted identification of bus dealer/manufacturer are to be added to the vehicle.

11 UNDERCOATING:

The entire underside of the body, including floor members, cab, chassis, side panels below floor level (if metal), and fender wells shall be undercoated, at the time of manufacture, with a nonflammable resin type polyoleim or equivalent equal to Tectyl 121-B. All openings in the floorboards and firewall shall be sealed.

12 AIR CONDITIONING

Type 7: Driver's area shall be heated and/or cooled by a dash mounted, forced air heater/defroster and air conditioning system supplied by the OEM: The vehicle air conditioning system equal to or better than in standard quality and design and performance to a Thermo King ShuttleAire S-40 with a TM-31 compressor. The split system shall have a skirt-mounted condenser. The air-conditioning system shall have an electronic control system capable of providing temperature control, freeze protection, compressor protection, and diagnostic functions. Refrigerant hoses shall be Aeroquip GH134 polyamide veneer construction with Aeroquip E-Z Clip tube-o type fittings with swivel connections. O-ring material must be compatible with HFC (R134a) refrigerant and polyolester (POE) or PAG oils. A label must be placed in the engine compartment detailing manufactures name, belt manufacture and part number, refrigerant Type and quantity, compressor oil Type and quantity. The evaporator and condenser must be matched to the compressor as per manufacturers recommended installation instructions. All A/C and heater hoses shall be adequately supported with P-Clamps at a maximum spacing of 24". No tie in systems will be allowed.

Type 8: Driver's area: the heater and defroster shall provide a minimum of 60,000 BTU with a 575-CFM airflow. The driver's air conditioning shall provide a minimum of 24,000 BTU with 575-CFM airflow. The driver's HVAC system shall have a minimum three-speed fan with a fresh air mode. Passenger air conditioning shall be a low profile roof mounted evaporator and condenser, Thermo King Model MRT ducted system or approved equal. The system shall include 2,000 CFM of undiffused airflow. Also to be provided is an interior duct-mounted squirrel cage blower above driver area to direct additional air to driver. A/C to have 72,000 BTU capacity. TM-31 and TM-16 compressor shall be furnished and shall be engine V-belt driven.

12 HEATER:

A minimum of 70,000 BTU heating is required.

Type 7: Heaters shall be hot water, forced air type. A 35,000 BTU heater shall be mounted under the rear row seating. A mid ship floor mounted 35,000 BTU heater shall also be supplied. The heaters shall be equipped with two brass ¼ turn valves that are clearly marked on the outside of the bus as to its location. The valves shall be located below or behind the driver's entry step well. Heaters are to be controlled by two individual three-position switches (off, low, high). All controls for both heaters shall be located for ready access by the seated driver. All hoses, drains and wiring must be covered and adequately supported with plastic/rubber coated steel clamps secured at a minimum of two-foot intervals and routed below floor level. OEM heater hoses will be accepted in the engine compartment. Silicone hose with constant torque clamps shall be installed between the OEM tee connection and the auxiliary heater. Combustion heaters are not acceptable. .

Type 8: Minimum requirements can be accomplished using the heat strip in the A/C system or if minimum heating is not achieved with a combination of floor heat as required in Type 7.

13 WHEELCHAIR LIFT AND DOORS:

A At buyer's option, a Braun Millennium series 917 IB or Vista, Ricon S-2005, or KlearVue series mobility aid lift with bridging feature will be installed in front of the rear axle or behind the rear axle at the purchaser's option and without additional charge. The lift shall incorporate a positive locking mechanism to prevent drifting from the stowed position. Lift shall meet requirements of FMVSS 403/404.

B The wheelchair lift shall be installed in accordance with the lift manufacturer's recommendations and requirements.

C The wheelchair lift system shall have one control station capable of controlling all lift functions. The control switches on the lift control station shall have clear, legible, permanently attached labels identifying their function. Decals will not be allowed. The control station should be conveniently mounted to the entry door with stainless steel bracket and within easy reach of wheelchair lift operator.

D The lift electrical system shall be protected by a heavy-duty circuit breaker installed per manufacturers instructions with master control switch located near the driver and clearly labeled with indicator light.

E Lift shall come with a cover that meets requirements of Title 13 that is easily removed and stored when wheelchair lift is in use and provide protection for passengers that may bump against lift. The cover shall match the interior color and be of a one piece construction that does not require fasteners. To reduce weight the cover shall be properly sized to cover the front, top and sides of the lift selected.

F All attachments of the lift assembly to the vehicle shall be done through structural support members. Bolting of any part of the lift assembly directly to the vehicle sheet metal walls will not be acceptable.

G The lift entry shall consist of two (2) panel swing out manually operated doors with a minimum opening of 42" X 68". The doors shall have windows with laminated or tempered safety glass set in neoprene or similar retention molding. The windows in the door shall be tinted and in proportion to the bus windows. Door location shall be

available at buyers option at rear of entry door or in the rear overhang of the bus at no additional charge.

H Each lift door panel is hinged with exterior mounted 3/16" diameter pin, stainless steel piano hinge. Each panel is separately locked top and bottom with rod type pins controlled with flush mounted handles. A water deflector shall be integrated into the door frame structure at the top.

I A positive factory-installed gas shock to assist in maintaining opened or closed position of door(s) shall be installed to hold the lift entry doors open while the lift is in use. Lock shall be stainless steel paddle-type handle or Caltrans approved and incorporate top and bottom rotating cam latches with a standard key lock.

J An automatic curb illumination lamp or lamps shall be located inside the lift doorway and other passenger loading areas.

13.4 CONTROL INTERLOCK

The interlock shall be a fully automatic, solid state, microprocessor-controlled unit (Equal to Intermotive ILIS 603) or approved equal capable of self-diagnosis. Interlock shall utilize an LED display panel to show subsystem status. Interlock must prevent the vehicle from shifting out of park and must prevent driving the vehicle with parking brake left on. Interlock must meet ADA Title 49 Lift Interlock requirements and be compliant with FMVSS 403/404.

14 WHEELCHAIR SECURITY AND OCCUPANT RESTRAINT SYSTEMS:

A Each vehicle shall be equipped with two forward facing wheelchair securement and occupant restraint systems. The systems shall be capable of securing a variety of common wheelchair designs and accommodate a wide range of occupant sizes. The spacing of the L track must be maximized to assist with securement.

B Wheelchair Securement and Occupant Restraint System(s), including all attachment hardware and anchorages, shall meet or exceed the following requirements:

1 30 mph/20 G Impact Test criteria per SAE J2249
2 36 CFR Part 1192 and 49 CFR Part 38 and 571 (ADA)
3 All applicable Federal Motor Vehicle Safety Standards (FMVSS), as amended
4 California Code of Regulations, Title 13

C Each securement system shall consist of four (4) retractor assemblies, automatic self-locking and self-tensioning. Retractors will not depend on knobs for tension or any inter-action of attendee. Retractor assemblies attach to the structural frame of the wheelchair at four separate points, and anchor into flanged L track. The securement system shall be at Buyer's option and without additional cost, Q'Straint Securement System QRT Q 8300 MAX series retractors, Sure-Lok Titan or approved equal. The occupant restraint system shall consist of adjustable lap (pelvic) belt and a shoulder (upper torso) belt and provided with a shoulder belt height adjustment and be retractable.

D The securement system shall be mounted in flanged L track with end caps on track that does not extend to sidewalls. The L track shall be the same manufacturer as the securement system. The system anchorages and/or track shall be recessed and attached with flush screws in accordance with the requirements of the system manufacturer. A copy of the manufactures installation instructions must be available to Caltrans upon request. Any deviation of track installation will require written approval from securement manufacturer that the installation will not alter required pull testing.

E Tie Tech (or equal) web cutter for emergency use shall be provided with each vehicle.

F One torso pad approximately 20 cm X 30 cm (8" X 12") with thickness of approximately 2.5 cm (1") and belt shall be supplied to secure wheelchair users while riding on the wheelchair lift.

G A bag supplied by the securement manufacturer to store securement system must be supplied and installed for each securement system.

14.5 SAFETY EQUIPMENT

A One 5 pound BC fire extinguisher conveniently mounted.

B A 16-unit First Aid Kit meeting the minimum requirements of Title 13, California Code of Regulations (13 CCR) Section 1243.

C Three bi-directional emergency reflective triangles that conform to the requirements of FMVSS No. 125.

D Two front and two rear tow hooks shall be provided, accessible under front and rear bumpers

15 ROOF HATCH

Transpec Model #1075, or approved equal, five (5) position roof ventilator and emergency escape hatch shall be installed in the roof towards the front of the bus.

16 PUBLICATIONS AND PRINTED MATERIALS:

Each vehicle will have a complete set of operation, quality assurance, and warranty publications. The information shall be organized in a three ring binder format with each section clearly identified. A draft copy must be available for Caltrans review and acceptance prior to the pre-production meeting. The following shall be provided at time of delivery:

A Operation Manual: A complete operations manual and troubleshooting guide with a detailed manufacturers parts list that covers the conversion features on the vehicle as listed in this specification. The manual will provide complete, comprehensive instructions for the wheelchair accessories, wheelchair lift deployment, air conditioning systems, tie downs, heater, deployment of seats, wiring diagram and related equipment.

B A complete schematic diagram of all hydraulic lines, air lines and circuits.

C Warranty Information: Each vehicle will have a published listing of contractor warranty repair locations, including address, telephone number, and contact name.

17 PASSENGER SIGNAL SYSTEM PULL CORD

Chime shall be mounted overhead of the driver on the ceiling cove. The chime shall be activated by pull cord switches mounted on each side of the bus accessible to all passengers. The cord shall be plastic coated 1/8" minimum diameter wire strained cable supported by chrome plated brass eyelets mounted 24" minimum centers. Wheelchair positions adjacent to wheelchair lift must have touch tape installed on the lift or other suitable means for passenger to alert driver. Signal cord cannot be behind passengers shoulder when secured.

17.5 PASSENGER STOP REQUEST SIGNS

Transign, or approved equal, back-lighted stop request shall be mounted overhead on the front ceiling end closure. The sign shall be so designated as to remain illuminated when activated (by the passenger signal system) until it is extinguished by opening the door.

18 FRONT AND SIDE DESTINATION SIGN

Transign or approved equal electric roller curtain signs shall be mounted in the front cap over the windshield and the side in the first curbside window. The front sign window shall be the full width of the front cap area. Letters shall be a minimum of 5" in height for the front sign and 3" in height for the side sign. The sign is back lighted and include lettering for fifteen (15) destinations. The front cap must have the ability to incorporate digital signs up to 16 rows x 160 rows 15mm dot. Front head sign must be an integral piece of the cap design.

19 LICENSE PLATES

Provisions shall be made to mount standard size U.S. license plates per SAE J686 on the front and rear of the bus. These provisions shall direct mount or recess the license plates so that they can be cleaned by automatic bus washing equipment without being caught by the brushes. License plates shall be mounted at the lower center or lower street side of the bus and shall not allow a toehold or handhold for unauthorized riders.

20 TESTING

A Complete coach and all working and moving parts and operating devices shall be thoroughly tested and put in proper operating condition by the manufacturer.

B The roofs, windows, windshields and all doors of all coaches shall be water tested, as follows:

(1) The water test shall consist of a series of nozzles that are strategically located around the perimeter of the vehicle so as to spray water over the entire surface of the vehicle.

(2) The nozzles shall eject a volume of water no less than 2.6 gallons per minute under a pressure of no less than twenty-two (22) pounds per square inch measured at the nozzle tip.

(3) There shall be no less than twenty (20) nozzles installed in the water test area, each capable of directing a force of water as indicated above.

C The Contractor shall be required to water test each vehicle, under the conditions set forth above, for no less than five (5) minutes, in order to determine whether or not there are any body leaks at the window areas, door areas, roof panels, etc. Contractor shall take the necessary corrective action when body leaks are found to exist as a result of the above test, and conduct a second water test to recheck for body leaks following corrective action.

21.0 TABLE 1

	Type 7			Type 8		
Wheelbase	195"	213"	233"	178"	208"	208"
Minimum Wheelbase					**190"**	
Overall Length + or – 6" (excluding bumpers)	27'	29'	32'	26'	28'	30'
Exterior Width Max.		96"			96"	
Seating:						
Ambulatory Seating Capacity	22	26	30	24	28	32
Wheelchair positions	2	2	2	2	2	2
Ambulatory seating with W/C	16	20-	24	18	22	26
*Folding seat positions	2	2	2	2	2	2
Rear flip seat positions	4	4	4	4	4	4
Seat Width Per Sitting – Min	17"	17 "	17 "	17"	17 "	17 "
GAWR -Front-minimum	7,000	8,000	8,000lb		8,000lb	
GAWR-Rear-minimum	13,500	15,000	15,000lb		17,500lb	
GVWR	19,500	22,000	22,000lb		25,500lb	
Height, Interior-Min at center isle		79"			80"	
Minimum Engine Size (Liters)		6.6			5.9	
Horsepower Rating-Min.		300			195	
Fuel Requirement		Diesel			CNG	
Fuel capacity-Min.		60 gal.		7,400 SCF @3,600 PSI		
Steps:						
Ground to first-Max		11-12"			12.5"	
Riser to height-Max		10"			10"	
Tread depth-Min		9"			9"	

*Rear lift only. Front lift will require a total of three (3) three step folding seats plus one seat credit for each floor plan as standard. Copies of all floor plans must be submitted with the bid.

22 CONTRACTOR REQUIREMENTS & NOTES

WARRANTY: REQUIREMENTS

The Contractor will coordinate **all** warranty issues to correct defects in materials and workmanship during the warranty period which begins on the date of acceptance. This requires the Contractor to provide a single point of contact for all warranty issues to the Procuring Agency in coordinating all OEM, and component warranties. The contractor warrants and guarantees to the original Procuring Agency each complete bus and specific subsystem and components for parts and labor as follows:

1 OEM standard factory warranties for chassis and engine.

2 The wheelchair lift shall have five years unlimited mileage.

3 Alternator warranty shall be a minimum of 36 months or 36,000 miles.

4 Complete bus body and body structure, exterior, wiring and paint are warranted to be free from defects, related defects and to maintain structural integrity for a period of three years or 150,000 miles.

5 The air-conditioning system shall have a minimum 2 years unlimited mileage.

The warranty shall not apply to any part or component of the vehicle that has been repaired or altered in any way so as to affect adversely its performance or reliability, except insofar as such repairs were in accordance with contractor's maintenance manuals and the workmanship was in accordance with recognized standards of the industry. The warranty shall be void if the buyer fails to conduct normal inspections and schedule preventative maintenance procedures as recommended in the contractor's maintenance manuals.

A fleet defect is defined as the failure of identical items covered by the warranty and occurring in the warranty period in a proportion of the vehicles delivered under this contract. For the purposes of this bid, identical defects occurring in sixty (60) percent of vehicles delivered shall be considered a "fleet defect". The contractor shall correct a fleet defect under the warranty provisions. The contractor then is responsible for the inspection and/or correction of the potential or defective parts in all of the vehicles affected.

Contractor is required to meet with Caltrans, every six months to review contract requirements, warranty issues, delivery schedule, usage reports and resolve any customer issues. The first meeting will be scheduled at the preproduction meeting and will occur approximately every six months for the length of the contract. The meetings will take place in Sacramento at Department of Transportation Headquarters, 1120 N St, Sacramento, CA.

Each Contractor shall describe his/her policy and procedures concerning warranties, both on workmanship and material, as applying to this equipment, and the Contractor's/manufacturer's method of adjustment. The final stage manufacturer and or Contractor shall assume the responsibility and warranty for all materials and accessories used in the vehicles, whether they are made by the manufacturer or purchased from an outside source. The warranty, as well as any recall notifications, shall cover each vehicle of the ultimate purchaser or recipient agency. The California Department of Transportation shall not be considered to be a dealer; however, the Contractor shall provide Caltrans a copy of any recall notice.

SERVICE WARRANTY: Any recognized service or warranty work required, which is performed by the Contractor, under the Contractor's or manufacturer's warranty shall be at a location within the State and will be the responsibility of and paid for by the Contractor. This location must be within two hours travel time of the recipient's location or the Contractor must provide warranty work certification to a local shop capable of performing the work or provide for mobile service to the buyer's facility to make repairs.

PARTS: An adequate stock of repair parts and qualified service facilities must be readily available in California, and must be available and delivered to the transportation providers repair shop within 72 hours of the time requested/ordered from the Contractor.

The Contractor will bear all reasonable financial costs for providing backup service from alternative sources, for failure to provide repair parts within the 72-hour time limit; and will bear all such costs until the parts are received. Freight and transportation for the parts is the responsibility of the Contractor and use of overnight delivery is required when the bus is put out of service due to the needed parts. If overnight delivery is not available the part must be sent by the fastest method available and at a minimum using UPS Ground Trac.

EXPERIENCE: Each bidder shall submit evidence of his/her ability and experience to provide the equipment described in these specifications with the bid, by including a list of five users' names, addresses, and telephone numbers who have been provided similar equipment on the same chassis from the same Contractor/manufacturer during the past two years. If a newly manufactured vehicle is bid, Caltrans will determine the acceptability and qualifications of the manufacturer, Caltrans' decision shall be final.

INSPECTION: The intent of this inspection is to resolve as many discrepancies, as possible, on the equipment and allow the manufacturer the opportunity to correct the discrepancies while the equipment is still in the manufacturer's plant and before shipment to California. The cost of these inspections will be paid by the agency identified on the purchase order. This inspection in itself will not constitute acceptance of the vehicle. Final acceptance will be made upon delivery of an acceptable product complying with the specifications at the designated location indicated on the purchase order.

Odometer reading cannot exceed 3,000 miles at the time of delivery of completed buses to the purchasing agency. There will be a charge of one dollar ($1.00) per mile for each vehicle with an odometer reading in excess of 3,000 miles payable to the purchasing agency at the time of delivery. Under no circumstances are tow vehicles to be attached to any buses.

Upon bid award, a preproduction meeting is required at the manufacturer's facility. The manufacturer(s) shall produce a pilot model that shall serve as a standard for the following units as ordered but shall not relieve the contractor from an obligation to manufacturer all units in compliance with all specifications. The meeting will include, at a minimum, representative(s) from the successful manufacturer, dealer and representative(s) from Caltrans. For travel the Contractor/Manufacturer will pay the travel and perdeim expense for the Caltrans representative(s) to attend the preproduction meetings. Caltrans is to be notified in writing, a minimum of 30 days prior to meeting date. Travel expenses will be paid in accordance with Department of Personnel Administration regulations: Title 2, California Administrative Code, Chapter 3, Subchapter 1, Article 2.

The pilot vehicle will be available for inspection prior to the start of the meeting. The contractor/manufacturer will pay the travel and perdeim expense for Caltrans' inspector and Senior Transportation Planner. Travel expenses will be paid in accordance with Department of Personnel Administration regulations: Title 2, California Administrative Code, Chapter 3, Subchapter 1, Article 2.

Vehicle's inspected at the manufacturer's plants, which do not comply with the specifications, will not be approved for delivery. Twenty (20) calendar days will be allowed to correct all deficiencies. Additional inspection trip's for compliance will be at the expense of the Contractor at the rates detailed above.

SERVICE: Prior to delivery, each vehicle shall be inspected and serviced by the contractor or by an authorized dealer of the manufacturer in a service shop within the State of California. The service shall include not less than the following:

1. Complete lubrication of chassis, engine and operating mechanisms with manufacturer's recommended grades of lubricants.
2. Check all fluid levels and fill as necessary. This inspection must include engine oil, hydraulic oil, transmission fluid, coolant level and mixture, battery levels, brake fluid differential oil, washer fluid.
3. Complete wash and detail of the vehicle prior to delivery and inspection.
4. A four wheel alignment at final point of inspection is required. Wheel alignment must take place after delivery to the FOB destination and documentation of alignment settings for camber, caster and toe-in settings shall be furnished for the final inspection and must accompany delivery documentation to purchaser.
5. Full tank of fuel at the F.O.B. point.
6. Alignment of headlights.
7. Check to insure proper operation of all accessories, gauges, lights and mechanical and hydraulic features. Particular attention shall be given to door alignment, lift operation, weather-stripping, hardware, paint condition and tagging of cooling system.
8. A copy of the pre-delivery inspection and all subsequent inspections by contract inspectors to be provided to the receiving agency upon delivery.
9. A certified four corner weight certificate to show the "as built" weight of the vehicle must be provided to purchaser for each vehicle. The vehicle must be full of fuel and all fluids and weighed with all equipment installed. The weight certificate must be included with the bus and available for review at time of inspection.
10. Cleaning of vehicle, and removal of all unnecessary stickers.

ACCEPTANCE: Final acceptance will be made upon delivery of acceptable products complying with the specifications at the designated locations in the purchase order and signature of acceptance by the agency listed on the purchase order.

Acceptance of delivery or placement in operation of any equipment shall not release the manufacturer from liability for faulty design, workmanship, or materials appearing even after final payment has been made.

VEHICLE REGISTRATION DOCUMENTS REQUIRED: The Contractor shall register all vehicles. A certification of compliance for vehicle emissions must be supplied at the time of delivery of each unit.

GENERAL: All equipment cataloged as standard for the basic vehicle, unless superseded by these specifications, must be furnished and included in the purchase price of each vehicle. Complete printed specifications, published literature, and photos, or illustrations of the basic unit or units that the bidder proposes to furnish with this bid must accompany each bid.

Bids will not be considered if the Contractor's designated F.O.B. delivery destination is other than that stated in the invitation to bid.

Bids will be considered only from a manufacturer having a California representative carrying an adequate supply of repair parts in the State of California. This representative shall have the capability of performing all warranty work in the State of California.

The State requires the successful bidder to furnish evidence that they hold a valid distributor agreement from the bus manufacturer or is the bus manufacturer.

The manufacturer shall provide full and competent engineering services to handle any, and correct all, problems associated with the performance of this equipment. At least one qualified service representative shall be available to render prompt service.

All equipment/options are to be factory installed. If the equipment/options are not available for factory installation, dealer installed equipment/accessories may be acceptable to meet the specifications. Any component added to the vehicle by the dealer must meet manufacturers approved instructions for additions. The bidder is to specify those items that will be dealer installed.

Modifications to the vehicles may be performed by final-stage manufacturers only if National Highway Traffic Safety Administration certifies them and registered to manufacture or alter vehicles in accordance with the Code of Federal Regulations, Title 49, Parts 567-568. In addition, all modifications must be in accordance with the OEM guidelines for building on an incomplete chassis. The chassis may not be modified to alter the wheelbase. The vehicle manufacturer must be ISO 9001 certified and a copy of the certifications must be submitted with the bid documents.

Due to the critical nature of this product, the requirements of these regulations and standards will be strictly enforced. It is the **Contractor's responsibility to obtain current copies of the regulations for bidding and/or construction purposes**.

The contractor is required to provide certification affixed to each vehicle that each unit meets or exceeds all State and Federal requirements as of the date of manufacture. CARB (California Air Resources Board) re-certification must be supplied for any components not supplied with the OEM chassis that effects the fuel or exhaust system.

The final-stage manufacturer will be required to provide all test data, drawings, etc., relating to the certification of the vehicle as an accessible vehicle.

Upon delivery, it shall be the supplier's responsibility to provide any evidence necessary that the product fully meets all requirements of this set of specifications.

QUALITY OF MATERIALS: Whenever, under the contract documents, it is provided that the contractor shall furnish materials or manufactured articles or shall do work for which no detailed specifications are set forth, the materials or manufactured article shall be of the best grade in quality and workmanship obtainable in the market from firms of established good reputation.

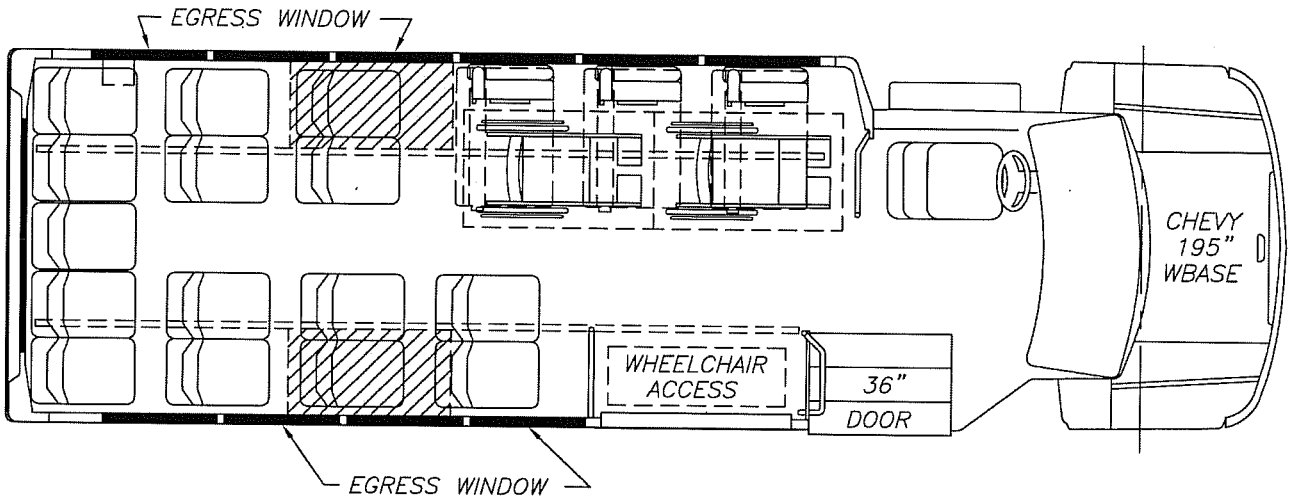
Welding procedures and materials shall be in accordance with standards of the American Society of Testing Materials and the American Welding Society. All visible welds shall be ground smooth. Where metal is welded, the contact surface shall be free of scale, spatter, and grease and shall be treated to preclude rusting.

INVOICE PAYMENTS: Manufacturers invoice(s) submitted to the agency identified on the Purchase Order for payment must include the tax exemption for handicapped equipment (California Revenue and Taxation Code Section 6394.4).

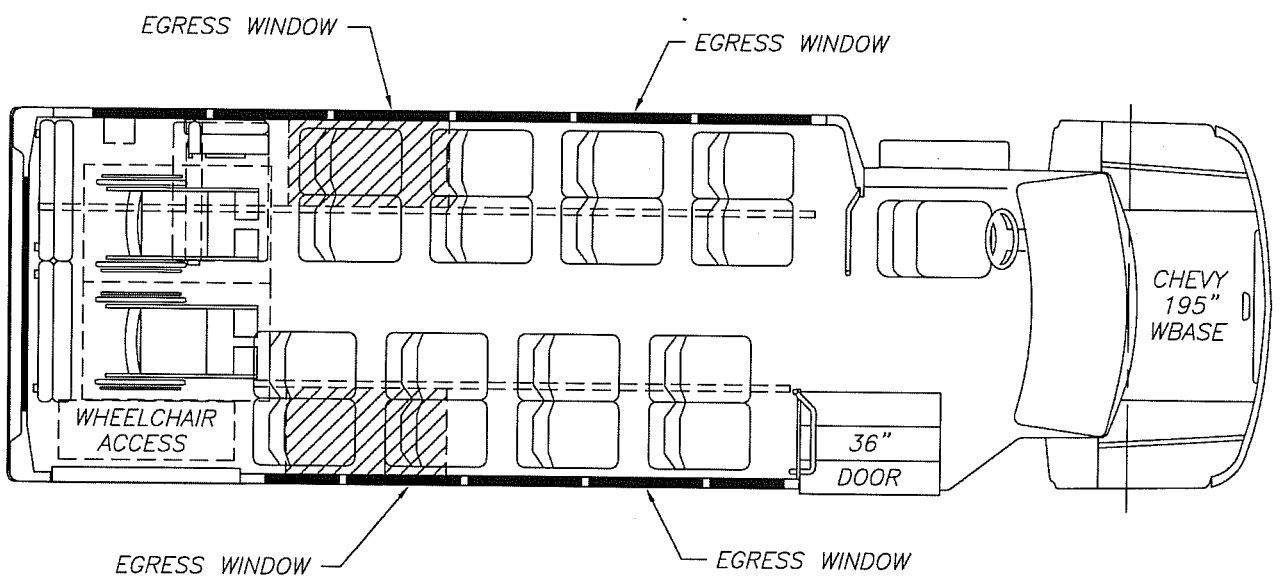
22.0 FLOOR PLAN

Type 7 27' Body

Front Lift

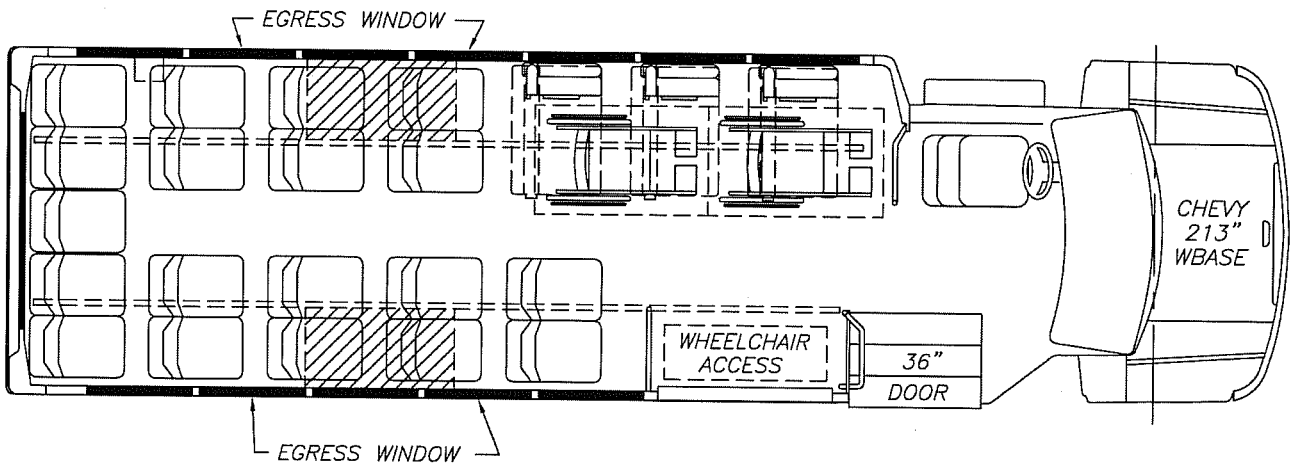


Rear Lift

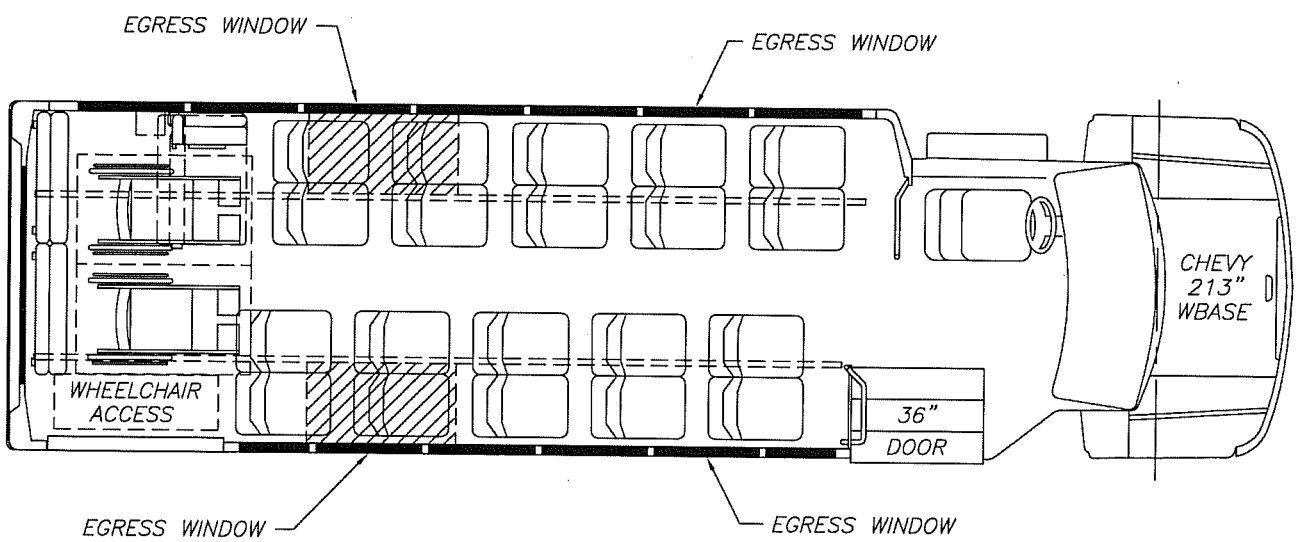


Type 7 29' Body

Front Lift

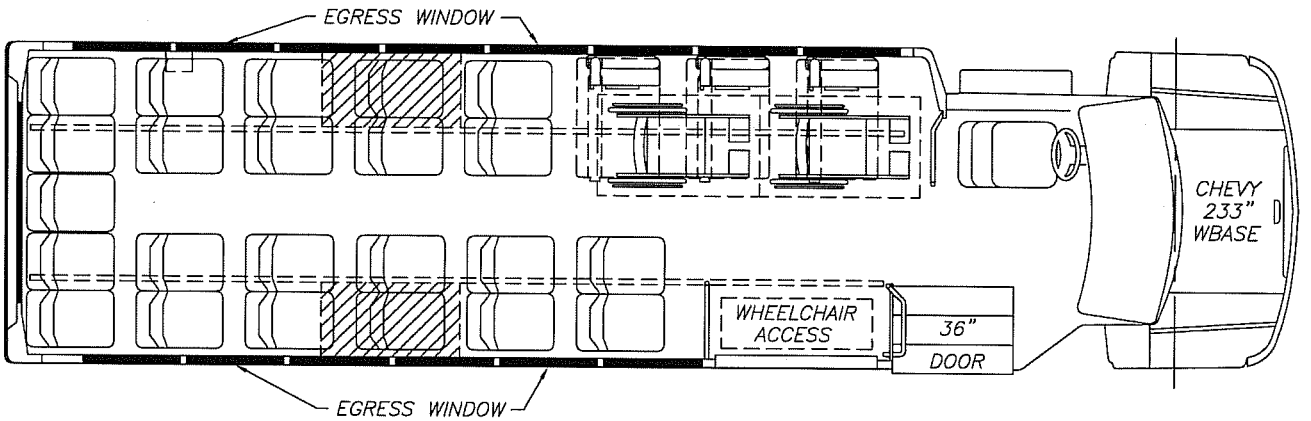


Rear Lift

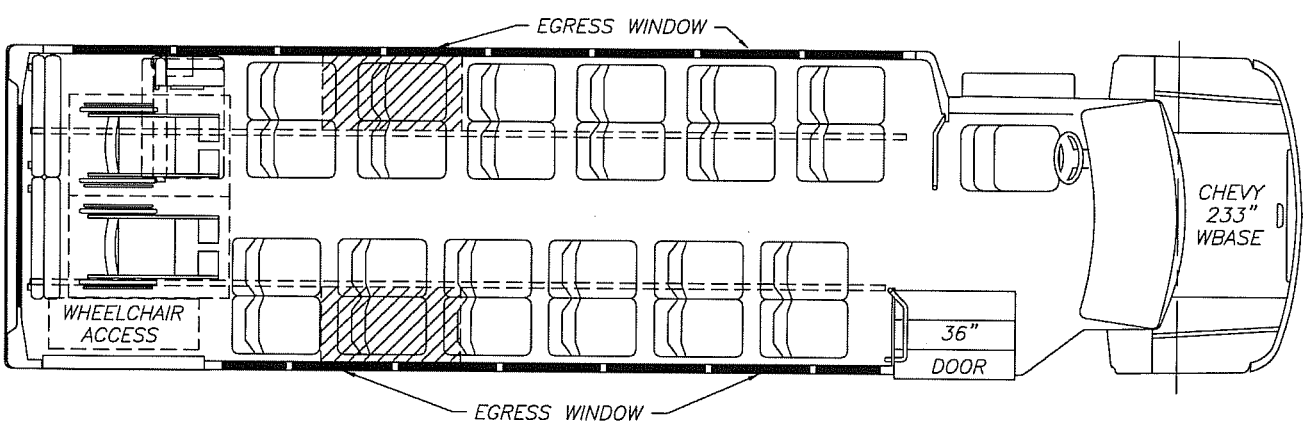


Type 7 32' Body

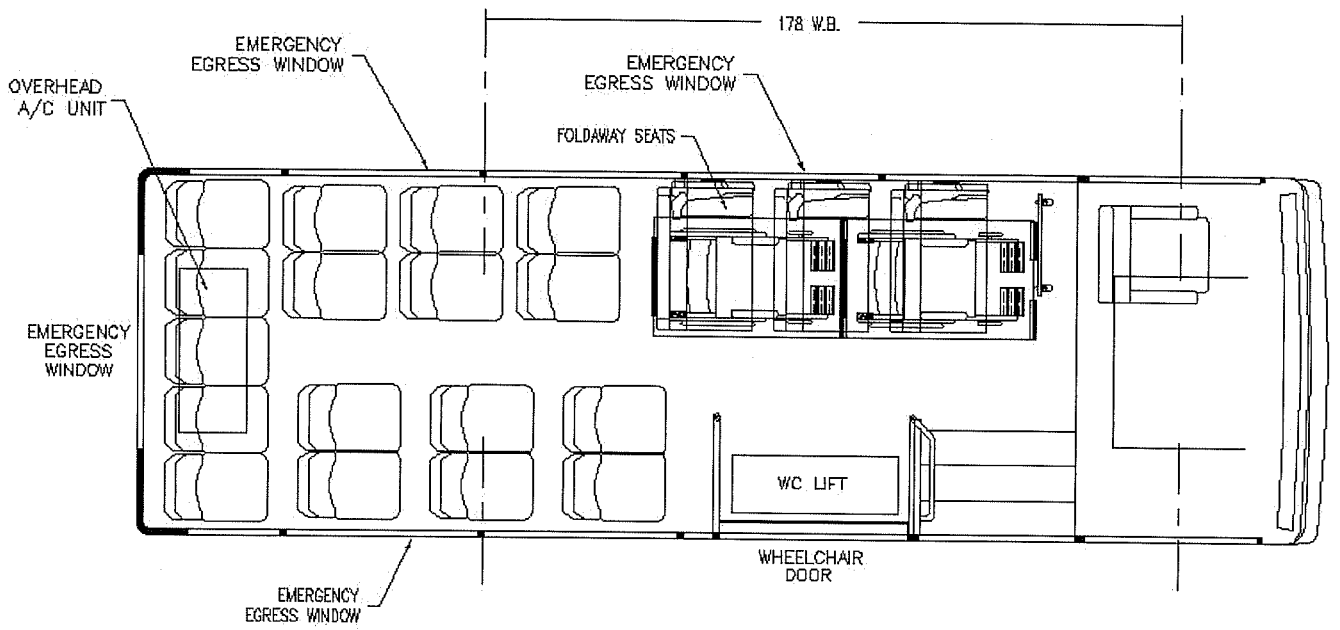
Front Lift



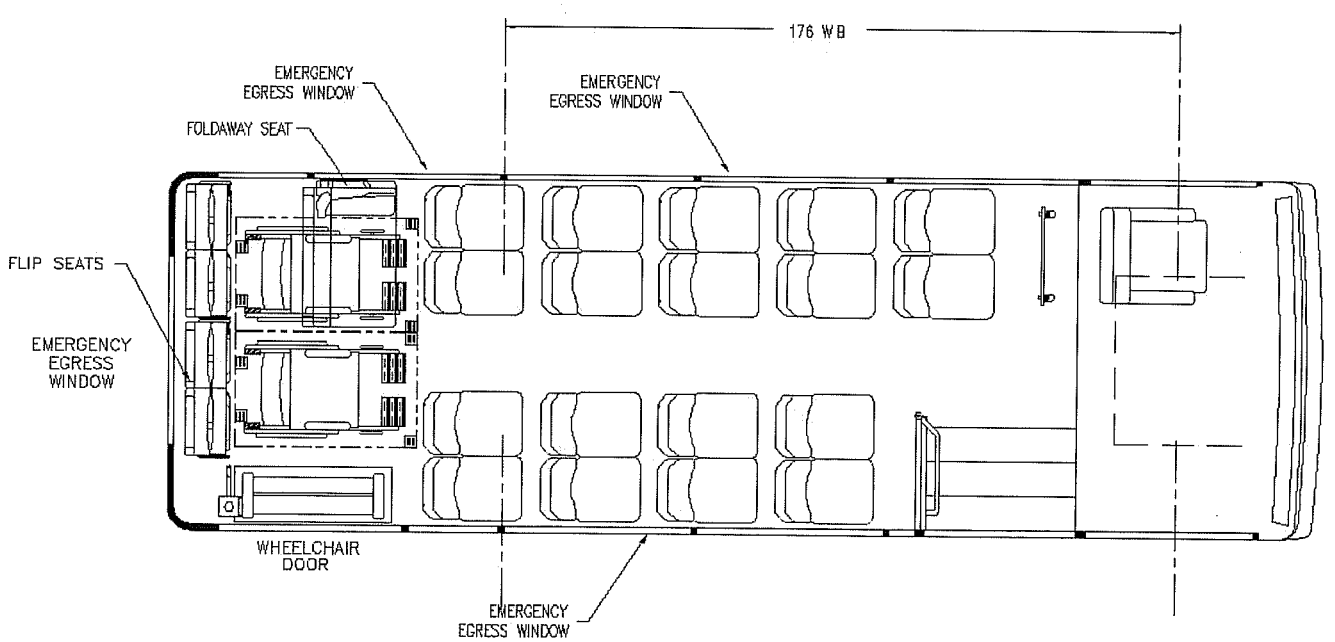
Rear Lift



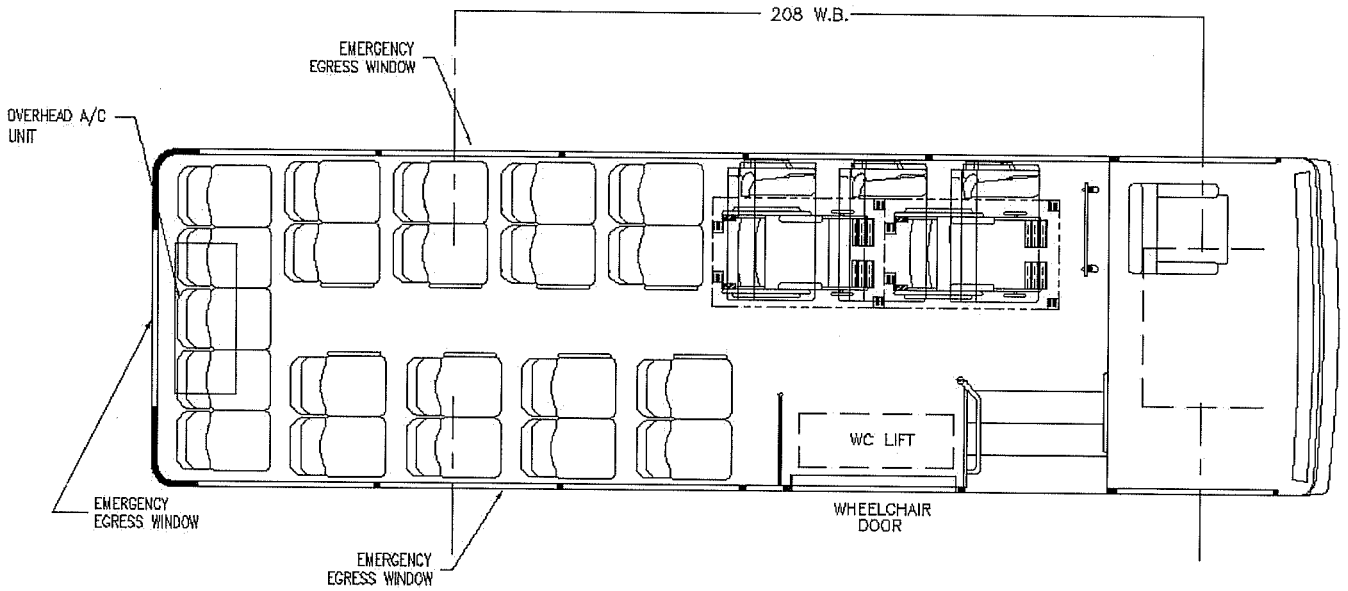
Type 8
26' Front Lift
178" WB



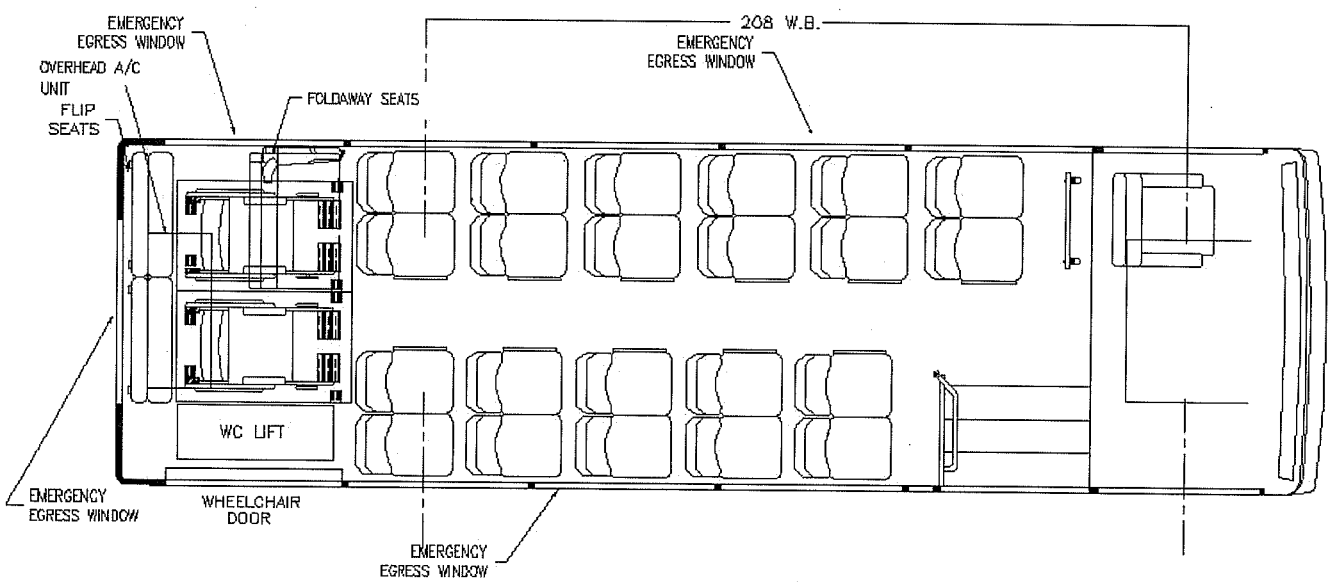
Rear Lift
178" WB



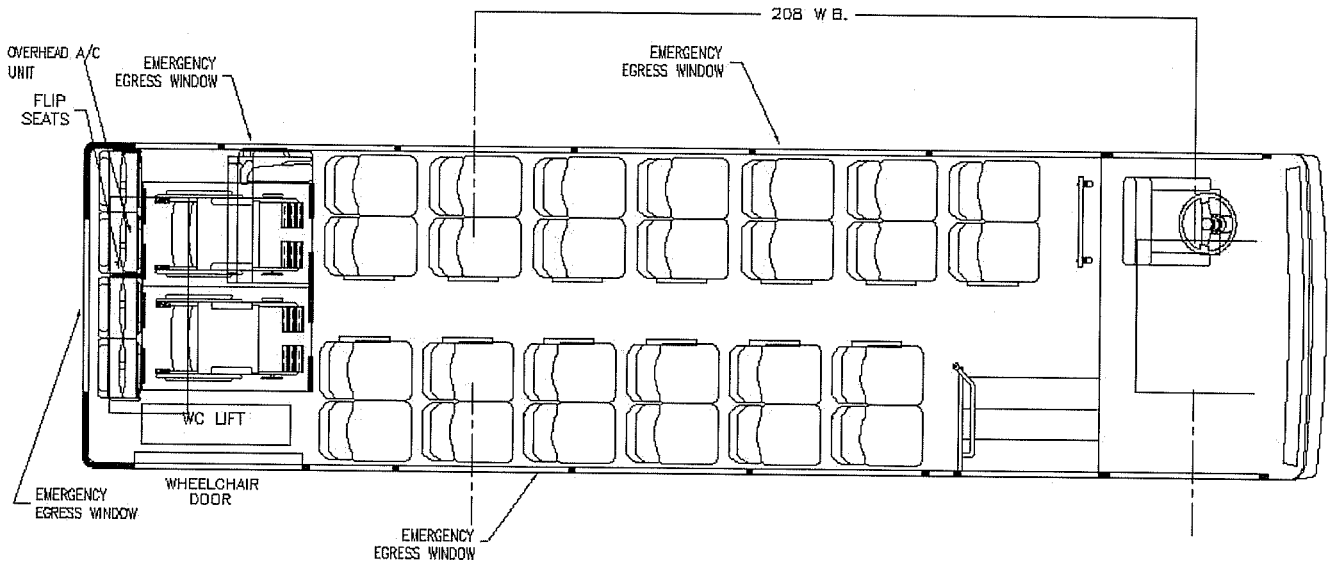
Type 8
28' Front Lift
208" WB



Type 8
28' Rear Lift
208" WB



Type 8
30' Rear Lift
208" WB



Type 8
30' Front Lift
208" WB