

A. 57-Passenger Bus Seating with Air Conditioning

All units **must** be constructed to meet or exceed all Federal Motor Vehicle Safety Standards (FMVSS) and Code of Maryland Regulations specifications in effect at time of manufacture regardless of individual specifications listed herein and shall include the following:

Note: All specifications here in are associated with a typical type C deiseal school bus. Proposed vendors are allowed to make alterations/ modifications to these specifications to accommodate electrification but final specifications will be reviewed and approved by MCPS.

Interior:**Air Conditioning:**

1. Provide front and rear free-blow air conditioning with a minimum 85,000BTU's
2. The front A/C evaporator cooling output shall be through the dash and defroster outlets. The front A/C shall be 30,000BTU minimum.
3. The rear A/C evaporator cooling shall be located over the emergency door at the rear bulkhead and protrude less than 4" from the bulkhead. The rear A/C shall be 55,000BTU minimum.
4. Both front and rear A/C shall be equipped with filters that are easily removed for cleaning.
5. A/C refrigerant hoses, fittings and hose clamps shall meet SAE-J-2064 Type connect fittings.

Note: Now crimped style industrial

Bidders shall supply details of A/C system with the bid.

Back-up Warning Device:

1. An audible warning device indicating vehicle is about to back-up or is backing-up shall be installed. Warning device shall sound upon placing the gear selector in reverse.
2. Backing image provided when bus shifted to reverse. Audible alarm mounted near the backing monitor behind rear view mirror.

Body Fluid Clean-Up Kit:

1. Contents of body fluid kit must meet published Motor Vehicle Administration (MVA) minimum standards.
2. Container shall be constructed of metal or plastic suitable for mounting and labeled "BODY FLUID CLEAN-UP KIT" and must be easily removed from mounting bracket when needed.
3. The successful vendor shall ensure that manufacturer refills are available.
4. The Department of Transportation shall select mounting location at time of pilot model inspection.

Body Interior Access Panel:

1. Access panels shall be located at the front center interior ceiling panel to access communication wires and antenna with conduit routed to dash for antenna feed.

Brakes:

1. Driver's controls will include a manual control valve to apply and release parking brakes dual air pressure gauge, and an audible warning device and light indicating when air pressure has dropped below 80 lbs., (60 lbs. acceptable if 80 lbs. not available) psi (See section on instruments.)
2. Brake (and accelerator) pedal(s) shall be electronically adjustable to accommodate difference in drivers' height with dash mounted control switch.

Doors, Service:

1. Protective header pad shall be provided above door opening and be the same color and material as the seats.
2. Interior and exterior mounted manual door releases must be provided. The interior emergency release handle shall be mounted within 48" of the floor.
3. Door control mechanism shall be located overhead of door and concealed behind a removable panel.
4. Door switch shall be 3 position type: Position 1; Closed, Position 2; Red, Position 3; Open and Red.
5. Service doors shall be outward opening and air operated under control of driver with switch to the right of steering column on dash and designed to prevent unintended opening or closing when ignition switch is either turned off or turned on. Entrance door shall have pressure sensitive edges to automatically reverse to open if something is detected in the entrance during closing.
6. Provide interior lock for rear emergency door with ignition interlock preventing vehicle from starting when either door is locked.

Emergency Exits:

1. Emergency door shall be located in center of rear end of bus.
2. A red LED light shall be installed above the emergency exit door in interior of bus and be on whenever engine is on.
3. Protective header pad shall be provided above door opening and be the same color and material as the seats or black.
4. Two roof hatches with interior and exterior release handles shall be provided. Hatch shall be one-piece solid cover design without vent.
5. Provide two emergency swing out windows on the right side and two on the left side with vertical hinges.
6. Seat backs or barriers shall not be located in such manner to restrict the use of the windows in an emergency.
7. All emergency exits shall be equipped with an audible buzzer that will sound when latch is moved toward open position.
8. All emergency exits shall conform to Federal Motor Vehicle Safety Standards 217.

Engine Cruise Control:

Bus shall be equipped with cruise control and must be operable from 20 mph up.

Fire Extinguisher:

1. One 5lb. ABC type fire extinguisher to meet State standards.
2. The Department of Transportation shall select mounting location at time of pilot model inspection.

First Aid Kit:

1. First aid kit shall be a metal type kit 16 unit supplied to meet Maryland standards.
2. First aid kit must be mounted in a manner that allows easy removal from bracket when needed.
3. The Department of Transportation shall select mounting location at time of pilot model inspection.

Flooring and Floor Covering:

1. Floor covering shall be black slip resistant rubberized material.
2. Aisles and steps shall be covered with a ribbed rubberized slip resistant material.

3. Floor covering shall be one continuous piece from front to rear. Splicing in floor covering shall not be acceptable.
4. Subfloor shall be 5/8" marine grade plywood.

Fusees:

1. Shall provide three roads flare fusees, wire support type, in a container.
2. The MCPS-DOT shall select mounting location at time of pilot model inspection.

Handrails:

1. Handrails are to be installed on both sides of the front entrance going up the steps of the bus.
2. Must meet current standards for draw strings.

Heaters/Defrosters:

1. Three heaters to be provided, two front and one rear.
2. Heaters to have the following minimum BTU ratings to be specifically engineered to provide optimum HVAC performance by the manufacturer.
 - A. Left front heater: 90,000 BTU.
 - B. Right front heater: 50,000 BTU.
 - C. Rear heater: 50,000 BTU
3. Driver's heater to provide selection option for fresh air, recirculation air, or combination.
4. Defrosters shall be of sufficient capacity to keep windshield clear of fog, ice, and snow.
5. Defroster channel shall run full length of windshield for even distribution of heated air.
6. Defrosters shall work in conjunction with both front heaters and air conditioning and have separate blowers and adjustable snorkels on left and right hand sides.
7. Defroster channel openings shall be protected with wire mesh of no greater size than 1/4" x 1/4" to prevent objects from falling into fans and motors.
8. All heaters to be plumbed in parallel to provide the interior with constant even heat using Gates Blue Stripe hose.
9. All hot water lines inside the passenger compartment shall be made of rubber in one continuous piece with constant torque clamps on all fittings.
10. All plumbing for heaters will be enclosed in aluminized steel protective housings.
11. All rubber plumbing in driver's compartment to be protected with flexible rust resistant tubing.
12. All heaters shall be equipped with air filters, to provide easy access for cleaning.
13. Provide two 6" minimum diameter heavy-duty defroster fans mounted above each windshield (one each) with appropriate protective covers.
14. Provide dash mounted water shut-off device convenient for driver to turn off water inside bus.

Horn:

1. Dual electric horns shall be provided. One horn shall have "F" note at 110 decibels (DBA) and one horn shall have "A" note at 112 DBA.

Ignition/Keys:

1. All ignition switches shall be keyed alike.
2. Manufacturer shall furnish their standard key code.
3. Manufacturer shall provide two sets of ignition keys per bus.
4. Two keys for access panels to electrical equipment/windshield wipers or other areas shall be provided per bus.

5. There shall be an appropriate storage hook or other device for securing access panel keys in the driver's compartment or overhead storage box.

Interior of Bus:

1. Interior of bus shall be free of all unnecessary projections likely to cause injury.
2. All interior panels to have hemmed edges.
3. Interior side panels shall be aluminized steel extending from lower edge of window to floor.

Interior Height

Minimum interior body height from floor to center of roof shall be 77".

Interior Lights:

1. Step Well: One minimum, operating whenever service door is opened LED.
2. Dome: Six minimum, three rows of two for passenger area LED. Dome lights to activate with driver controlled switch and when an emergency exit is opened.
3. Dome: One individually switched for driver LED.

Mirrors:

All mirrors shall conform to all State of Maryland and FMVSS Standard III requirements and be mounted with stainless steel brackets and hardware.

Interior Mirror:

1. Shall have safety plate 6" x 30" minimum designed to minimize glare and to afford good view to the rear.
2. Mirror shall be metal backed with rounded corners and protected edges.
3. Provide interior mirror with back up camera access and lever lock. Back-up camera shall operate at all times when ignition on integrated with video recording system.

Miscellaneous:

1. Provide drivers OEM integrated or molded cup holder
2. Provide trash receptacle in driver's area as approved by MCPS

Noise Reduction Package:

1. Provide sound package throughout the entire passenger compartment that will meet or exceed the 83 DBA sound limits.
2. Package shall include, but not be limited to, complete acoustic headliner with fiberglass insulation, firewall insulation, rubber steps and floor cover.
3. Must include firewall, transmission cover, and black rubber mat with 50 oz. felt backing in driver's area and toe-board insulation.

Paint Interior:

1. Standard Color
2. All paint must be lead free

Radio:

1. AM/FM/ PA and weather band radio, with minimum of six 30 watt or greater interior speakers.
2. Radio shall be of sufficient wattage to drive the speakers.
3. Service manual with schematic shall be provided.
4. Radio shall operate when the key is in the ON and ACCESSORY positions

Rear Window Wide Angle Prism:

1. Provide rear window wide angle lens made by 3M Company or equal. (To allow driver a good view area directly behind the bus.)

Safety Devices:

1. Provide post-trip inspection device which sounds alarm in driver's area upon shut-down of vehicle with the ignition switch in the off position. Device can only be deactivated by depressing button located at rearmost interior panel above rear window. (Device ensures drivers perform post-trip inspection of passenger compartment.) When alarm sounds, a light shall be illuminated and located next to a warning label in the driver's compartment that reads, "PERFORM POST-TRIP INSPECTION, DISABLE ALARM AT REAR OF BUS." System shall not require red warning light activation to sound alarm. System shall not sound horn or flash headlamps.

Seats/Seating Arrangement:

1. Passenger Seats: 57 seated passenger capacity.
2. There shall be 3 rows of 39" integrated child seats, and 7 rows of standard 39" seats on the left side and using a flip seat at the side emergency door, and 2 rows of 39" integrated child seats and 10 rows of standard 39" seats on the right side,
3. Integrated child seats shall not have exposed/ visible shoulder or lap belts when not unfolded or in closed position.
4. Federal high back seats with 28" back.
5. Each seat, except those adjacent to emergency exits, shall be equipped with the maximum number of child safety seat latch system eyelets allowed for each seat size.
6. Upholstery shall be heavy-duty fire block including under side of passenger seats.
7. Passenger seat frames shall be FMVSS safety seats designed for installation of seat belts.
8. Lower front barrier on both sides of the aisle to include kick panel.
9. Left side barrier immediately behind driver's seat shall tilt rearward to allow maximum driver movement of driver's seat.
10. A storage pouch attached to the left front seat barrier approximately 16" x 16" capable of storing approximately 4 1/2" of papers or notebook type materials shall be affixed to barrier immediately behind driver's seat.
11. Left side seating arrangement shall allow maximum range of adjustment for driver seat and maximum allowable space at flip seat for easy exit through side door.
12. Bidder shall submit floor plan at time of bid for approval.
13. Color to be standard gray.

Seat/Seatbelt, Drivers Seat:

Driver's seat must be compatible with the design of the bus.

1. Adjustable six ways air suspension seat with 275 pounds minimum weight capacity. Only National Heated seat will be considered at this time.
2. Seat to be high back seat with 2 moveable arm rests.
3. Provide lumbar support adjustment.
4. All seat materials to be heavy duty and meet current standards for fire block.

5. Color to be standard gray or black.
6. A combination shoulder strap and seat belt with adjustable pillar-loop retractors and boot or sheath shall be provided for the driver.
7. Belts shall comply with current specifications and recommended practices of Society of Automotive Engineers except that the belt shall be fastened to bus floor immediately behind driver seat when seat is adjusted to its rearmost position.
8. Shoulder strap and seat belt shall have retractors and boot or protective cover.
9. All driver shoulder and seatbelt webbing shall be bright orange in color.
10. Shoulder strap shall be adjustable from the side wall mount 16" of minimum adjustment.

Signs and Numbers Interior:

1. NO SMOKING signs shall be in front center of bus in 2" red letters.
2. FIRE EXTINGUISHER LOCATED ON FLOOR shall be placed on front center of bus in 1" letters.
3. NO STANDING IN FRONT OF WHITE LINE sign shall be in front center of bus.
 - i. Numbers shall be placed as follows:
4. **Inside:** above front windshield and above rear windows.
5. All emergency exits shall be marked according to Federal and State Requirements with appropriate operating instructions and identification labels inside and out. (White panel red letters acceptable.)
6. *See safety devices on Post-trip Inspection Device sign.
- 7.

Steering Wheel:

1. The steering wheel shall be an 18-20" diameter.
2. Shall be mounted on tilt and telescoping column.
3. Shall be covered with a padded-touch material other than hard plastic.

Steps:

1. Step Well: Three-step entrance covered with black slip resistant dimpled rubber with white nosing.
2. Step Wells shall be constructed of rust resistant material.
3. Rhino liner or approved treatment of interior and exterior of entrance steps. Bidder provide details with bid for approval.

Storage Compartment:

A storage compartment shall be provided above the driver seat on the left side of the interior that complies with all Federal and Maryland regulations with door latch, not lockable.

Sun Visor:

1. Adjustable type plastic sun visor, 6" x 30", shall be provided over driver's side of windshield.
2. Adjustable type plastic sun visor, 6" x 30", shall be provided over left side driver's window.

Two-way radio:

1. Shall be equipped with Motorola 5550e mobile radio which includes GPS module, PRONet integrated voice and data licenses and a two wire GPS antenna. Procom Corporation will coordinate and do the installation of the two way radios.
2. The two way radio shall operate when the ignition system is in the on and accessory position only
3. Radio shall be wired as the existing fleet with the radio on off switch disabled so the radio cannot be turned off when the ignition switch is in the on or accessory position.

Ventilation:

1. One static type non-closing exhaust ventilator shall be included as integral part of roof and be mounted in the center of the roof above the driver area and service door.
2. Heaters in driver's area will provide optional fresh air/recirculating positions.

Warning Light Control:

1. The flasher control unit shall be solid state type.
2. The control switches will be mounted just below the center of the windshields and operate according to State and Federal requirements.
3. Amber warning light switch to be outlined in yellow.

Windows:

1. All full size passenger windows shall be aluminum or polycarbonate framed split sash minimum 28" in height. **Note: Windows are 30.5**
2. The window directly to the left of the driver shall be split and shall slide forward and backward in weather-stripped grooves.
3. All passenger window glass to be tinted to 28% light transmission.
4. Driver and service door windows are to be clear.

Wipers:

1. Intermittent wiper control is required.
2. Headlights automatically come on when wipers are in the on or intermittent position.

Wiring:

1. No body accessory can be operated when ignition switch is off except post trip warning device.
2. The following accessories shall work with the ignition switch in the Accessory Position and ON position: AM/FM radio/PA; Two-way radio and interior lights.
3. All wiring must be color coded and numbered.

Exterior:**Back-up Camera/Warning Devices:**

1. Back-up camera mounted above rear emergency door with monitor in rear view mirror.
2. Back-up sensors shall be mounted in or above rear bumper

Batteries:

1. Dual 12-volt maintenance-free type with a minimum of 1100 cold cranking amps per battery.
2. Battery capacity shall be sufficient to meet the electrical loads generated in normal overload factors.
3. Batteries shall be mounted on a left side slide out heavy duty tray in a skirt mounted battery box with stainless steel roller or ball bearings to allow easy slide in and out.
4. Battery quick disconnect switch shall be provided in easy access location in the battery box.

Body Size/Design:

1. Conventional-style bus design, with front-mounted engine and tilt hood.

2. Overall length must not exceed 30 feet.
3. Units built to be fully equipped with a 3/2 seating plan
4. The exterior side skirt of the bus shall extend at least to the centerline of the axles.

Bumpers:

1. Front bumpers to be heavy-duty type if available from the chassis manufacturer.
2. Bumpers must be of sufficient strength to permit pushing of a vehicle of equal weight without temporary or permanent distortion to the bumper.
3. Rear bumper shall be pressed steel channel at least 3/16" thick and 9 3/4" wide (high.)
4. Rear bumper shall be fully wrapped around back corners of bus, and extend forward at least 12", measured from rearmost point of body at floor line.
5. Rear bumper shall be attached to chassis frame in such manner that it may be removed easily, and braced as to develop full strength of bumper section from rear or side impact and attached to prevent hitching of rides.

Construction:

1. Construction shall be of rust-resistant, zinc-coated, prime commercial quality steel.
All such construction materials shall be fire-resistant.
2. Outside body panels below window line shall be no less than 16-gauge steel.

Exterior Color: All paint must be lead-free.

1. National School Bus Chrome Yellow high solids polyurethane (no exceptions.)
2. Roof - painted white.
3. Bumpers and Rub Rails - painted gloss black. (Note exception under Hood below.)

Doors, Service:

1. Door shall seal against a stationery rubber gasket on all vertical and horizontal edges.
2. All door hinges shall be grease able type or have nylon bushings.
3. Provide outside service door handle.
4. Provide exterior door lock for entrance door. All buses keyed alike

Fenders:

1. When tire size specified extends beyond the body, the wheel areas shall be covered with a metal or rubber fender extension around complete wheel housing.
2. Mud flaps shall be provided behind each wheel and extend down to approximately 9" from the ground.

Hood:

1. Hood must be fiberglass tilt type. No other type shall be considered.
2. Shall be equipped with easy tilt and drop proof mechanisms to assist in opening and closing.
3. Top of hood to be painted with glare resistant finish and clear coat.

License Plates:

1. Shall have front and rear brackets or mounting area and shall include license plate Mounting hardware or nylon inserts.

Lights and Signals:

1. All exterior lights shall be LED except Strobe on roof
2. All body mounted light and reflector rims shall be made of dura-mold plastic or stainless steel.

Front and Rear**Warning Lights:**

School bus alternately flashing eight light warning systems shall be provided to meet latest State and FMVSS requirements. Alternately flashing red/amber lights shall be equipped with synchronized flashing LED strobe lights.

Front:

Headlights: Shall be LED with thermo controlled heating element with daytime running light design. Daytime running lights shall only be illuminated when the ignition switch is in the "On" position and the transmission in gear, and not in the "Accessory" position.

Cluster: 3 amber pin LED

Marker: 2 front pin LED

Directional: rectangular LED amber to be mounted on fenders.

Rear:

Stop Tail: 1 right rear, 1 left rear 7" LED.

Stop Tail: 1 right rear, 1 left rear 4" LED.

Directional: 1 right, 1 left 7" amber lens LED.

Back-up: 2 7" with clear lens LED.

Cluster: 3 Red pin style LED

Marker: 1 right and left red corner with pin style LED

Sides:

Directional: One amber located right side behind service door and one located left side similar position with protective shields. One red located left and right behind rear wheel wells, or mid ship, all lights to have protective shields LED.

Service Door:

1. One with clear lens located on right side at service door entrance, LED.

Reflectors:

1. Three on each side of bus, (front, center, and rear). Two on rear of bus.

Roof:

1. One roof mounted white LED strobe light four inches high by five inches in diameter shall be provided (As Specialty #515400.)
2. Strobe light shall be center mounted, one foot toward the rear of the bus behind the rear roof hatch exit. Guards shall be provided to protect strobe light on top of bus.

3. Strobe light shall have a manual switch with pilot light to indicate light is on and shall be located in driver compartment.

Rear Tire:

1. LED flood light positioned behind the driver and passenger rear tires mounted on the side body skirt activated when transmission is in reverse.

Mirrors:**Exterior Mirrors**

1. All exterior mirrors shall be electrically heated, remote electric control with labeled switch. Heat switch shall include timer to deactivate after approximately 15 minutes.
2. Eurostyle, Double Nickel, or similar style mirror, (European "Overhung" style will not be accepted) with configuration one flat mirror mounted above one convex mirror on each side.
3. Mirrors will not extend beyond the body of the bus more than 110" measured from outside edge to outside edge of the left and right side mirrors.
4. Provide Tiger-Eye type crossover mirror on each front corner of bus fender.

Safety Devices:

1. All exterior safety devices are to be mounted with stainless steel fasteners and meet Maryland State and FMVSS requirements.
2. Provide one front and one rear air operated left-side mounted octagon shaped, stop arm in accordance with Maryland State requirements which shall include two flashing LED strobe lights on each arm which will be activated with the red warning lights.
3. Provide air operated bumper mounted or integrally designed air operated yellow polycarbonate-type crossing arm that will be activated with the opening of the service door. There shall be no light on the arm. The arm shall stow recessed above bumper or shall include a magnetic retention device to secure the arm against the bumper when not activated.
4. Provide post-trip inspection device which sounds alarm in driver's area upon shut-down of vehicle with the ignition switch in the off position. Device can only be deactivated by depressing button located at rearmost interior panel above rear window. (Device ensures drivers perform post-trip inspection of passenger compartment.) When alarm sounds, a light shall be illuminated and located next to a warning label in the driver's compartment that reads, "PERFORM POST-TRIP INSPECTION, DISABLE ALARM AT REAR OF BUS." System shall not require red warning light activation to sound alarm. System shall not sound horn or flash headlamps.

Signs:

1. All lettering shall be in black letters except where noted below.
2. The words MONTGOMERY COUNTY SCHOOLS shall be placed immediately
3. below window line on both sides of bus in 6" lettering, 1" stroke. (Driver side
4. lettering to be provided to MCPS for installation at a later date)
5. SCHOOL BUS shall be placed on the front and rear as required with a reflective background.

STOP ON SIGNAL shall be placed on the bottom of the rear emergency door as

1. required by MVA.
2. **Right Side:** top corner, top rear corner, below window line next to service
3. door, rear corner below window line.
4. **Left Side:** top front corner, top rear corner, side below driver's window, rear corner
5. below window line.

6. **Front:** left side front bumper (yellow numbers).
7. **Rear:** centered on rear emergency door next to handle.
8. **Roof:** shall be located on the forward most roof panel behind the static roof vent
9. and shall be numbered left to right in 18" high x 10" wide x 2 3/4" stroke with the
10. letters MCPS directly below the numbers in the same size. The rear corners, top and bottom of the back of the bus shall be outlined in yellow reflective tape.
11. "Battery Disconnect Switch" decal, located on outside of battery compartment door. Lettering will be approved by MCPS

Snow Rail:

1. Snow rail shall be installed full length of body skirt and painted black.

Steps:

Stirrup Steps: There shall be one stirrup step and a suitably located handle on each side of the front of body for ease in cleaning windshield and warning lamps.

Tires and Wheels:

1. All tires to be Michelin 16- ply low profile steel radial 255/70 x 22.5.
2. All wheels shall be 10-hole disc type Budd wheels hub piloted.
 - i. Front: All season or highway tread.
 - ii. Rear: Mud and snow (No exceptions).

Towing:

1. Tow eyes or hooks provided at front and rear of body located below the bumpers.

Windshield Wipers and Washers:

1. There shall be two heavy-duty positive action, 2-speed electric operated bottom mounted wipers and washers.
2. Washer spray to be attached to each wiper arm.

Wiring:

Wiring diagrams shall be affixed to electrical compartments accurately indicating the position of all relays, breakers, buzzers, fuses, etc.

UNDER CARRIAGE:

Axles:

1. Front axle 10,000 lbs. minimum and equipped with (Wet Hub) lubricated with 80/90 synthetic gear oil.
2. Rear axle 17,500 lbs. minimum.
3. Rear axle traction control device shall be included with anti-skid control devices with dash mounted control switch.

Battery Box:

1. One-piece battery cables of sufficient length to reach from the outside battery compartment to engine compartment shall be provided.
2. All cables are to be sufficiently protected from chaffing and shorting with appropriate protective devices.

Body to Frame Mounting:

Hold-down clamps shall be of a positive type, not spring type.

Brakes:

1. Brake system shall be full compressed air system with four-wheel Bendix ADB22X-V disc brakes, adequate at all times to control the bus when fully loaded and balanced for optimal braking efficiency and safety.
2. All current requirements for anti-skid devices shall be provided.
3. System will include Bendix AD-IP Air Drier with heater and spin-on filter.
4. There shall be one wet tank, one dry tank and one accessory tank. A check valve shall be provided between the compressor and the first reservoir and the first reservoir and second reservoir. Wet tank, or #1 tank, shall have an automatic drain valve and sludge remover such as Bendix DV-2 Automatic Drain Valve with heater. High pressure relief valve shall be provided to protect against excessive air pressure build up with remotely located drain valve at skirt of bus.

Shock Absorbers:

Heavy-duty type front and rear.

Spring/Suspension:

1. Front Axle: Leaf Springs.
2. Rear Axle: Air ride suspension capacity 21,000 lbs. minimum.
Combined rating to equal 27,500 lbs. GVWR as in Axle ratings

Undercoating:

Entire underbody to be completely factory undercoated with Textile wax base undercoating material or equal, *including fuel tank* and excluding front fenders and fiberglass hood.