



**Transportation Department**  
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## 48 Passenger School Bus

<b>48 Passenger School Bus</b>	
<p><b><u>Air Cleaner</u></b>                  Heavy-duty type air cleaner and install Williamson filter gauge.</p>	Yes <input type="checkbox"/> No <input type="checkbox"/> Explanation of Difference:
<p><b><u>Assist Rail</u></b>                  There shall be (2) two stainless steel assist rails at the entrance door, mounted on either side near the midpoint of the step well and extending to near the top of the seat barrier. Assist rails shall be securely attached.</p>	Yes <input type="checkbox"/> No <input type="checkbox"/> Explanation of Difference:
<p><b><u>Axles</u></b>                  Front axle shall have maintenance free spring pins. King pins of front axle must be serviceable and replaceable as a separate component. Also, front king pins must be able to be lubricated properly without lifting the bus. (Needle bearing king pins preferred)</p> <p>Front axle must be of a "set-back" design and capable of achieving a minimum of 55 degree wheel cut.</p> <p><b>Front Axle Rating: 10,000 Lbs.</b>  <b>Rear Axle Rating: 21,000 Lbs. w/ air ride suspension</b>  <b>Steering: Power</b></p>	Yes <input type="checkbox"/> No <input type="checkbox"/> Explanation of Difference:
<p><b><u>Batteries &amp; Battery Box</u></b>                  12-volt, maintenance-free type. Battery box must include slide out tray that is equipped with stainless steel slides and roller bearings for long life. Battery tray to have (2) positive, spring loaded pins to hold the tray in the closed position. Polyethylene battery cover to be provided. Battery box to be chassis frame rail mounted and be at least 14" high X 25" wide X 16" deep. All "hot" and "ground" wires to and from the battery are to be identified and specifically color coded with appropriate loom.</p> <p><b>Battery Box Latch: Thumb</b>  <b># of Batteries: 2</b>  <b>Battery CCA's (Each): 1900 CCA</b>  <b>Type: 31S</b>  <b>Main Power Switch mounted in battery box or exterior of battery door</b></p>	Yes <input type="checkbox"/> No <input type="checkbox"/> Explanation of Difference:
<p><b><u>Brakes</u></b>  <b>Brake Type: Air</b>  <b>Front Brake Size: 16.5" X 5" w/ Longstroke Chambers</b>  <b>Rear Brake Size: 16.5" X 7" w/ Longstroke Chambers</b>  <b>Air Dryer: AD-IP, Heated</b>  <b>Air Compressor: Cummins 18.7 CFM</b>  <b>Anti-Lock Brake System: 4-Channel w/ Traction Control</b>  <b>Automatic Slack Adjusters: Yes</b>  <b>Dust Shields: Yes</b>  <b>Park Brake Set: Dash Mounted</b></p> <p><b><u>Bumper</u></b>                  Front: 3/16" thick heavy-duty 14" front bumper with swept back style matching the hood shape. Rear: Shall be formed from 3/16" plate steel and a minimum of 9" wide (high) with a .5369 square inch section modulus. Bumper shall wrap around corners of bus and be attached to the chassis frame. Bumper is to be diagonally braced with minimum 4" steel tubing.</p>	Yes <input type="checkbox"/> No <input type="checkbox"/> Explanation of Difference:
<p><b><u>Capacity</u></b>  <b>Rated Passenger Capacity: 48-Passenger + Driver</b></p>	Yes <input type="checkbox"/> No <input type="checkbox"/> Explanation of Difference:

<p><b>Color</b>                  Exterior: Shall be National School Bus Yellow. This paint shall be a baked on high solids polyurethane. Guardrails shall be painted black completely from flange to flange. 3" black eyes around warning lights are required.                  Interior: Shall be light/ neutral colored baked on enamel. The area from the bottom of the side windows to the floor shall be mar-proof Galvalume steel. All seat frames, under seat heaters shall have a baked on black powder coating for scratch resistance. All interior headlining panels on the bus to be painted shall be pre-primed on both sides prior to assembly.  <b>White Roof: Yes</b></p>	<p style="text-align: right;"><b>Yes <input type="checkbox"/> No <input type="checkbox"/></b>                  Explanation of Difference:</p>
<p><b>Cooling System:</b>                  750 square inch minimum aluminum core radiator for optimum engine and transmission cooling. Visible coolant level check to be supplied. Formulated long-life pre-charged SCA coolant required. A translucent surge tank or sight glass must be provided for coolant level check to prevent having to open cooling system.  <b>Coolant Hoses: Silicone, EPDM or equivalent</b>  <b>Hose Clamps: Constant Torque</b>  <b>Fan Clutch: Viscous – Electric fan drive</b>  <b>Install Winterfront for grill</b></p>	<p style="text-align: right;"><b>Yes <input type="checkbox"/> No <input type="checkbox"/></b>                  Explanation of Difference:</p>
<p><b>Dimensions</b>                  Minimum exterior width: 96". Minimum interior width: 90". Minimum interior headroom: 78".</p>	<p style="text-align: right;"><b>Yes <input type="checkbox"/> No <input type="checkbox"/></b>                  Explanation of Difference:</p>
<p><b>Doors</b>                  Service Door: The service door shall be an outward opening, two-panel door. The door panel shall utilize a welded frame. Construction and made of powder coated extruded aluminum to reduce weight of door. Each door panel shall have two-piece glass to provide maximum visibility to the loading area. The door control mechanism shall be located to the left of the driver on the switch cabinet to prevent accidental opening by students. An emergency opening control valve. The control mechanism of the door shall be located above the door and concealed behind a panel for ease of service. Door shall offer a minimum 30" clear opening. There shall be a pad installed above the door for safe exit. A plastic handle shall be located on the exterior forward leaf of entrance door. Switches on steering wheel.   <b>Door Control: Air</b>  <b>Door Glass: Clear</b>  <b>Door Switch: 3-position (No exception &amp; operational)</b>  <b>Vandal locks: Required</b></p>	<p style="text-align: right;"><b>Yes <input type="checkbox"/> No <input type="checkbox"/></b>                  Explanation of Difference:</p>
<p><b>Electrical</b>  <b>Alternator Brand: Delco Remy</b>  <b>Alternator Amperage: 325 Amp minimum (A/C)</b>                  Shall be equipped with fully integrated multiplex electrical system for both body and chassis. Body and chassis wiring to be number and color-coded with matched weatherproof connectors. Single diagnostic port to be located under dash for both body and chassis system. All available circuits protected by a combination of solid- state technology and circuit breakers. All maintenance and service codes are to be displayed with LED numbered read-outs.                  All internal wiring shall be routed down the inside of the bus, above the side windows, behind a completely removable cover. This cover shall be removable without loosening the side windows. All wiring must start and terminate with engineered connectorized ends. NO butt splicing allowed. A complete wiring diagram is to be furnished. All wiring that passes through metal shall be grommeted. Clips are required to support main body wiring harness. Wiring shall be flame retardant. Automatic-resetting circuit breakers are not allowed.                   Switches shall be rocker type design with long life LED lighting. The door control and 8-light warning switches must be backlit so that it can be easily located in all operating conditions.</p>	<p style="text-align: right;"><b>Yes <input type="checkbox"/> No <input type="checkbox"/></b>                  Explanation of Difference:</p>

Front heater and defroster controls to be electrical, including a hot water shutoff control mounted in dash.  
 Dual electric horns.  
 Extended life halogen headlights with amber daytime running lights. DRLs to operate at 85% to further extend headlight life.

**Engine** Yes  No   
 Explanation of Difference:

Shall be an in-line, six-cylinder diesel engine that meets 2017 emission standards. Must also include automatic integral warning and de-rate protection system.  
 Engine shall meet all current state and federal emission requirements with the use of Selective Catalytic Reduction (SCR) technology. It shall be "Clean Idle Certified". Engine shall be B20 compatible with no impact on engine warranty.  
**Shall include 120 month, 200,000 mile extended engine warranty.**  
**Engine Horsepower: 220 (minimum/ no exception)**  
**Engine Torque: 560 @ 1600 RPM**  
**Engine Brake: Yes (to be supplied w/ dash-mount switch)**  
**Cruise Control: Yes**  
**Electric Throttle Control and Cruise Control: Engine electronics to include electronic throttle and cruise control.**  
**Alliance Fuel/Water Separator: Heated, w/ Primer Pump & Indicator Light**

**Emergency Exits** Yes  No   
 Explanation of Difference:

Emergency door: There shall be an emergency door located in the center rear of the bus. Door is to be equipped with an audible buzzer that will sound when latch is moved toward open position. Door is to have upper and lower glass. There shall be a device installed on the top of the emergency door that will automatically hold the door in the open position during emergencies and evacuation drills. There shall be a pad installed above the door for safe exit. Shall include vandal lock which includes a slide bolt lock with starter interlock.  
  
**# of Roof Hatches: 2**  
**Roof Hatch Type: Specialty, Low Profile**  
**Push-Out Windows: : 2 Each Side, w/ Vertical Hinges**  
**Emergency Door Lock: Single-Point**

**Exhaust** Yes  No   
 Explanation of Difference:

**Type: Stainless Steel**

**Fenderettes** Yes  No   
 Explanation of Difference:

Rear wheel openings shall be equipped with fenderettes that extend from the wheel well openings.  
**Fenderette Type: Steel w/ Rubber**

**Floor Covering** Yes  No   
 Explanation of Difference:

Plywood floor over steel floor must be provided and include exterior grade glue for longer life. Floor covering shall be heavy-duty vinyl. The floor in the passenger compartment shall be covered with .125" thick smooth vinyl. The aisle and entrance steps shall be covered with slip resistant .1875" thick ribbed vinyl.  
 Entire floor surface must be sealed with adhesives, and floor seams covered with stainless steel stripping or molding. The floor covering along the sidewalls shall be covered with molding so that dirt cannot readily work underneath the edges. Wheelhouses shall be covered with a molded one-piece cover extending over the entire wheelhouse.

**Plywood Type: 1/2"**

**Floor Color: Gray w/ Pebble Step Tread**

**Frame** Yes  No   
 Explanation of Difference:

**Frame Yield Strength: 50,000 PSI**

**Frame Type: Steel**

**Fuel Tank/Fuel System** Yes  No   
 Explanation of Difference:

Fuel tank shall be mounted between the frame rails for additional impact protection, even weight distribution on rear dual wheels. Shall include interior access plate in floor for servicing and an engine-mounted fuel pump.

**Fuel Tank Capacity: 60 Gallon**

**Fuel Tank Filler Door: Hinged w/ secure Latch**

<p><b><u>Guard Rails</u></b>                  Minimum of four (4) rub rails shall be supplied. One 4" located below windows, one 4" located at seat cushion level, one 4" located near floor level and one 4" located at skirt bottom. Side rails shall be fluted to allow for moisture drainage.</p>	<p style="text-align: right;">Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Explanation of Difference:</p>
<p><b><u>Gauges</u></b>                  Speedometer with odometer. Tachometer, oil pressure, water temperature, fuel, ammeter, voltmeter, hourmeter, tripmeter and DEF level gauges must be included and air pressure shall be illuminated.                  Gauges must be mounted in a manner to provide unobstructed view from driver's position. Shall include text light indicators monitoring both of the amber and red warning light activations, emergency exit door opening, low coolant level.</p>	<p style="text-align: right;">Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Explanation of Difference:</p>
<p><b><u>Heaters &amp; Defrosters</u></b>                  Driver's Heater: Heater shall be installed at front center of vehicle. The heater is to be a 3-speed minimum, fresh air type. Heater controls shall be electronic, automotive style. A defroster channel shall run the full length of the windshield for maximum defrosting. Heater ducting shall be distributed at floor and dash level. Defroster system shall direct air to side windows in driver's area.                  All heaters to be copper coil design type with aluminum fins. Heater motor/fan mechanism shall be serviceable without disturbing heater core. Passenger heaters shall be equipped with replaceable metal filters.  <b>84K BTU Pass. Heaters: 1</b>  <b>Pass. Heater Location #1: Underseat, Driver's Side, Rear of Bus</b>  <b>Stepwell Heater BTU: Combo Heater and DASH AC Unit</b>  <b>Constant Torque Clamps: Yes</b>  <b>Defroster Fans: 2-Over Windshield &amp; Driver</b></p>	<p style="text-align: right;">Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Explanation of Difference:</p>
<p><b><u>Hood</u></b>                  Hood shall be equipped with fiberglass tilt hood with easy opening hood for 22 lb. maximum pull effort. Engine splash shields must tilt out of way with the hood so as to gain access for fluid check without removal. Must have removable grill for easy serviceability. Hood must include hood pull for driver's comfort. Left side hood, engine air intake with integrated air intake plenum must be built into the hood.</p>	<p style="text-align: right;">Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Explanation of Difference:</p>
<p><b><u>Identification</u></b>                  The bus shall be lettered in accordance with all applicable federal and state requirements. Shall be: UNIONVILLE-CHADDS FORD SCHOOL DISTRICT &amp; Applicable designated numbers</p>	<p style="text-align: right;">Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Explanation of Difference:</p>
<p><b><u>Insulation</u></b>                  Ceiling, sides, and rear panels shall be insulated with a minimum 1.5" thick, blanket-type polyester insulation to properly deaden sounds, reduce vibration, and provide a thermal barrier. The insulation shall be fire-resistant of type approved by Underwriters Laboratories, Inc. A sound absorbing floor cover shall be applied in the driver's vestibule area.</p> <p><b>Perforated Ceiling: Full length of bus body</b></p>	<p style="text-align: right;">Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Explanation of Difference:</p>
<p><b><u>Lamps, Signals, &amp; Devices</u></b>                  All lamps shall conform to applicable FMVSS and state laws in effect at time of manufacture. Lights to include:                  -Cluster: Surface mounted three (3) amber front, and three (3) red rear lights. Type:LED                   -Marker: Two (2) front corners, two (2) rear corners and two (2) side roof. Type:LED                  -Stop/Tail: One (1) right rear, one (1) left rear. One (1) right rear, one (1) left rear. Type:LED                   -Back Up Lamps: Two (2), mounted in tail light assembly. Type:LED                  -Stepwell: 2, wired to clearance lights. One (1) inside &amp; one (1) outside of entrance. Type:LED                  LED                  -Dome: To be located over seat area. Driver's dome to be located on a separate switch.                   -Directional Rear: One(1) amber right and one(1) amber left, shall be illuminated surface. Type:LED</p>	<p style="text-align: right;">Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Explanation of Difference:</p>

-Interior Red Light located above back emergency door activated with key on.  
 -Reflectors: Two (2) amber on each side of bus, two (2) red on rear.  
 8-way student lights amber & red lights to be LED, must be sequential

**ALL lights located on rear of bus MUST BE LED**

**Lamps, Signals, & Devices CONTINUED on Page 6**

**Lamps, Signals, & Devices CONTINUED**

Shall include an exterior light check feature for pre-trip inspection.

**Post Trip Child Inspection System:** The bus shall be equipped with a No Student Left Behind system, or equivalent, that is activated by the driver activating the red warning lights and opening the entrance door while on route. The system shall be designed so as to require the driver to walk to the back of the passenger compartment upon completion of their route to disarm. If not disarmed, the headlights will flash and the horn will sound alerting personnel the bus was not checked to ensure all students have exited the bus. Bus is also to be equipped with a temporary disable switch for No Student Left Behind system allowing passengers to disembark before driver must walk the length of the bus to disarm.

**Oil Change Light:** For improved maintenance performance the bus shall be equipped with an oil change light with customer programmable parameters including miles run, hours of operation or gallons of fuel consumed.

**Eight Way Student lights to be sequential (no exception) Must be operational**

**Type of Lights: LED where specified above**

**Strobe Light: Yes**

**Side Directional: Yes Type: LED**

**Stop Arm Control: Air**

**Crossing Arm Control: Air & Self-Stowing**

**Camera: REI, SD card with 32 GB memory (one camera system- installed & operational @ delivery)**

**Mirrors**

**Interior Mirror: 6" X 30"**

**Crossover Mirror: Heated Standard**

**West Coast side mirrors: electric adjustable and heated**

**Mirror Bracket Color: Stainless Steel**

**Miscellaneous**

**Steering Column: Tilt & Telescoping**

**Tow Hooks: Two-Front, Two-Rear**

**Radio: AM/FM/CD/PA/MP**

**Sun Visor: 6" X 30" Solid black, opaque**

**Back-Up Alarm: Yes**

**Mudflaps: Front & Rear**

**Speakers: 6 minimum**

**Cowl Steps: Two, fold down**

**Mounting**

Bus body shall be mounted to chassis frame in such a manner as to prevent shifting. Rubber mounting pads reinforced with fiber shall be used to cushion the body on the chassis at every floor crossmember.

**Safety Equipment**

Each bus shall be equipped with a webbing cutter, 24 count first aid kit, body fluid kit, reflective triangles in accordance with FMVSS, wrecking bar, and one dry type chemical fire extinguisher. Check with District's lead technician for location of installation of these items.

**Child Reminder System: Yes**

**Shock Absorbers**

Heavy-duty, dual action. Front and rear

**Seats & Barriers**

Passenger Seats: All seats shall comply with all applicable FMVSS and state specifications. Seats to be installed so that they are staggered and allow for greater hip space while walking the aisle.

	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Explanation of Difference:

	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Explanation of Difference:

	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Explanation of Difference:

	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Explanation of Difference:

	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Explanation of Difference:

	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Explanation of Difference:

	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Explanation of Difference:

Seat frames shall be powder coated non-reflective black. Cushions are to be attached to frame so as to prevent detachment from frame, yet allow for cleaning by pivoting cushion upright with a latch.

**Barriers: Two (2), 39" with recessed legs.**

**Seat Frame Type: Lap Belt/ Seat Belt Ready (seat belts not included)**

**Upholstery Weight: 42 oz.**

**Upholstery Color: Gray**

**Modesty Panels: Both Sides**

Driver's Seat: **Shall be air-ride**, high back with adjustable seat back. Seat back is to recline 15" and include adjustable lumbar support. Seat cushion width shall be minimum 20" and offer forward cushion tilt for optimum driver comfort. Fore and aft adjustment by fingertip control, without tools. Fully adjustable lap belt and shoulder harness to be included and attached to body.

**Arm Rests: Both Sides**

**Upholstery Type: Fabric**

**Stepwell**

The stepwell shall be constructed of galvanized steel and include three (3) full-depth steps. The entrance and egress area including the top landing area adjacent to the driver's seat shall be unobstructed by the engine cover or other components. Anti-corrosion protection applied to inside and outside of step well.

**Storage Compartment**

Overhead storage compartments shall be included or above the driver's side window. Compartment doors shall be hinged at top, and include quick release latches. There shall be an additional storage compartment to the left of the driver, aft of the switch panel.

**Cupholder: Yes**

**Suspension**

**Front Capacity: 10,000 Lbs.**

**Rear Suspension Type: Air Ride**

**Rear Capacity: 21,000 Lbs.**

**Tires/Wheels**

**Wheel Size: 22.5" X 8.25"**

**Tire Size: 11R22.5**

**Tire Ply: 14 Ply**

**Front Tire Type: Radial**

**Rear Tread Type: Radial Mud and Snow w/ aggressive tread**

**Brand: To be specified (Brand & Model)**

**Spare Wheel: Yes**

**Transmission**

**Allison Trans. Type: 2500 PTS**

The driveline must include a booted slip yoke to protect the slip splines from road debris, or a 7- year warranty shall be supplied.

**Undercoating**

Entire underbody shall be completely undercoated with an asphalt emulsion water-based undercoating after body to chassis mounting for maximum rust proofing.

**Ventilation**

Body shall be equipped with static type, non-adjustable exhaust ventilator located in low-pressure area of front roof.

**Warning System**

Low oil pressure and high water temp warning light, low voltage warning light

**Wheelbase**

**Wheelbase: Indicate wheelbase and turning radius**

Yes  No   
Explanation of Difference:

Yes  No   
Explanation of Difference:

Yes  No   
Explanation of Difference:

Yes  No   
Explanation of Difference:

Yes  No   
Explanation of Difference:

Yes  No   
Explanation of Difference:

Yes  No   
Explanation of Difference:

Yes  No   
Explanation of Difference:

Yes  No   
Explanation of Difference:

<p><b><u>Windows</u></b>                  Two-piece side windows shall be safety glass. The top portion of the side windows shall be capable of being lowered to a position that provides an opening at least 12" high X 25" wide. Windows must be accessible for removal without lowering the wiring harness access panel and include dual slide locks with replaceable latches. All passenger windows shall incorporate aluminum mullion bar design. Rear door glass must be bonded, flat safety type. Driver's window shall be double-sliding sash with safety glass. Stationary glass shall be bonded. Safety view windows to be provided between the driver's window and front corner post on the left side as well as between the entry door and front corner post on the right side. These are to provide maximum visibility to the front corners of the bus.</p> <p><b>Passenger Windows: Tinted, Laminated</b>  <b>Rear Windows: Tinted, Laminated</b>  <b>Driver's Windows: Clear, Laminated, Not Double Pane Glass</b></p>	<p style="text-align: right;">Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Explanation of Difference:</p>
<p><b><u>Windshield &amp; Accessories</u></b>                  -Windshield shall be designed to reduce glare and breakage and provide maximum vision. The tinted safety plate laminated glass shall provide minimum 3,000 sq. in. of windshield glass area.                  -Dual electric wet arm type windshield washers are required.                  -Bus to be equipped with two (2) heavy-duty wet arm type bottom-mounted wipers resulting in 1,527 sq. in. of wiped windshield. Wipers to be intermittent. Wiper motor shall be accessible for service under engine hood.                  -Two (2) cowl steps and handles for windshield servicing.</p>	<p style="text-align: right;">Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Explanation of Difference:</p>
<p><b><u>Warranty</u></b>                  -Body: 5-year unlimited mileage.                  -Engine: 10 years / 200K miles Extended Warranty. Travel/Towing covered for first two (2) years. (Must include electronic modules, fuel pump, nozzles, and sensors.)                  - <u>Include optional extended engine warranty with details of coverage.</u>                  -Auto Transmission: 5-year unlimited miles (Must include Synthetic fluid)                  -Base Chassis: 1-year unlimited mileage minimum.                  -Axle: 5-year unlimited mileage including king pins.                  -Two (2) year, bumper to bumper warranty                  Include Warranty Specs</p>	<p style="text-align: right;">Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Explanation of Difference:</p>
<p><b><u>Water Test</u></b>                  Bus is to be tested for water leaks in a pressurized water test booth at the Manufacturer's facility.</p>	<p style="text-align: right;">Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Explanation of Difference:</p>
<p><b><u>Additional Add-On Equipment</u></b>                  1 year diagnostic software update/renewal for laptop                  Loaner bus to be supplied when bus is returned for warranty work</p>	<p style="text-align: right;">Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Explanation of Difference:</p>