

Low Floor Kneeling Bus Specifications

Kentucky Public Transportation Association
Low floor Transit Bus

Vehicle Specifications

Descriptions:

Bus shall be an adjacent front door type with wheelchair access. This bus will be designed to transport a minimum of 7 + 4 wheelchair or 11 seated passengers + 3 wheelchair + 1 driver seated passengers w/use of stationary and foldaway seats. Bus offered will be certified for 7 year / 200,000 mile Altoona test. Compliance with criteria will be submitted with proposal. Bus must meet Federal and Kentucky Motor Vehicle Safety Standards. The contractor must supply documentation of Altoona Testing at time of bid. Bidder must furnish sufficient technical data test results to enable Kentucky Public Transportation Association to determine whether the proposal is equal to that specified.

Quantity:

Minimum zero (0) vehicles to be purchased with three (3) options to purchase additional vehicles for a maximum of three (3) vehicles per specification. In addition, KPTA/RTEC has the right to assign a portion of the contract awarded, to allow other transit agencies to purchase any remaining options.

DIMENSION REQUIREMENTS

Length, overall bumpers	317" maximum
Width, overall body	95" maximum
Height, overall @GVWR	120" maximum
Wheelbase	191" maximum
Height, floor @GVWR	27" maximum
Height, first step @GVWR	12" maximum
Height, interior	75" minimum
Width, door (clear)	37" minimum
Height door (clear)	72" minimum
GVWR	25,700 maximum

Clearances:

GROUND CLEARANCE

Bus shall have a minimum of 7" ground clearance at any position under the bus excluding axle zones. The minimum ground clearance in any axle zone shall be 8".

GENERAL

Buses are to utilize a rugged transit designed bus chassis. The chassis is to be a front engine design and shall include the following minimum components and systems.

CHASSIS FRAME ASSEMBLY

The chassis frame assembly shall be fabricated using high yield strength formed steel channel with reinforced gusseted-formed steel cross members all load bearing locations.

Frame rails shall be the chassis manufacturer's standard steel.

FRONT AXLE ASSEMBLY

The front suspension shall be a minimum capacity of independent design or larger to meet load specifications.

REAR DRIVE AXLE

The rear axle shall be a full floating type single speed drive axle providing a minimum of 65 MPH road speed with a minimum capacity to meet load specifications.

The rear differential shall be non-locking.

FRONT SUSPENSION

The minimum rating shall be sized to meet load specifications. The front suspension shall be aligned before leaving the factory.

INSULATION

Insulation of rigid closed cell polystyrene, sprayed foam or bagged fiberglass shall be provided for the full depth of the structure between all interior and exterior panels. Vendor shall specify type of insulation with their bid along with documentation of flame retardant and non toxic.

NOISE ABATEMENT

Vehicle shall be equipped with thermal and acoustic insulation providing an interior noise level of not greater than 86 db in the passenger compartment.

EXTERIOR TRIM

Shall be colored to match bus, securely attached, and provide no sharp edges.

BODY PANEL MATERIALS

The sidewall and roof steel structures are to be covered with a minimum of 4 mm FRP material, or .020 (25 gauge) steel, two side galvanized. The construction methodology shall provide an exterior skin with no visible fasteners. Detailing shall be simple; additional devices and trim shall be minimized and where necessary, integrated into the basic design.

FINISH AND COLOR

All exterior surfaces shall be smooth and free as possible of visible fasteners, wrinkles and dents. Exterior surfaces to be painted shall be properly cleaned and primed as appropriate for the paint used prior to application of paint.

PEDESTRIAN SAFETY

Exterior protrusion greater than 1.25 inches and within 78 inches of the ground shall have a radius no less than the amount of the protrusion. The left side rear view mirror and required lights and reflectors are exempt from the protrusion requirement.

Grilles, doors, bumpers and other features on the side and rear of the bus shall be designed to minimize the ability of unauthorized riders to secure toehold and handholds.

All nuts, bolts, clips, washers, clamps and like parts shall be given a coat of primer paint as additional protection against corrosion. All exterior screws and bolts shall be stainless steel.

All structural components shall be protected from corrosion with zinc chromate or e coat.

Body shall be thoroughly water tested and made tight to prevent leakage.

Vehicles purchased under this contract shall, during the course of manufacture and prior to acceptance, be subjected to a water test to determine body leaks. This test shall consist of a series of nozzles, which are strategically located around the perimeter of the vehicle to spray water over the entire surface of the vehicle. The nozzles shall eject a volume of water no less than twenty two pounds per square inch measured at the nozzle tip.

All exposed surfaces and edges shall be smooth, free from burrs and other projections and shall be neatly finished.

Floor material shall be 5/8" thick engineered wood. The underside of the floor material shall be sealed with a material to prevent moisture intrusion. All edges must be sealed.

Wheel housings shall be steel and provide clearance for tire chains.

WEIGHT

The bus shall be designed to be as light as possible without degrading safety, appearance, comfort, performance or durability. The GVWR of the bus shall not exceed 25,700 pounds.

OPERATING ENVIRONMENT

The bus shall achieve normal operation in temperature ranges of -40 degrees F to +105 degrees F at relative humidity's between five and one hundred percent.

STEERING

The steering mechanism shall be constructed so that the vehicle can be easily steered by its operator and shall be such as to make the wheel free from road shock and vibration. The steering mechanism shall be self-centered requiring little or no effort for the operator to bring the vehicle back to a straight-ahead position from a turning position. Steering wheel rim shall be no greater than 20-inch diameter and the wheel rim shall be of plastic or synthetic resin construction molded over metal. The steering gear box should be placed in an easily accessible location for service.

There shall be tilt-wheel or adjustable steering column.

BRAKES

Service Brakes: The Anti-Lock Brake System (ABS) foundation brakes shall be a power actuated hydraulic split system of four-wheel disc type, with four channel anti-lock braking control. Braking system shall include a red brake-warning lamp in the instrument cluster that lights when the parking brake is on.

The braking system will be equipped with a remote mounted reservoir for master cylinder fill. Container shall be located in an open area with easy access for service.

Parking Brake: The vehicle shall be equipped with a cable actuated in wheel parking brake, or a transmission mounted drum type. The brake shall be foot applied and located on the left hand side of the driver's compartment.

Warning System: The bus shall be equipped with the OEM's standard warning device.

WHEELS AND TIRES

Tires shall be interchangeable front and rear and be of a tubeless type. Wheels and tires must meet all DOT specifications for this application and GVWR.

Tires shall be LT225 /75R/16E ALS minimum.

Wheels shall be 16" x 6.50 "minimum.

Spare Wheel & Tire: Spare wheel and tire shall be the same per above spec.

FUEL SYSTEM

Fuel fills to be on the side of the vehicle. Fuel Tank shall be a minimum of 50-gallon capacity.

ELECTRICAL SYSTEM

The vehicles supplied shall have a twelve (12) volt electrical system. Wiring and circuit boards shall be accessible from the interior of the bus. All components are to be selected and integrated to function in an environment characterized by low engine (alternator) speeds and high amperage draws. Uniform schematics must be supplied and current with each vehicle.

All wiring shall be loomed, and held in place by insulated clamps spaced every 12 inches on center. Wiring shall be system coded, numbered or function coded every 6 inches. All wiring shall be sized for the load of the individual circuit and have adequate insulation, and provide flexibility and resistance against solvents or abrasives in accordance with SAE standards. All exposed underbody connectors shall be weather proofed for protection. Butt connectors or open connectors are not acceptable on exterior of the bus. All wiring passing through metal shall be grommet to protect the wires. All switches and gauges installed by the body manufacturer shall be mounted in a separate panel, located on the dash, which shall be easily reachable by the driver.

RADIO: Electrical package shall also include Deluxe AM/FM/CD player w/ 4 speakers.

ALTERNATOR: A minimum of a 200-ampere alternator with rectifier is required. The rectifier shall be separately serviceable.

BATTERIES: The battery equipment shall be the chassis manufacturer's standard where available. Batteries shall be 12 volt 1100 CCA capacity. A battery box with a stainless steel tray shall be provided. It shall be vented internally and the door sealed to prevent moisture and road dirt from entering.

EXTERIOR LIGHTS: All exterior lights to be LED. Headlights shall be the chassis manufacturer standard and wired for daytime running.

Rear stoplights are to be independent of directional and hazard warning signal.

In addition to the normal stoplights provided on the base vehicle an extra LED stoplight shall be provided. This light shall be mounted on the centerline of the vehicle above the rear window and shall be wired to operate in conjunction with the normal stoplights.

Red rear reflectors shall be provided. An additional four (4) reflectors two on each side of the vehicle, amber front and red rear, shall be provided.

LED mid-ship directional signals wired to operate with front directional signals shall be provided.

A rear license plate light shall be provided.

INTERIOR LIGHTS

One overhead entrance light together with the step well lights shall provide no less than two foot candles of illumination on the entrance step tread with the door open. Outside lights shall provide at least one (1) foot candle of illumination on the street surface within 3 feet of the step tread outer edge.

Overhead entrance and step well lights shall be wired to and be automatically activated by a door-controlled switch. This circuit shall be on with the key in the run or accessories position.

All interior passenger compartment lights shall be LED.

Red location indicator lights shall be provided above all emergency exits.

AUDIBLE ALARMS: A 12-volt dual horn shall be situated beneath the front end of the vehicle, protected from wheel wash. A 97 db back up alarm shall be provided that is clearly audible outside of the vehicle when the transmission is in reverse. Vendor to supply description, warranty information and literature with bid.

ELECTRICAL FUSES/CIRCUIT BREAKERS: All fuses and/or circuit breakers other than the chassis OEM's shall be placed in single or multiple blocks, easily accessible from inside of the vehicle so that the driver can change fuses or reset the circuit breakers. Wiring shall meet applicable SAE and ANSI standards.

ENGINE:

The engine shall be a 5.4-liter minimum 6.0 maximum, V-8 gasoline engine; optional 6.8 liter V10 gasoline or optional 6.6 liter; optional diesel engine. Engine shall be equipped with diagnostic connectors that can be easily accessed. The engine shall be furnished with a large capacity full flow oil filter that is easily accessible for replacement. The internal engine compartment cover shall be secured with quick release fasteners. No gaps or holes in the finished compartment seal shall be accepted.

The engine shall be equipped with a high idle system that is intended to maintain battery charging under heavy demand and maintain air conditioning capacity when the vehicle is stationary. With transmission in park, a driver-controlled switch shall be capable of increasing engine idle to the OEM recommended rpm. The fast idle will automatically disengage when the vehicle is placed in forward or reverse gears, or when vehicle brakes are applied.

AIR FILTER:

The air filter is to be a paper type large enough to meet the engine requirements in all weather condition.

EXHAUST SYSTEM:

The muffler shall be low exterior noise type and mounted behind the rear axle. A minimum of two (2) heavy duty exhaust hangers are required from the rear axle to the rear extension of the vehicle. Hangers shall be bolted to the chassis or understructure, not welded.

COOLING SYSTEM:

The cooling system shall have sufficient capacity to provide satisfactory cooling at 115 degrees ambient at sea level. It shall be equipped with an overflow tank such that the coolant expelled is captured and restored to the cooling system.

TRANSMISSION:

The transmission shall be a four-speed overdrive, with increased cooling capacity to match the GVWR of the bus. The vehicle shall be furnished with separate transmission oil cooler.

BUMPER:

The rear bumper shall be a minimum 10-gauge 7” wide steel step style bumper with non-skid surface. Bumpers shall be fastened directly to the chassis frame to allow shock from impact to be transmitted directly to the chassis frame.

FLOOR COVERING:

Floor covering shall be transit grade non-slip flooring sprayed on poly, rubber. The driver’s area shall be covered with Insulated rubber matting. The vestibule shall be covered with non-slip flooring with a 3” wide contrasting color standee line.

WINDOWS:

All windows must meet State and Federal safety regulations. Passenger windows shall be Transit type T sliders. Aluminum sash is to be powder coated flat black. Glass to meet FMVSS 217 with maximum tint. Four egress windows to be provided, two (2) per side.

Driver window shall be roll down in entrance door.

SUN VISOR:

Two visors will be installed, one per side. They must be adjustable.

PAINT & GRAPHICS:

The entire exterior body surface shall be completely sealed, cleaned and primed as necessary prior to final finish. The final finish paint shall meet all State and Federal health and safety regulations. Paint color will be gloss white.

FRONT PASSENGER DOOR:

A driver operated 2-leaf outward opening passenger access door shall be located to the front on the right hand side of the vehicle. Dimensions shall be:

Overall Clear Height	72” minimum
Overall Clear Width	37” minimum
Step to Ground	12” maximum

The doors shall be fully glazed with single piece glass allowing the driver an adequate view of the curbside area outside the door. Brushes or other appropriate seals shall be fitted to the bottom of the door panels to assist in sealing.

The door operating mechanism shall be all electric gear driven and located in a panel above the door. An exterior door key shall be provided. A switch on the driver's console shall operate the door. Grease fittings shall be installed on the door cam arms on top of the hex shaft on door leaves. Door must have an emergency release in case electric is not properly working.

WHEELCHAIR ACCESS:

The vehicle is to be a low floor configuration and it shall have a powered ramp that can be deployed at the front passenger door to allow wheelchair access. The ramp shall be a minimum of 32" wide and shall provide an ADA approved slope. The ramp shall be power operated and shall provide a minimum load capacity of 800 pounds. It shall be equipped with an interlock to prevent the vehicle from moving while the ramp is deployed, and a means to extend, and retract the ramp in the event of power failure.

Two sets of high quality, self-retracting, four point, flush mounted, floor support wheelchair securement restraint systems with shoulder harness are to be provided. Additional securement points for wider and longer chairs shall be provided for each wheelchair location. A storage bag shall be provided for each set of restraints.

WINDSHIELD WIPERS & WASHERS:

Two speed heavy-duty electric wipers shall be provided, one each side with a single control. Wiper control shall provide for variable speed control.

Wiper arms shall be bottom mounted/parallelogram type. Arms will be a minimum of 24' long and blades shall be a minimum of 21" long.

Washer shall be electric pump with a minimum one (1) gallon washer reservoir supplying nozzles located on the wiper arms.

DRIVER'S SEAT:

Driver's seat shall be a high back with lumbar support, without an armrest. Seat is to be covered with a durable covering, for example, Level 3.5 vinyl seat fabric, or equivalent. **Slide seat adjuster must have maximum travel to accommodate a wide range of driver sizes.**

PASSENGER SEATS:

Passenger seats shall have a durable covering, for example, level 3.5 vinyl on all seats. Seats are to have grab rails on aisle side only, with aisle side only armrest provided. Minimum seating capacity shall be seven (7) passengers and four (4) wheelchairs or eleven seated (11) passengers and three (3) wheelchairs, plus 1 driver. All seats must be equipped with frame mounted retractable seat belt for each passenger (stationary and foldaway seats). Retractors must be below seat not at buckle location to accommodate child seats.

Seat dimensions are as follows:

Width per passenger	18 Inches
Height of seat cushion	18 inches above floor
Depth of seat	17 inches maximum
Height of seat back	22 inches maximum
Hip to Knee Room	27 inches minimum
Aisle Width	14 inches minimum.

Seat and seating shall comply with the following FMVSS Standards:

207	Seating Systems
209 & 210	Seat Belt Assemblies & anchorage

EXTERIOR MIRRORS:

Mirrors are to be dual with a flat and convex surface in each. They shall be heated and remote controlled for easy driver adjustment. Exterior shall be black powder coat finish.

INTERIOR MIRROR:

The interior mirror shall be a 6" x 9" convex mirror mounted to provide driver with viewing of the entire passenger compartment.

PASSENGER ASSISTS:

All stanchions, overhead grab rails and modesty panels shall be Stainless steel. Stanchions shall be fitted floor to ceiling per the pre build internal layout. Overhead grab rails shall be fitted horizontally from the roof supports. Modesty panel assemblies shall be fitted behind entrance doorstep.

MODESTY PANELS AND DRIVER'S BARRIER

Modesty panel and driver's barrier shall be supplied.

AIR CONDITIONING:

The air conditioner shall use 134-A refrigerant. Separate systems are required for the driver and passenger. The system shall be capable of cooling the interior of the vehicle to 72F.

Condenser shall have a minimum rating of 67,000 BTU/hr. The condenser shall have a minimum of three fans enclosed within the condenser housing. Each condenser shall have a rubber mud flap mounted fore and aft of the condenser.

Evaporator shall be a minimum of 67,000 BTU rating. It shall have a three-speed continuous duty permanently lubricated motor and shall include a blower assembly.

OEM in dash unit shall be provided with a minimum 15,000 BTU rating. The passenger area air conditioning system shall operate separately from the in dash air conditioner. Controls shall be mounted in the driver's control panel and shall include on and off switch with three-speed blower switch and thermostat switch.

Air conditioning circuits shall be protected with manual reset circuit breakers or thermal relays.

HEATER:

The OEM in dash heater shall be supplied.

A 65,000 BTU auxiliary heater shall be mounted in the rear under the rear row of seats with an on/off and blower speed control on the driver's console.

REAR DOOR:

2 Window Rear Door

EMERGENCY EQUIPMENT:

The bus shall be equipped with a minimum 5 lb. ABC rated fire extinguisher and triangular hazard kit.

MISCELLANEOUS:

On site vehicle equipment training in house of 4 total hours.

All testing tools for engine, transmission, ABS brakes, and A/C must be supplied for loading into our lap top computer.

Two (2) complete sets of parts manuals for this specific bus are to be supplied.

Two (2) complete sets of service manuals for this specific bus must be supplied. Manuals must identify all proper maintenance procedures.

Two (2) complete sets of laminated wiring schematics for this specific bus.

One (1) complete service manual for powered ramp for this specific bus.

UNDER BODY PROTECTION:

Under side of floor shall be sprayed with a protective coat. All body substructures shall be coated for corrosion resistance.

WARRANTY

A/C system	Two (2) years/unlimited mileage
Heating system	Two (2) years/unlimited mileage
Engine Assembly	Two (2) years/unlimited mileage
Transmission	Two (2) years/unlimited mileage
Rear Axle	Two (2) years/100,000 miles
Brakes	Two (2) years/50,000 miles
Door system	One (1) year/50,000 miles
Corrosion Structural	Five (5) years/250,000 miles
Body Structural	Two (2) years/unlimited mileage
Starter	Two (2) years/100,000 miles

Proposal by bidder shall include the following:

1. List of customers vehicle with similar specifications
2. Parts delivery time, parts on hand and any extra cost for special delivery.
3. Returned parts policy
4. Additional warranty availability and cost
5. Warranty labor allowance, real time or flat rate
6. Towing reimbursement for warranty repairs
7. Training program for maintenance personnel
8. Contact persons designated for Electrical, Leakage, and Warranty Problems.

Separate bids on these options for this specific bus are to be quoted as follows:

Base Bid Price Options	Price
Electronic destination sign installed (front and curb side)	
Bike Rack for 2 bikes installed	
Switch to operate ADA ramp from drivers seat installed	
Switch to top out air suspension for 30 seconds operated by driver installed	
Retractable seat belts	
Standee line	
Self-locking wheelchair securement stations installed	
Hand straps (four on each side) on the ceiling grab rails	
Ceiling grab rails to be mounted above arm rest on aisle side seats (Location)	
Side skirt mounted A/C condense	
Larger capacity AC unit	
Larger capacity heater unit	
Two-way Radio Prep	
Fare box	
Lower window passenger door	
Faster kneeling option	
Option to open doors without kneeling bus	
270 amp alternator, or dual alternators	
Longer Ramp	
Optional seating and wheelchair capabilities	
Diesel Engine	
Integrated Child Seats	
Optional wheelbase lengths	
Manual ramp	
Roof hatch	

Base Bid Price Options**Price**

- Stainless Steel Wheel Covers installed
- Electronic Destination Sign Installed (front and curb side)
- Bike Rack for 2 bikes Installed
- Switch to operate ADA ramp from drivers seat installed
- Switch to top out air suspension for 30 seconds operated by driver installed
- Retractable Seat Belts
- Standee line
- Self-locking wheelchair securement stations installed
- Hand straps (4 on each side) on the ceiling grab rails
- Ceiling grab rails to be mounted above arm rest on aisle side seats (Location)
- Side skirt mounted A/C condense
- Larger capacity AC unit
- Larger capacity heater unit
- Two-way Radio Prep
- Fare Box
- Lower Window Passenger Door
- Faster Kneeling Option
- Option to open doors without kneeling bus
- 270 amp alternator, or dual alternators
- Longer Ramp
- Optional seating and wheelchair capabilities
- Diesel Engine
- Integrated Child Seats
- Optional wheelbase lengths
- Manual Ramp
- Roof Hatch

