MISSISSIPPI STATE UNIVERSITY

INVITATION TO BID 24-31

VANS, CUTAWAY BUSES, AND HEAVY DUTY BUSES

March 21, 2024

INSTRUCTIONS FOR BIDDERS

Sealed bids will be received in the Office of Procurement & Contracts, Mississippi State University, for the purchase of the items listed herein. **Bids shall be received no later than April 16, 2024 at 2:00 p.m.** according to the directions below.

All bids must be received in the Office of Procurement & Contracts on or before the bid opening time and date listed herein. Delivery of bids must be during normal working hours, 8:00 a.m. to 5:00 p.m. CST, except on weekends and holidays when no delivery is possible. No bids will be accepted after the designated time or date indicated in the bid specifications. It is recommended that proposals be submitted in advance, at least one day prior to the specified date and time to allow for a timely receipt. Delay in mail delivery is not an exception to the receipt of a bid.

Bidders may submit their bids electronically via https://portal.magic.ms.gov/irj/portal (use RFX 3160006500 as your reference number) or via a sealed envelope (the preferred method). Sealed bids should include the bid number on the face of the envelope as well as the bidders' name and address. Bids should be mailed to 245 Barr Avenue, 610 McArthur Hall, Mississippi State, MS 39762. We also request a copy of the bid on a flash drive which can be included with the mailed hard copy. If you choose to submit your bid electronically, the flash drive is not necessary.

Any questions or clarification to the bid specifications or technical specifications must be submitted in writing prior to the bid opening. Such questions must be submitted at least 72 hours prior to the bid opening, unless otherwise stated. Verbal questions will not be entertained. All questions regarding this bid should be directed to Jennifer Mayfield, in the Office of Procurement & Contracts at 662-325-2550, or jmayfield@procurement.msstate.edu. Please include the bid number in all correspondence.

Should the bidder find discrepancies or omissions in the specifications, he/she shall notify MSU at once. MSU will not assume responsibility for any oral instructions, or interpretations of meaning of the specifications or other contract documents to any bidder by any person or persons.

Procurement & Contracts will make all official changes or alterations to anything contained in these specifications. Such changes shall be posted as an addendum that can be found on our webpage: https://www.procurement.msstate.edu/procurement/bids/index.php.

All bids shall be made out on the proposal forms attached hereto and all the attached certificates must be completed and signed in compliance with the provisions of MSU-SMART.

GENERAL TERMS, CONDITIONS, AND SPECIFICATIONS

Bidders must comply with all rules, regulations, and statutes relating to purchasing in the State of Mississippi, in addition to the requirements on this form. General Bid Terms and Conditions can be found here:
https://www.procurement.msstate.edu/procurement/bids/Bid_General_Terms_May_2019_V2.pdf

Any contract with MSU resulting from this Invitation for Bid shall be in substantial compliance with Mississippi State University's Standard Contract Addendum:
https://www.procurement.msstate.edu/contracts/standardaddendum.pdf

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to debarment within the State of Mississippi.

No bidder may withdraw a bid within one hundred and twenty (120) days after the actual date of the bid opening.

MSU-SMART reserves the right to reject all bids or to award each type bus to the lowest responsible, responsive bidder. For the items listed as Options, MSU-SMART reserves the right to award all, some or none of the items listed, whichever is in the best interest of MSU-SMART. **A single award will be given for each vehicle type.**

Upon acceptance of any bid, the successful bidder shall execute a contract, in accordance with the specifications. The contract will be in place through December 31, 2029. It is anticipated that MSU will initially purchase three (3) buses. The contract will become effective as soon as all documentation has been completed & approved by all necessary parties.

MSU-SMART must be notified twenty-four (24) hours in advance of delivery. Delivery arrangements must be made by phone to Tom Perkins, Assistant Director of Transit, 662.325.5204.

- The Bidder agrees that by submitting a successful bid, any transportation agency within the State of Mississippi and Alabama will be permitted to participate in the awarded contract per the same terms and conditions set forth in the contract.
- The Bidder agrees that by submitting a successful bid, Political subdivisions of the State, quasi state agencies, and external procurement units shall be permitted to purchase from awarded contract per the same terms and conditions set forth in the contract.
- The Bidder agrees that by submitting a successful bid, any political subdivisions outside the State will be permitted to participate in the awarded contract per the same terms and conditions set forth in the contract.

- The Bidder agrees that by submitting a successful bid, any agencies of The United States Government will be permitted to participate in the awarded contract per the same terms and conditions set forth in the contract.
- The Bidder agrees that by submitting a successful bid, any other buying organizations (other than The United States Government), not located in The State of Mississippi would qualify to participate in the awarded contract per the same terms and conditions set forth in the contract.
- The Bidder agrees that by submitting a successful bid, any FTA recipient will be permitted to participate in the awarded contract per the same terms and conditions set forth in the contract.

EXTEND TERMS TO OTHER ENTITIES:

Mississippi State University is asking all responding vendors to indicate their willingness to extend the terms of this bid to other public entities in the United States. While this clause in no way commits any other entity to purchase from the awarded contractor, nor does it guarantee that any additional orders will result, it does allow other entities, at their discretion, to make use of MSU's competitive process (provided said process satisfies their own procurement guidelines) and purchase directly from the awarded contractor. All purchases made by other entities shall be understood to be transactions between that entity and the awarded vendor and MSU shall not be responsible for any such purchases.

Sign here to acknowledge the above paragraph: _____

Any price escalations will follow Producer Price Index WPU1413: Truck and Bus Bodies. Please note in your bid when prices might change over the term of the contract.

REFERENCES

References should be provided from recent government contracts of similar transit needs. Provide contact names and phone numbers.

1. GENERAL REQUIREMENTS – LOW FLOOR ADA FULL SIZE VAN

The purpose of this specification is to provide a transit quality lowered floor ramp equipped (side entry) paratransit vehicle with an OEM raised roof and seating for (9) adult ambulatory passengers and (2) wheelchair positions in addition to the driver.

All vehicles delivered in accordance with this specification must meet the necessary requirements of the Americans with Disabilities Act herein referred to as ADA. All vehicles supplied under these specifications shall be in full compliance with Federal Motor Vehicle Safety Standards as established by the Department of Transportation and FTA guidelines.

ALTOONA BUS TESTING REPORT:

- The converted van must have been submitted to the Altoona Bus Test Center for a 4 yr./100,000 mile Surface Transportation and Uniform Relocation Assistance Act (STURAA) test. Testing must have been completed on current body style being converted. A copy of the test report shall be made available upon request.

BODY STRUCTURE:

- Standard van body shall meet all stated specifications. The vehicle shall be reinforced such that the structural of the basic van is not degraded.

OEM VEHICLE FRAME AND BODY:

- Window Van extended body (159" wheelbase) with high roof (VF3L27) with single rear wheels. Vehicle will be unibody construction with front-wheel drive propulsion.
- Engine: 3.6L V-6 DOHC SMPI 24 valve gasoline engine with variable valve control. 24.0-gallon fuel tank.
- Alternator: 220 amp.
- Battery: 800 amp 95 amp hours (Ah) battery with run down protection.
- Transmission: 9-speed electronic sequential shift control automatic transmission with overdrive (948TE). Front wheel drive. 3.86 axle ratio. Brake actuated limited slip differential, ABS,& driveline control.
- Suspension: Touring ride suspension, with Crosswind Assist electronic stability control with anti-roll. Independent front strut suspension, anti-roll bar, coil springs, and gas pressurized shocks. Rigid rear axle with leaf suspension, HD rear anti-roll bar, and gas pressurized shocks.
- Tires/Wheels: (4) LT225/75R16E BSW AS tires, with (4) 16" X 6.0" Aluminum wheels. An underbody- mounted full-size spare with steel wheel shall also be provided.
- Radio: AM/FM/Satellite, clock, external memory control, 4 speakers, voice activation, Bluetooth streaming audio, with radio steering wheel controls. Bluetooth wireless phone connectivity, 4G LTE Wi-Fi Hot Spot internet access.

- Power outlets: (2) 12V DC power outlet, with (1) 12V rear power outlet.
- Camera: Rear camera.
- Windows: Power front windows and rear fixed rear windows with deep tint. Driver and passenger 1-touch down windows.
- Mirrors: Power Folding/Heated mirrors.
- Premium Appearance Group. Add option.
- Dimensions: Overall exterior length 250.6", exterior height 102.5", and exterior width 80.3".
- Driver/Front Passenger Seating: Bucket front seats with fixed headrest restraints. Driver armrest, and 4-way adjustable driver seat and passenger seat. Cloth faced front seats with vinyl back material.
- Wheelbase: 159"
- GVWR: Overall GVWR 9,350#, with 4,629# front GAWR and 5,291# rear GAWR. This vehicle as converted shall not exceed the OEM chassis GVWR when fully loaded.
- Optional: Adaptive Cruise Control w/Stop & Go

DOORS:

- Vehicle must have a driver-operated power bus style entry door system with tinted glass included rear of the curbside B pillar. The bus style entry doorway shall provide a minimum 32" clear entry width and 72 ½" clear entry height. There shall be no steps to enter the vehicle and the floor shall be a maximum of 12.5" from the ground.
- The left and right vertical sides of the doorway shall be cut and fit to match the contour of the chassis body.
  No metal edge should extend outward from the contour of the chassis body more than 2". A light that automatically illuminates when the doorway is opened shall be Included in accordance with ADA requirements.

HANDRAIL:

- A left side handrail at the front passenger door shall be provided. Cross-sectional diameter of handrail shall be between 1 ¼" and 1½".

INTERIOR HEADROOM DIMENSIONS:

- Entry door clearance – 72 ½"
- Headroom lowered floor – 81 ½"
- Headroom rear section – 75"

INTERIOR LIGHTING:

- Lighting shall be included that provides not less than two foot-candles of illumination at the entrance area. This system shall illuminate automatically when the vehicle

passenger entry door is opened. All accessory vehicle lighting shall conform to ADA 49 CFR, part 38, subpart B, subsection 38.31.

MOBILITY AID RAMP:

- A manually operated wheelchair ramp shall be mounted in the passenger entrance door opening and shall swing inward to stow, allowing ambulatory passenger ingress and egress. When deployed, the ramp shall have a minimum clear unobstructed platform width of 32" and a slope meeting the requirements of ADA, 49 CFR. The ramp surface shall be continuous and made skid resistant through powder coating with a rated capacity of 1,000 lbs. It shall have no protrusions from the surface greater than ¼" and shall accommodate both four-wheel and three-wheel mobility aids. Each side of the ramp shall have a protective barrier at least two (2) inches high to prevent mobility aids from rolling off the ramp edge. The installed ramp shall not obstruct the view of the driver through any vehicle window.

CONTROL INTERLOCK:

- The curbside accessible power entry door shall be interlocked with the vehicle transmission to ensure the vehicle cannot be shifted out of park when the curbside accessible power entry door is open.

RUNNING BOARDS:

- Vehicle must have heavy-duty cab-length running boards installed at the driver door and co-pilot door. Steps shall be constructed of galvanized one inch square 11-gauge steel tubing or angle iron and have cross center braces. The steps surface shall be made of expanded galvanized steel to allow debris and water run-off. The steps shall be properly braced and secured to the van.

INTERIOR:

- All interior panels, materials, and treatments shall meet all FMVSS 302 requirements. Interior walls in passenger compartment shall be molded ABS plastic. Closed cell foam insulation shall be added to van walls and ceiling for sound deadening and insulative purposes.

LOWERED FLOOR ASSEMBLY:

- The lowered subfloor structure shall consist of 2" x 2" tubular steel covered with 1/8" plate steel, providing 69" floor width at B-pillar, and an overall lowered floor length of 96". The entire surface of exterior lowered floor shall have a rust inhibiting coating, such as an epoxy primer base, applied to cover all welded areas. A ¾" exterior grade plywood sub-floor shall be affixed to the lowered floor steel skin.

REAR SECTION FLOORING:

- Interlocking aluminum floor planks will be provided in rear section of van. This floor system provides an ultra-durable and corrosion resistant platform for seat attachment and provide for adjustable seating.

SLIP-RESISTANT FLOOR COVERING:

- The floor covering shall be wall-to-wall slip-resistant, transit quality vinyl flooring securely bonded to the plywood sub-floor, with a minimum thickness of 2.2 millimeters (gray). Seams must be heat welded to provide a permanent waterproof seal against water penetration leading to premature sub-floor failure or curling. The floor must be installed according to manufacturer's directions using proper tools, accessories and adhesives.

WHEELCHAIR SECUREMENT:

- Vehicle will be equipped with up to two (2) forward-facing wheelchair securement locations, with a minimum clear floor area of 30" wide by 48" long. Each vehicle shall be equipped with two securement systems. The system is an all-in-one securement station that provides push-button operation with visual and audible feedback. All attachment hardware and anchorages shall meet or exceed the 30 mph/20 g Impact Test criteria per SAE J2249, 36 CFR Standards, as amended.

WHEELCHAIR STATION ASSIST:

- One automatic winch system will be mounted on the streetside wall directly across from the wheelchair ramp. This system provides operators full control of the passenger boarding and de-boarding process.

SAFETY BACK-UP EQUIPMENT:

- An Audible Back-up Warning Device shall be included that is electrically operated and produces an intermittent sound when the vehicle is shifted into reverse to warn others during vehicle movement.

ELECTRICAL WIRING:

- Vehicle wiring shall run inside the body, located in a protected area. Any wiring that is exposed to the elements shall be non-metallic loomed and securely clipped every 18" for maximum protection. Clips shall be rubber or plastic coated to prevent their cutting thru the wiring insulation. Protective grommets shall be installed at all points where wiring penetrates metal and other materials. Circuit breakers and electrical panels shall be in easily accessible location.

AUXILIARY AIR CONDITIONING AND HEATING:

- Vehicle shall be equipped with a auxiliary tie-in rear heat/air conditioning system in addition to the OEM front and rear heating/air conditioning system. The auxiliary rear heat/air system shall be mounted above the driver/front passenger in an enclosed housing. Ducting shall be provided along the ceiling within the passenger area. The auxiliary system shall be separately controlled from the OEM heat/air conditioning system providing 50,000 Btu cooling performance and includes a separate engine-mounted compressor.

PASSENGER SEATS:

- Bench style aftermarket seating shall be provided for ambulatory passengers. Seating shall be GO-ES style seat with 202A headrest, offering a 17 ½" seat width, integrated 3-point occupant restraint belt system, and armrests. All passenger seating shall comply with FMVSS 207/210 and 202A. All seats shall be covered with level 5 transit grade docket 90 vinyl (gray) and additional seat bottom cushion. Vehicle will also be equipped with Seat Link system that logs time/date and GPS coordinates of seat activity.

PRIORITY SEATING AND WHEELCHAIR SECUREMENT DECALS:

- Each vehicle shall contain a sign which indicates that the seats in the front of the vehicle are priority seats for people with disabilities. In addition, each wheelchair securement location shall have designated it as such. Decal shall be in compliance with 49 CFR, part 38 (ADA), subsection 38.27.

CONVERSION WARRANTY

- The vehicle shall be warranted against defects in material and workmanship for a period of not less than thirty-six (36) or thirty-six thousand (36,000) miles, whichever occurs first.

LOW FLOOR ADA FULL SIZE VAN - BID PROPOSAL FORM

The undersigned, having carefully examined the appropriate specifications does hereby agree to furnish and deliver the following items at the price(s) indicated:

SCHEDULE OF ITEMS	UNIT PRICE DELIVERED	TOTAL PRICE
Price for Low Floor ADA Full Size Van as specified		
OPTIONS TO BE PURCHASED		
Base Coat Clear Coat Paint		
19” Seats In Lieu Of Standard 17.5” Seats		
Additional Seated Passenger		
Remove Seated Passenger (Credit)		
Remove Winch System (Credit)		
4 Camera Video Recording System		
6 Camera Video Recording System		
8 Camera Video Recording System		
Upgrade To Rooftop Ac System		
Delete Tie Down Position (Credit)		
Delete Seat Link (Credit)		
Basic Vinyl Lettering – Agency Name And Phone Number		
¼ Vehicle Vinyl Wrap		
½ Vehicle Vinyl Wrap		
Full Vehicle Wrap		

Provide information requested, affix signature and return this page with your proposal:

Name of Firm: _____

Complete Address: _____

_____

Telephone Number: _____

E-mail Address: _____

Authorized Signature: _____

Printed Name: _____

Title: _____ -

2. GENERAL REQUIREMENTS – HIGH FLOOR ADA FULL SIZE VAN

CHASSIS

GENERAL

- Vehicle Chassis shall meet all applicable SAE and FMVSS requirements.
- Manufacturer/Vehicle Upfitter shall attest that they are certified by Chassis Manufacturer's QVM Program at the time they are supplying a response.
- Manufacturer/Vehicle Upfitter shall attest that they are certified by the Federal Transit Administration's TVM Program at the time they are supplying a response.
- Vehicle Shall have Dual Rear Wheels

DIMENSIONS

- Wheelbase- 148"
- Overall, Height- 107.7"
- Overall length- 263.9"
- Inside height- 77"

GROSS VEHICLE WEIGHT RATING (GVWR)

- GVWR of 10,000 min

ELECTRICAL

- Wiring shall be TXL insulated. All wiring shall be color coded for identification. All wiring should run inside the body in a protected area. Any wiring exposed to the elements shall be in nonmetallic loom and securely clipped for maximum protection. Clips shall be rubber or plastic coated to prevent their cutting through the wire insulation.
- All accessories and electrical equipment expect head, parking lights, emergency flashers, and wheelchair lift shall be wired through the vehicle ignition switch so s to be operative only with the switch in ON or ACCESSORY position.
- An OEM backup alarm shall be provided.
- Power wire to lift shall be securely clamped and protected in-line circuit breaker with manual reset provided to lift.

BODY

GENERAL

- Unibody raised roof van shall meet all stated specifications. The vehicle shall meet the structural integrity of the stated van that is not degraded.
- Vehicles shall meet all applicable requirements of the American with Disabilities Act (ADA) as set forth in 49 CFR 37 and 38, issued 9/6/91; and 49 CFR 571, FMVSS 403 and 404, issued 12/27/02 with respect to the body structure.

RAISED ROOF

- The raised roof shall be part of a unitized body constructed OEM vehicle.
- Minimum of 77" center aisle height.
- The raised roof shall be the Ford High roof option.

PASSENGER ENTRANCE DOOR

- The passenger sliding door shall be replaced with a bifold transit door.
- The bus door should be interlocked so that the door cannot be opened if the vehicle is not in park.
- The bus door opening should be a 36"x 76" opening and minimum 84" at second step.

LIFT DOOR

- The lift door shall be curbside of the vehicle rear of the rear axle.
- The lift doors shall be dual manual swing-out doors with a clear opening of 44"x74"

WINDOWS

- Standard OEM power standard windows in the front doors shall be retained. The windshield shall be OEM safety tinted type.
- An OEM wagon Van Chassis with Full OEM Windows shall be provided.

BUMPERS

- OEM front and rear bumpers shall be provided.

EXTERIOR LIGHTING

- Exterior lighting shall meet all state and federal regulations.
- Lighting requirements for the passenger entry and lift door areas must meet ADA requirements.

EXTERIOR MIRRORS

- OEM dual power, and black matte finish.
- OEM mirrors with manual convex shall be provided.

FINISHING PROCEDURES

- All bolts shall be treated to prevent corrosion.
- All screws shall be fastened securely into panels or the vehicle so as not to jar loose.
- All bare metal components shall be prepped with acrylic enamel paint to match the vehicle.

RUNNING BOARDS

- Running boards shall be provided for the driver and co-pilot. Running boards shall be a minimum of 8" deep and provide a non-slip surface.

INTERIOR

- Interior finish shall be completed in a highly professional manner. Interior color shall be OEM with coordinating colors for any additions.
- All sharp edges, sharp corners, and/or protrusions shall be eliminated for safety reasons.
- Vehicles shall meet all applicable requirements of the ADA as set forth in 49 CFR 37 and 38, issued 9/16/91; and 49 CFR 571; all applicable FMVSS requirements, including but not limited to 208, 302, 403 and 404 with respect to the vehicle.
- The chassis shall be an OEM wagon chassis with OEM interior.

FLOORING

- ¾" plywood sub floor with vinyl nonslip Transit Grade covering shall be provided.

SEATING

- Driver's seat shall be OEM deluxe high back, fully padded, contoured bucket type of heavy-duty construction with arm rest. The driver's seat shall be easily adjusted forward and backward without the use of tools. OEM unibelt restraint system is required. Vinyl upholstery shall be complimentary to the exterior of the vehicle and coordinate with the passenger seats.
- All seating must be in compliance with the requirements of FMVSS 208 and all other applicable FMVSS requirements. Bench seating shall be provided in single or double passenger sizes depending on seating configurations shown in the attached drawings. Forward facing foldaway seats (single or double) shall be provided over wheelchair stations. A combination of single, double, and foldaway seats shall be used. Refer to the attached floorplans for seat layout.

- All seats shall be heavy-duty construction with 1” 16 gauge reinforced tubular steel frames. All metal surfaces shall be chemically cleaned, iron phosphate, painted and baked to provide rugged, long lasting, rust resistant surfaces.
- All seat backs should be a minimum of 16 gauge 1”x16” steel straps, welded to the seat frame. All seat bottoms shall use a flexolator suspension system for even support.
- Upholstery material shall be Freedman Level 1, transit vinyl. Seats shall be color-keyed to the vehicle’s interior panels and exterior color. Foam padding shall be high density (4.5 pcf) non-deformable foam. Load bearing values excess of 45ILD.
- Seating arrangements shall be spaced between rows to best fit passenger flow.
- All seating shall meet or exceed all applicable FMVSS requirements, including, but not limited to FMVSS 302, 207, and 208

PASSENGER RESTRAINT SYSTEM

- All seating comes complete with integrated 3 pt. seatbelts to be compliant with FMVSS 208 and all other applicable FMVSS regulations.

INTERIOR LIGHTING

- The interior of the vehicle shall be adequately illuminated. Overhead lighting fixtures and courtesy lights shall be arranged in such a manner to provide lighting intensity at a reading level.
- Adequate light shall be provided for the instrument panel, with intensity controlled by an instrument panel switch.
- All door lights and the passenger entry door shall illuminate automatically when doors are open.

INSTRUMENT PANEL, DASH, AND OTHER CONTROLS

- Dash shall coordinate with the interior trim color. Glove box with light and lock to be provided (OEM)
- Instrument panel and dash shall be equipped with the following OEM instruments, gauges, and controls. All controls and switches shall be within easy reach of the driver.
    - Speedometer with odometer and trip odometer
    - Oil pressure gauge
    - Voltmeter
    - Engine coolant temperature gauge
    - Fuel gauge
    - Upper beam head lamp indicator
    - Dual-note horn
    - Directional signals (light)
    - Parking brake on (light)
    - Headlight switch
    - Inside hood release

    - Controls for heater, defroster, and air conditioning
    - Standard OEN AM/FM radio w/digital clock & speakers
    - Windshield wiper and washer
    - Emergency flashers
- OEM driver's sun visor to be provided.
- OEM driver's side air bag to be provided in steering wheel.
- OEM front passenger air bag to be provided.

HEATING AND COOLING

- Front heater and defroster shall be OEM with the maximum BTU rating available.
- The Rear Air Conditioning System Shall be the Largest OEM AC available at time of order.

EMERGENCY AND SAFETY EQUIPMENT

- Tire Changing Tools and Jack shall be OEM and mounted at the back corner of the van. The wheel wrench and appropriate tools shall be located inside the front passenger step well compartment.
- Standard OEM Driver and Front Passenger Air bags shall be retained.
- Safety Kit shall include Seat Belt Cutter, First Aid Kit, Triangles and Body Fluid Clean Up Kit.

WHEELCHAIR/MOBILITY AID LIFT SYSTEM

GENERAL

- Vehicles shall meet all applicable requirements of the Americans with Disabilities Act (ADA) as set forth in 49 CFR 37 and 38, issued 9/6/91; and 49 CFR 571, FMVSS 403 and 404, issued 12/27/02 with respect to mobility aid accessibility. The contractor (vendor) is solely responsible for any additions, deletions, omissions, or interpretations of ADA, as it relates to the construction of said contract vehicles.

WHEELCHAIR/MOBILITY AID STATIONS

- Wheelchair/mobility aid stations(s) are the space inside the vehicle for transporting persons in wheelchair/mobility aid devices and are to be provided on vehicles having wheelchair/mobility aid lifts. Each wheelchair/mobility aid device station shall consist of a usable floor area where a passenger in a wheelchair/mobility aid device may be positioned and where a wheelchair/mobility aid system shall be installed.
- All wheelchair/mobility aid stations shall be designed to secure wheelchair/mobility aid devices in a forward-facing position.
- The stations shall not be any less than the minimum length of 48" required in accordance with ADA.

- No wheelchair/mobility aid station(s) obstructions shall hinder a wheelchair/mobility aid device from being rolled into place.

WHEELCHAIR/MOBILITY AID SECUREMENT SYSTEM

- The four-point track/belt tie down shall be provided at each wheelchair/mobility aid device position. Securement systems and their attachments to the vehicles, shall withstand a force in a forward longitudinal direction of 2,500 lbs. per a securement leg and a minimum of 5,000lbs. for each aid device. Movement of an occupied wheelchair/mobility aid device shall be no more than 2" in any direction.
- This system shall be composed of the following components: Four (4) separate belts and Four (4) lengths of track with all necessary buckles, hardware fittings and other parts to make it a complete wheelchair/mobility aid device securement system..
- Each wheelchair/mobility aid station shall have a separate securement for each set of tie downs. They are not to share the same track.
- The floor tracks for the wheelchair/mobility aid stations shall sit on top of the floor to ensure that no debris obstructs the securement for the wheelchair/mobility aid station.
- During installation of the wheelchair/mobility aid securement system care shall be taken to avoid damage to any of the vehicle's components. Particular attention should be taken to avoid damage to the fuel tank during and after installation of the L-Track. It should be noted that the method of installing the track is the sole responsibility of the vendor and he may use whatever method will obtain the required results. By submitting and signing this bid the vendor hereby certifies that the wheelchair/mobility aid device securement system has met all applicable Federal Motor Vehicle Safety Standards and has been mounted in accordance with the manufacturer's specifications.

WHEELCHAIR/MOBILITY AID DEVICE LIFT

- The wheelchair/mobility aid lift system shall be a system which permits persons confined to wheelchair/mobility aid device to enter and leave the vehicle while in a wheelchair/mobility aid device without difficulty by means of a vertical lifting platform and which also provides for the safe transportation of persons in a wheelchair/mobility aid device inside the vehicle.
- The lift operation and installation must meet ADA, FMVSS 403 and 404 requirements.
- Lift shall require no independent power source. The lift shall operate on the vehicle's existing heavy duty electrical system.
- Placement of the lift or the method of attaching shall not significantly diminish the structural integrity of the vehicle or cause a hazardous unbalancing of the vehicle either by its weight when the vehicle is moving or by its weight and load when the vehicle is stopped, subject to the vehicle manufacture's recommendations.
- All protrusions or moving parts of the lift mechanism which could snag clothing shall have a guard or shield to protect passengers and/or operator.
- An operational manual shall be provided.

LIFT PLATFORM

- The platform to be provided shall be the widest available for the manufacturer with a minimum clear usable width of 34” and a minimum clear usable length of 51”.
- The lift platform shall also be in compliance with ADA and FMVSS 403 and 404 requirements.
- The weight rating for the wheelchair lift shall be a minimum of 800lbs.
- Platforms shall be capable of being raised and lowered with no sudden acceleration, deceleration or jerking motion.
- A handrail restraint, a belt between the two handrails, shall be provided to offer extra security for passengers in wheelchair/mobility aid devices as they are lifted on the platform.

LIFT CONTROLS, INTERLOCK, AND BACKUP SYSTEMS

- Operating controls shall be of heavy-duty commercial type and shall be designed for hand-held operation with a long cord extension to allow operation of the lift by the operator standing outside the vehicle at a position behind or at the side of the lift platform. A method for storing and securing the controls when not in use shall be provided.
- The lift operation and interlock shall be in compliance with ADA and FMVSS 403 and 404 requirements.
- The controls shall be designed to be used safely without adverse effects to the operator or to the controls in all weather conditions.
- Lift controls shall allow for instant direction reversal at any point in the cycle.
- The vehicle shall have an interlock system that will not allow the vehicle to be shifted out of park if the lift door is open. As an added feature, it also will not allow the vehicle to be shifted out of park anytime the parking (emergency) brake is applied.
- The interlock system shall make the lift controls inoperative unless the vehicle’s emergency brake is active.
- The interlock system shall only allow the lift to be operational when the vehicle is in “Park”, the “parking (emergency) brake is engaged, the “ignition” is on, and the “lift door” is open.
- In addition to the normal operating power, a manual backup system for unloading wheelchair/mobility aid passengers and returning the lift to the stowed position shall be provided in the event of electrical failure. The backup system shall be mounted on the interior of the vehicle, close to the lift, and in a location that will not interfere with passenger loading and unloading.

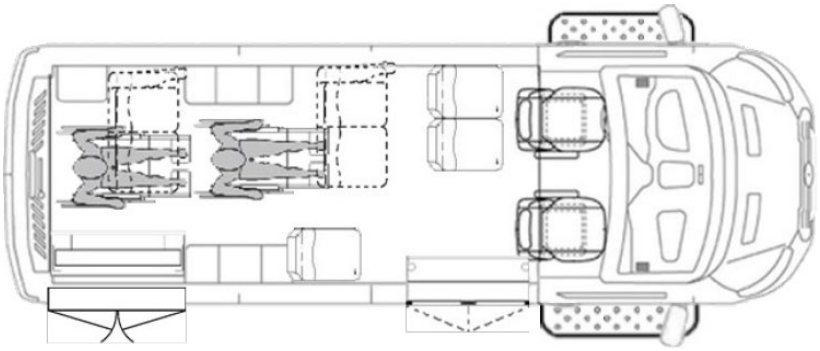
OPTIONAL EQUIPMENT

100% ELECTRIC DRIVETRAIN OPTION

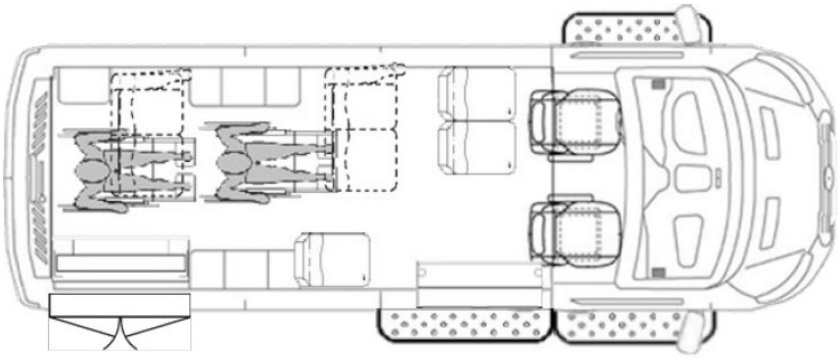
- Option to remove Gas burning engine and include 100% Electric Drivetrain.
- When 100% Electric Option is chosen Entry door shall be manual sliding OEM side entrance. The Bi-Fold Transit Entry Door shall be removed to keep OEM Battery Systems intact. Running board shall be added under sliding OEM entrance door for easy passenger entrance.
- When 100% Electric Option is chosen the base van shall be a Single Rear Wheel High Roof Van Chassis with 9,500 Lbs. GVWR.
- When 100% Electric Option is chosen the floor shall be aluminum with non-skid Transit Grade Floor Covering.
- When 100% Electric Option is chosen the interior shall be an aftermarket ABS interior.
- When 100% Electric Option is chosen the Rear AC shall be aftermarket.

FLOORPLANS

BASE FLOORPLAN



100% ELECTRIC FLOORPLAN



HIGH FLOOR ADA FULL SIZE VAN - BID PROPOSAL FORM

The undersigned, having carefully examined the appropriate specifications does hereby agree to furnish and deliver the following items at the price(s) indicated:

SCHEDULE OF ITEMS	UNIT PRICE DELIVERED	TOTAL PRICE
Price for High Floor ADA Full Size Van as specified		
OPTIONS TO BE PURCHASED		
100% Electric Vehicle Option – Per Specifications		
Base Coat Clear Coat Paint		
Additional Seated Passenger		
Remove Seated Passenger (Credit)		
Move Lift To Rear Doors/Delete Curbside Lift Doors (Credit)		
Oem Sliding Entry/Delete Bi-Fold Entry Doors (Credit)		
4 Camera Video Recording System		
6 Camera Video Recording System		
8 Camera Video Recording System		
Upgrade To Rooftop Ac System		
Medium Roof Cargo Van (Credit)		
General Contractor Package Upfit For Cargo Van		
V25 Fire Suppression System		
3 Position Bikerack		
2 Position Bikerack		
Basic Vinyl Lettering – Agency Name And Phone Number		
¼ Vehicle Vinyl Wrap		

OPTIONS TO BE PURCHASED	UNIT PRICE DELIVERED	TOTAL COST
½ Vehicle Vinyl Wrap		
Full Vehicle Wrap		

Provide information requested, affix signature and return this page with your proposal:

Name of Firm: _____

Complete Address: _____

_____

Telephone Number: _____

E-mail Address: _____

Authorized Signature: _____

Printed Name: _____

Title: _____

3. GENERAL REQUIREMENTS – LOW FLOOR CUTAWAY BUS

SCOPE

- This specification describes a steel cage, low floor, commercial bus designed for use in Tour, Charter, Shuttle, and other Commercial or Transit applications that meets all the requirements of ADA and the FMVSS Safety Standards in effect at the time of manufacture.
- The proposed bus must have been tested at the Federal Bus Testing center at Altoona, PA in the 5 year/150,000-mile category.
- The bus provided must be built on a Cut-Away (GMT 610) Chassis of the current model year with a Driver position only. Other chassis' will not be accepted.

PURPOSE

- The purpose of these specifications is to describe a Mid-size bus suitable for transporting both ambulatory and non-ambulatory passengers in both rural and urban areas.
- This vehicle is not a School Bus and is not intended to transport children to or from school.
- The bus will be of a "Steel Cage" type construction with FRP (Fiber Reinforced Plastic) Composite skin laminated to a moisture resistant (less than 1%) substrate (not Luan) attached to the steel cage with urethane adhesive. The roof will consist of a single piece FRP skin laminated to the substrate and roof steel with urethane adhesive. The bus body is constructed of welded walls, sub floors, roof framing, and rear steel structure which are bonded and bolted together, forming an integrated steel cage around the passenger area.

CLASSIFICATION: MID-SIZE LOW FLOOR BUS

- This specification is for a Mid-Size Low Floor Commercial bus of the "Body on-Chassis" type.
- The bus shall meet all requirements of the Americans with Disabilities Act even though the specific items may not be listed in detail in this specification.
- The bus shall be of the Low Floor type with OEM suspension both front and rear.

EXCEPTIONS TO SPECIFICATIONS

- Manufacturers of similar equipment of the type specified may submit requests for approved equals provided that the bus is built on the identical chassis specified and that they have produced this model in commercial quantities. Manufacturers of similar buses must be able to provide a list of current users of the proposed bus as references.
- Manufacturers requesting any deviation from these specifications must provide actual test results supporting their claim.
- Such requests must be accompanied by test reports and other evidence showing that the proposed product meets or exceeds the requirements of these specifications.

- Any tests submitted to support a request for approved equal must have been performed by an Independent Professional Engineering Company and certified by a Licensed Professional Engineer.

ITEMS NOT ELIGIBLE FOR EXCEPTIONS

- The passenger door must be a dual panel, electrically operated and have two windows. The windows shall be a minimum of 14.5" wide and 69" high.
- The entry door much be on a 12-degree angle to assist with random access for wheelchair loading and unloading.
- The entry door must be forward to assist in seeing the passenger entry
- The Exterior skin must be FRP (Fiber Reinforced Plastic) Composite skin Laminated to a moisture resistant substrate (less than 1% absorption) attached to the steel cage with urethane adhesive. No Luan is permitted in the sidewalls or rear end wall of the bus. Laminated constructions with Luan or other wood materials are not allowed as they can lead to corrosion of the skin due to the wicking of moisture into the wood material.
- The steel cage must be Electro-coated (Cathodic E-coating to 1500-hour salt spray test) after fabrication, prior to final assembly.
- The steel structure of the walls must extend below the floor level and continue to the lowest part of the bus. Separate skirting that only serves a decorative purpose is not allowed; every part of the sidewall must have the steel cage structure behind the exterior skin.
- The overall width, excluding mirrors, of the bus must be a nominal 96" wide as narrower buses do not allow sufficient space for wheelchair maneuverability.
- Any exceptions approved will be in writing and will be distributed to all prospective bidders and other interested parties. The approval, if granted, shall extend to all bidders and not just to the bidder who made the request.
- Vehicle Manufacturer must carry at least $50,000,000 liability insurance.
- The vehicle must have passed all applicable FMVSS including FMVSS 214 and FMVSS 301 and test results must be submitted with bid proposal.

MATERIALS

- All materials used in conversion of the bus shall be new and unused; returned or reconditioned components will not be accepted. Brand names and part/model numbers of the major components will be listed and must comply with the brands and models specified in these specifications.
- Major components include but are not limited to Seats, Windows, W/C ramps, W/C Tie downs, Air Conditioning/ Heat, Flooring, Floor Covering, Entry Door, and Chassis.

WARRANTY

- The manufacturer of this vehicle will provide a Warranty of 3 year or 50,000 miles parts and labor. The body structure shall be warranted for a period of five (5) years and 100,000 miles.

- Chassis Warranty provided by GM for 3 years or 36,000 miles whichever comes first and 5 years or 60,000 on the drivetrain whichever comes first. Refer to GM manual for complete coverage.
- The major subcomponents, including but not limited to, the Wheelchair.
- Ramp, the Wheelchair Tie Downs, and the optional rear Air Conditioning
- Systems are warranted by the manufacturer of that component. Detailed Warranty coverage shall be provided with each bus. Trans Air conditioning systems are warranted for 3 years and unlimited mileage.
- The Electrical System will be warranted for 3 Years or 50,000 miles parts and labor.

GENERAL INFORMATION

DIMENSIONS

- Exterior Width: 96" maximum excluding mirrors
- Interior Width: 91.5" minimum
- Interior Height: 77" minimum at the rear of bus/85" at the front of bus when measured at center aisle (Rear interior height varies with bus length)
- Exterior Height: 115" maximum excluding roof hatch or roof mounted A/C units
- Rear Overhang: Less than 33% of the overall bus length

BASE MODELS

- 24’ length, 165” wheelbase, 14,200 GVWR
- 26’ length, 191” wheelbase, 14,200 GVWR
- 28’ length, 210” wheelbase, 14,200 GVWR

PASSENBER SEATS AND CAPACITY

- Seating Capacity: 1-23 passengers for gas chassis/1-21 passengers for
- (Passenger weight based on Federal Guidelines)
- Wheelchair Positions: 1-8 (dependent upon wheelbase and seat configuration)
- Seated Knee Room Forward: 27" minimum
- Seated Width per Seat: 17" (wider seats optional)
- Cushion Height above finished floor: 17-1/2" minimum/18-1/2" maximum
- Minimum Aisle: 18" standard (options may affect aisle width)

SPECIFICATIONS

CHASSICS

- Engine: 6.0L Gas
- Base Transmission: Heavy Duty 6-Speed Automatic (MYD) with Auxiliary
- Transmission Cooler
- Horsepower at RPM: 342 at 5,400 (Gas)

- Torque FT/LBS at RPM: 373 at 4,400 (Gas)
- Standard Axle Ratio: 4.10 (Gas)
- Fuel Injection: Electric Fuel Injection (Gas)
- Battery: Heavy Duty 770 CCA & 600 CCA Batteries
- Alternator: 220-Amp (Gas)
- GVWR Standard: 14,200
- GVWR Front Axle: 4,600 on 14,200
- GVWR Rear Axle: 9,600 on 14,200
- Fuel Tank Capacity: 57 Gallons
- Tires: LT225/75RX16E on White Steel Rims
- Dual Rear Wheels
- Brakes: Heavy Duty Disc Brakes with four-wheel anti-lock system
- Park Brake: Internal Rear Disc
- Shuttle Bus Package (Includes): Chrome Appearance Package (Chrome grille with dual composite halogen headlamps), Tilt/Cruise Convenience Package, Soft Mount Donuts (mounting upfit body to chassis), Aux Rear Heat provisions, Stop/Turn Signal Circuits (stop and turn signals to be operated separately), 110-Volt Outlet and USB Port in driver cab.
- Air Bag: Driver Side Only
- Driver Seat: Cloth, High Back, Adjustable Fore and Aft, and Three Point Seat Belts
- Passenger Seat: Omitted
- Mirror: Inside Rearview Day/Night
- Horn: Dual Note Tone
- Air Cleaner: Heavy Duty type with a replaceable element
- Radio: Radio provisions only
- Doors: Driver Door (Passenger Door Omitted)
- Driver Side Sun Visor
- 50 State Emissions
- Power Ports: (2) 12 Volt
- Daytime Running Lights
- Medium Dark Pewter Vinyl Color Scheme
- Black Vinyl Cab Floor Covering with Insulation
- Factory Dash A/C, Defroster, and Heat
- Low Oil Pressure Light
- Full-Flow Oil Filter (Disposable Type)
- High Engine Coolant Temperature
- Power Steering
- Driver Dome Light

BUMPERS

- Bumpers shall be provided at both front and rear. The front bumper shall be the OEM Chrome Bumper. The rear bumper shall be steel and painted black. Optional Rear Bumpers are available.

EXHAUST

- Exhaust system shall be equipped with a heavy duty, corrosion resistant exhaust system which meets or exceeds FMVSS and EPA noise level and exhaust emission (smoke and noxious gas) requirements.
- Exhaust hangers shall be standard equipment and shall be welded to the frame.
- Exhaust U-bolts shall be used in connections with thread orientation must be directed upwards.

SUSPENSION

- Standard OEM Front and Rear Spring Suspension

FLOOR CONSTRUCTION

- Steel sub floor cross members shall be 2" x 2" 14-gauge steel tubing.
- Sides of the sub floors shall be 14-gauge C-Channel that will overlap the 1.5" x 2.5" 16 gauge floor line tubing in the side walls.
- Steel sub floor structure must be isolated from the chassis by means of OEM rubber isolation mounts and bolted through these mounts to the chassis frame rails.
- Except for the 210" wheelbase, the floor decking shall be a 5/8" thick single piece of engineered wood with moisture barrier laminated to upper surface and moisture sealed edges.
- A sealant shall be used in body to floor corners to provide a water-resistant seal as an aid in floor cleaning.
- Ramp area & interior floor will be covered with Altro Storm Grey floor covering.
- The cab floor shall have the OEM insulated floor covering.
- The cab cockpit floor will have a 16-gauge plate welded in place for future fare box installation.

WHEEL HOUSINGS

- Rear wheel housing shall be constructed of 16-gauge (minimum) one-piece steel constructed and adequately reinforced to prevent deflection.
- Ample clearance shall be provided for tires under load and operating on both smooth and rough terrain.
- Black rubber wheel flares will be installed.
- Front wheel housings are to be provided with the chassis cab section.

- Rear mud flaps are standard.
- Underside of wheel housings shall be coated with Poly Urea for corrosion and sound.

CURB SIDE WALL, DRIVER SIDE WALL, AND REAR SIDE WALL

- Wall structure which ends at the floor line is not acceptable and lower skirts that are not an integral part of the side wall are not permitted. Steel structure must extend below the floor level to the lowest point inside wall.
- There is (1) 1-1/2" x 2-1/2" horizontal 16-gauge steel tube at the top forming the edge of wall.
- There is one row of 1-1/2" x 1-1/2" horizontal 16-gauge steel tube below the window line.
- There is one row of 1-1/2" x 2-1/2" horizontal 16-gauge steel tube at the floor level.
- There is one row of 14-gauge C-Channel at the top of the side wall There is one row of 1-1/2" x 1-1/2" horizontal 16 gauge steel tube at the bottom forming the edge of the wall.
- Vertical steel ribs consist of 1-1/2" x 2" 16-gauge steel tubes located at sides of each window.
    - 1-1/2" x 1-1/2" 16-gauge steel tube is welded vertically at the midpoint of each window with a width greater than 24" connecting the horizontal tubes below window and the horizontal tube that is welded at the floor line
    - 1-1/2" x 1-1/2" 16-gauge steel tubes are required at the front of the side wall to form the front and rear of the door opening.
- Rear walls shall have 14-gauge plates with holes to allow the wall to be fastened to the side walls.
- The entire steel structure must be bonded (structural bonding adhesive) and bolted together. Any other method of assembly will not be accepted.
- Exterior wall surface is White FRP Composite laminated to a moisture resistant (less than 1% absorption) substrate (not Luan) attached to the steel cage with urethane adhesive.
- Interior wall surface is Grey FRP composite laminated to a moisture resistant (less than 1% absorption) substrate (not Luan) attached to the steel cage with urethane adhesive. Options to replace Nanocide (Grey or Tan), Auto Cloth (Grey), or Vinyl Soft Touch (Grey)
- Luan used as a substrate is not permitted in the exterior or interior of the of the wall construction. Experience has shown that construction using Luan can lead to moisture wicking into the walls causing corrosion of the exterior skin.

ROOF CONSTRUCTION

- Roof Bows must be 1-1/2" x 1-1/2" 16-gauge tubes bent to the radius of the roof. Traditional roof bows with or without capped top covers are not allowed.
- There shall be (2) Roof Bows welded together at the front of the roof structure.
- All roof cross members shall be a minimum of 16 gauge.

- One row of 1-1/2" x 1-1/2" 16-gauge steel tubing will be installed to form the center longitudinal members front to rear of roof structure.
- (1) 1-1/2" x 1-1/2" 16-gauge tube will be installed at bottom of roof bow on each side of roof structure.
- 6The entire steel structure must be bonded (structural bonding adhesive) and bolted together. Any other method of assembly will not be accepted. The bottom tube of the roof assembly will be bonded and bolted into the rivnuts of the side wall upper C-Channel.
- Exterior roof surface is White FRP (Fiber Reinforced Plastic) Composite laminated to a moisture resistant (less than 1% absorption) substrate (not Luan) attached to the steel cage with urethane adhesive.
- Exterior FRP (Fiber Reinforced Plastic) Composite will be secured to the side walls with the seam being covered by a rain gutter.
- Exterior seams are only allowed at the junction of the front cap and rear cap. Any other seams on the exterior of the roof are not permitted.
- Interior ceiling surface is Grey FRP composite laminated to a moisture resistant (less than 1% absorption) substrate (not Luan) attached to the steel cage with urethane adhesive. Options to replace include Nanocide (Grey or Tan), Auto Cloth (Grey), or Vinyl Soft Touch (Grey)

PASSENGER ENTRY DOOR

- Entry Door shall be a dual panel, swing out type door with two glass windows.
- Door Opening: 35" minimum clear opening with entry assist handles
- Door Windows Dimensions: 14.5" x 69" minimum
- Clear Entry Dimensions: 39" wide by 75" high
- Entry doors shall incorporate gaskets and/or seals to provide a barrier against intrusion by wind, water, and dust around the perimeter. The seal at the center of the door shall be by means of full height overlapping rubber seals and shall include a barrier or sweep at the bottom of both doors.
- Passenger entry door shall function through the use of an electric door mechanism.
- For emergency situations, a manual door release control shall be provided over the top of the door and shall be designed to permit simple operations to override the electric door operator.
- Standard operating for the passenger entry door will not allow the door opened when vehicle is traveling faster than 5 mph for safety.

MIRRORS

- Two exterior rear view mirrors shall be provided: one at the driver's left side mounted in the OEM position and one on the right/curb side.

WINDOWS

- Solid windows are standard (Options include T-Slider Windows) Window frames will be anodized black as standard.
- Passenger windows shall be a minimum of 18-1/2", 36", or 45" wide and 36" high. (Body length will dictate sizes)
- Large curb side viewing window (approximately 550 square inches of viewing glass)
- Rear egress window is standard on the rear wall.
- Extra egress window for the front driver side is standard for 183", 191" and 210" wheelbases.

EMERGENCY EXITS

- Hinge-out windows shall be installed for emergency escape and shall comply with FMVSS-217.
- Emergency Escape windows shall be clearly labeled, and operation instructions shall be clearly visible at each escape window. The emergency release handle will meet FMVSS-217 requirements and shall not return to the locked position automatically; it shall require the driver or other authorized person to manually re-lock it. All emergency exits shall comply with F.A.C. 14-90.
- Roof Hatch Option is required when rear egress window/door is not available with CNG or Rear Luggage Compartment.
- Rear Egress Door Option: Rear door w/2 windows (upper and lower), door alarm, and exit LED light without side windows.

ELECTRICAL

- The vehicle shall be equipped with a heavy-duty (12 volt) electrical system.
- All components are to be selected and integrated to function in an environment characterized by low engine (alternator) speeds and high amperage draws due to lights, air compressor, wheelchair ramp, 4-way flashers, air conditioning/heater, and other accessories in constant operation.
- The vehicle shall be equipped with an OEM 220-Amp Alternator (Gas).
- The vehicle shall be equipped with (1) 770 & (1) 600 CCA battery. The first battery is located under the hood at curbside, and the second is located under the curb side viewing window in a readily accessible area on a pullout tray.
- The vehicle shall be equipped with a rotary disconnect switch that removes 12V battery power from all bodybuilder loads while not interfering with OEM chassis electrical circuits.
- The interior passenger area shall be equipped with Round LED Surface Lights. There will be 6 lights (3 driver/3 passenger) on all units except for optional additional lights. The SOF 29 (210" WB) will have 8 lights (4 driver/4 passenger). These lights shall activate when the entrance doors are opened and turn off when the doors are closed.
- The ramp area shall be equipped with (1) exterior overhead door light and

- (2) LED Stepwell Lights to illuminate the entry floor/ramp platform meeting ADA specs. These lights shall activate when the ramp is deployed and or the door is opened and turn off when the ramp is stowed, or the door is closed.
- The driver's seat and instrument panel area shall have an OEM flush mounted ceiling light to provide general illumination. The light shall be controlled by the operator through OEM switch on the front console and shall illuminate without ignition activation.
- The vehicle shall be equipped with center-top mounted third brake light, tail brake lights, rear turn signals, back-up lights, and state license tag lights shall be LED fixtures. All rear exterior lights integrated into rear ABS Cap.
- All wiring shall be SXL/GXL and be sized to minimize voltage drop at full load.
- Entire harness system and mating electrical components are plug connected with lock tab connectors; all terminals are machine crimped; all harnesses shall be covered in high temp conduit and all exterior under body/under hood connectors are IP67 rated sealed connectors.
- All body wiring shall be run inside the body in a protected area. All wiring shall be in a loom and secured for maximum protection. Clamps shall be rubber or plastic coated to prevent them from cutting the wiring insulation.
- When routing wiring under vehicle all wiring shall be encased in a loom and attached to the frame and sub-floor structure with proper fasteners and shall not be bundled with hoses. The harness shall run in straight lines as close to chassis frame rails as possible. Any harness that goes over the rear suspension shall be encased in a conduit fixture securely fastened to the sub-floor rails or routed inside the frame rails.
- All fuses and relays (other than chassis OEM) shall be placed in an Electrical Panel. The panel shall be accessible through a non-locking door. Connection to OEM electrical system shall be accomplished through connectors supplied by chassis manufacturer using locking mating connectors. A legend shall be provided on the circuit panel door that displays circuit fusing and identification information.

GRAB RAILS AND STANCHIONS

- LH Entry Stanchion Stainless Steel with modesty panel. Fastening of the panel shall be by bolts - screws will not be acceptable. The front side of the stanchion shall include a handle for boarding and aligned with entry door grab handles.

SEATING

- Seats must be installed such that they provide "theater" seating in that rows of seats in the rear of the bus shall be higher that the seats in the front of the bus.
- Seats shall be installed utilizing tracking to provide flexibility and easy movement.

PASSENGER ENTRY RAMP

- The entry ramp shall either be a Braun power ramp that is designed to let wheelchair and ambulatory passengers enter the bus once the ramp is fully deployed.
- Entry ramp shall be rated at 1000 lbs.
- Entry ramp shall be 62 inches minimum and provide a 1:5 angle when deployed to the ground.
- Steps are not allowed, and all passengers shall enter by way of passenger door.

LOW FLOOR ADA CUTAWAY BUS - BID PROPOSAL FORM

The undersigned, having carefully examined the appropriate specifications does hereby agree to furnish and deliver the following items at the price(s) indicated:

SCHEDULE OF ITEMS	UNIT PRICE DELIVERED	TOTAL PRICE
Price for 24' Low Floor ADA Cutaway Bus as specified – 165" Wheelbase with Twelve (12) Ambulatory Seats and Two (2) Wheelchair Positions		
OPTIONS TO BE PURCHASED		
26' Model With 191" Wheelbase		
28' Model With 210" Wheelbase		
Kneeling Air Suspension		
Kneeling 4-Corner Liquid Spring Suspension		
Additional Seated Passenger		
Remove Seated Passenger (Credit)		
Upgrade To Transit Grade Seating (Per Seat)		
Additional Wheelchair Position		
Retracable Tie Down Position		
Wheelchair Tie Down Position		
Wheelchair Tie Down Position		
4 Camera Video Recording System		
6 Camera Video Recording System		
8 Camera Video Recording System		
Upgrade To Rooftop Ac System		
Frameless Passenger Windows		
Fire Suppression System		

3 Position Bikerack		
2 Position Bikerack		
Front And Side Led Destination Signs		
½ Vehicle Vinyl Wrap		
Full Vehicle Wrap		
Base Coat Clear Coat Paint		
Basic Vinyl Lettering – Agency Name And Phone Number		
¼ Vehicle Vinyl Wrap		

Provide information requested, affix signature and return this page with your proposal:

Name of Firm: _____

Complete Address: _____

_____

Telephone Number: _____

E-mail Address: _____

Authorized Signature: _____

Printed Name: _____

Title: _____

4. GENERAL REQUIREMENTS – HEAVY DUTY TRANSIT BUSES

GENERAL

SCOPE

- These technical specifications are intended to provide a general description for 32 ft, 35 ft, and 40 ft heavy-duty, low floor design transit buses that will be purchased for use by Mississippi State and other agencies as allowed per these specifications.

DESCRIPTION

- We are seeking new, current year production, heavy-duty, 32ft, 35ft, & 40ft low floor transit vehicles. A two (2) door, 102" wide bus is specified for maximum passenger capacity and ease of passenger ingress and egress. The base buses provided shall be diesel operated, rear engine design, meeting all current EPA regulations for the year the bus will be delivered. All transit buses furnished shall meet the minimum functional requirements of this specification. All of the manufacturer's standard components shall be included unless otherwise specified. Vehicle chassis shall include all Original Equipment Manufacturer (OEM) standard items required for bus service.

DIMENSIONS

40 FEET BUS DIMENSIONS

- LENGTH, BODY 481.5" max
- WIDTH, BODY 102.0" max
- OVERALL HEIGHT, WITH ROOF A/C 124.5" max
- WHEELBASE 275.0" max
- OVERHANG, FRONT EXCLUDING BUMPER 91.5" max
- OVERHANG, REAR EXCLUDING BUMPER 114.5" max
- APPROACH ANGLE (DEG) 9.5
- BREAKOVER ANGLE (DEG) 9.0
- DEPARTURE ANGLE (DEG) 9.0
- FLOOR HEIGHT 15.0" max
- HEIGHT, STEP FROM GROUND FRONT & REAR KNEELED 11.0" max
- UNKNEELED 14.0" max
- HEIGHT, INTERIOR (CENTER OF AISLE) @ FRONT AXLE 95.0" max
- @ REAR AXLE 79.0" max
- WIDTH DOOR "CLEAR" (ENTRANCE & EXIT) 34.0" min
- GVWR – MIN 43,000 lbs.

35 FEET BUS DIMENSIONS

- LENGTH, BODY 425.0” Max
- WIDTH, BODY 102.0” Max
- OVERALL HEIGHT, WITH ROOF A/C 125.0” Max
- WHEELBASE 220.0” Max
- OVERHANG, FRONT EXCLUDING BUMPER 89.5” Max
- OVERHANG, REAR EXCLUDING BUMPER 115.0” Max
- APPROACH ANGLE (DEG) 9.5
- BREAKOVER ANGLE (DEG) 12.0
- DEPARTURE ANGLE (DEG) 9.0
- FLOOR HEIGHT 17.0” Max
- HEIGHT, STEP FROM GROUND FRONT & REAR KNEELED 11.0” Max
- UNKNEELED 14.0” Max
- HEIGHT, INTERIOR (CENTER OF AISLE) FRONT AXLE 95.0” Max
- @ REAR AXLE 78.0” Max
- WIDTH DOOR “CLEAR” (ENTRANCE & EXIT) 34.0” Min
- GVWR – MIN 34,000 Lbs.

32 FEET BUS DIMENSIONS

- LENGTH, BODY 371.0” Max
- WIDTH, BODY 102.0” Max
- OVERALL HEIGHT, WITH ROOF A/C 125.0” Max
- WHEELBASE 168.0” Max
- OVERHANG, FRONT EXCLUDING BUMPER 89.5” Max
- OVERHANG, REAR EXCLUDING BUMPER 115.0” Max
- APPROACH ANGLE (DEG) 9.5
- BREAKOVER ANGLE (DEG) 14.0
- DEPARTURE ANGLE (DEG) 9.0
- FLOOR HEIGHT 17.0” Max
- HEIGHT, STEP FROM GROUND FRONT & REAR KNEELED 11.0” Max
- UNKNEELED 14.0” Max
- HEIGHT, INTERIOR (CENTER OF AISLE) @ FRONT AXLE 95.0” Max
- @ REAR AXLE 78.0” Max
- WIDTH DOOR “CLEAR” (ENTRANCE & EXIT) 34.0” Min
- GVWR – MIN 34,000 Lbs.

GROUND CLEARANCES

- Buses shall have a minimum eight-inch (8") ground clearance at any position under the bus excluding axle zones. The minimum ground clearance in any axle zone shall be 5 inches.
- Buses shall have a minimum angle of approach of (8.5) degrees, a minimum angle of departure of (8.5) degree, in order that they may safely negotiate varying

pavement conditions in the Agency's service area.

WEIGHT

- It shall be a design goal to construct each bus as light in weight as possible without degrading of safety, appearance, comfort, or performance. The curb weight of the diesel 40'bus shall not exceed 30,000 pounds. The 35' & 32' diesel bus shall not exceed 26,000 pounds.

SERVICE LIFE

- Buses shall be designed and constructed to ensure a minimum service life of at least twelve (12) years/500,000 miles in revenue service. They shall be capable of operating at least 40,000 miles per year, including the last year.

FAILURES

- The following shall be the design requirements for maximum frequency of in-service failures of the types defined, provided that preventative maintenance procedures specified by the contractor and followed within the limits of practicability dictated by transit maintenance practice.

MAINTAINABILITY

- Prime consideration shall be given to the ease of maintaining the buses. All bus components and systems both mechanical and electrical which will require periodic physical work or inspection processes shall be installed so that a minimum of time is consumed in gaining access to the critical areas. It shall not be necessary to disassemble portions of the bus structure and equipment such as seats and flooring under seats in order to gain access to these areas.
- Each bus shall be designed to facilitate the disassembly, reassembly, servicing, or maintenance thereof by use of tools and items, which are normally available as commercial standard items.
- The body and structure of all buses shall be designed for ease of maintenance and repair. Individual panels or other equipment, which may be damaged in normal service, shall be repairable or replaceable. Ease of repair shall be related to the vulnerability of the item to damage in service.

ELECTRONIC NOISE CONTROL

- Electrical and electronic subsystems and components on all buses shall not emit electromagnetic radiation that will interfere with on-board communications equipment.

EXTERIOR NOISE

- The exterior noise produced by any one bus shall not exceed 83 dBA in any mode of operation.

INTERIOR NOISE

- The interior noise produced by any one bus shall not exceed 82 dBA in any mode of operation.

ENGINE EMISSION

- Buses shall conform to the air pollution control standards of the Environmental Protection Agency of the Federal Government, and all applicable State regulations at time of delivery for a Heavy-duty Urban Transit Bus.

OPERATING ENVIRONMENT

- The bus shall achieve normal operation in temperature ranges of -15 degrees F to +115 degrees F at relative humidity between five (5) and one hundred (100) percent. No special equipment or procedure shall be required to start a bus for up to twelve (12) hours of exposure to temperatures +20 degrees F without the engine in operation.

BODY DESIGN

- The bus shall have a clean, smooth, sleek design, correctly proportioned and properly balanced. The exterior and body features, including grills and louvers, shall be shaped to allow complete and easy cleaning by automatic bus washers without snagging washer brushes. Water and dirt shall not be retained in or on any bus feature to freeze or bleed out onto the bus after leaving the washer. Body and windows shall be sealed to prevent leaking of air, dust, or cleaning in automatic bus washers for the service life of the bus under normal use (wear excluded). Accumulation of spray and splash on any window of the bus, generated by the bus' wheels on a wet road, shall be minimized.

BODY MATERIAL

- Exterior body materials shall be fabricated out of aluminum, reinforced fiberglass and/or other applicable composites to reduce maintenance, extend durability, and provide consistency of appearance throughout the life of the bus. Detailing shall be kept simple; add-on 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. A commercial, transit appearance is desired thus a riveted type body construction shall not be accepted. Exterior surfaces to be painted shall be properly cleaned and primed, as appropriate for the paint used, prior to application of paint to assume a proper bond between the base surface and successive coats of original paints.
- Paint shall be applied smoothly and evenly with the finished surface free as possible of dirt, runs, orange peel, and other imperfections. All exterior finished surfaces shall be impervious to diesel fuel, gasoline, and controlled applications of

commonly used graffiti removing chemicals. The bus shall be painted white with blacked out window area.

PEDESTRIAN SAFETY

- Exterior protrusions greater than .50" and within 80 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 this requirement.
- Grilles, doors, bumpers and other features on the sides and rear of the coach shall be designed to minimize the ability of unauthorized riders to secure toehold and handholds.

STRENGTH AND FATIGUE LIFE

- Under normal condition of transit service throughout the service life of the bus, the basic structure shall withstand fatigue damage that is sufficient to cause Class 1 or Class 2 failures. The structure shall also withstand impact and inertial loads due to normal street travel throughout the bus' service life without permanent deformation or damage. The basic design shall incorporate all severe service, heavy-duty bus features.
- All failures involving basic body, structure, axles, and suspension are considered structurally related failures for purposes of this specification. The bus sidewall design shall provide passenger protection from automobile side impact. The roof and sides shall be engineered to support the entire weight of a fully loaded vehicle on its top and side, if overturned.

CRASHWORTHINESS

- The bus sidewall ability to provide passenger protection from automobile side impact is of critical importance to MSU-SMART. As such, a copy of test data showing compliance with FMVSS 214D "Crash Worthiness" is required with the submission of the proposers bid package. Physical side impact test must be in accordance with FMVSS 214D and performed by a third-party testing entity. The test report must be of the same bus design as is being proposed. Failure to include this test report will render the proposal informal and cause of its rejection.
- The roof and side shall be engineered to support the entire weight of a fully loaded vehicle on its top and side, if. A copy of test data showing compliance with FMVSS 220 "Rollover Protection" is required with the submission of the Proposers bid. The test report must be of the same bus design as is being bid. Failure to include this test report will render the proposal incomplete and deemed unacceptable.

DISTORTION

- The bus, at GVWR and under static conditions, shall not exhibit deformation or distortion that impairs operation of doors, windows or other mechanical elements. Static conditions include the vehicle at rest with any one wheel or dual set of wheels on a six (6) inch deep hole or with any one tire or any dual set completely deflated.

ISO 9001:2000 CERTIFICATION

- Quality control during the manufacture of the buses as specified is of critical importance to MSU-SMART. It is the intent to procure transit buses from a manufacturer that has a proven and third party certified quality control system in place. As such, the bus manufacturer shall be certified ISO 9001:2000 at the facility(s) which produce the buses. Written certification of ISO 9001:2000 compliance is required with the bid submission documents. Failure to provide the certification as specified will render the bid incomplete and deemed unacceptable.

BODY SPECIFICATIONS

BODY FRAME ASSEMBLY

- The frame assembly shall be fabricated using Grade C, high- strength carbon steel. Square or rectangular tubing, plates and formed sheets shall be of welded design into a single monocoque space frame. Gusseting and structural reinforcement shall be provided at strategic locations as determined by finite analysis. Documents or Engineering drawings shall be provided to with the bid package to show structural reinforcement areas. A body on chassis or bolted construction is unacceptable.
- The structure shall be manufactured and assembled by a single O.E.M., so as to allow for ease of parts/service assistance. The bidder shall also allow a sole warranty restitution center for structure, (provision allows the exclusion of the engine, transmission and HVAC systems.)
- The steel cage structure and all related metals parts are to be welded into a complete frame assembly prior to corrosion protection. All steel parts must have a 1-mil physical profile for paint adhesion prior to priming. The cage shall be completely primed using corrosion resistant epoxy primer or approved equal.
- In critical corrosive areas, such as the floor framing, wheel wells, step wells and rear engine bulkheads, PPG Cora Shield or approved equal shall be applied after the initial primer coat. This primer and sealer shall be then baked on to ensure proper curing. Corrosion protection system shall have been successfully tested for a minimum of 1,000 hour salt spray test.
- The inside of all tubular frame structures in the floor, sidewalls and roof structures shall be sprayed with Ziebart Formula - Type A, or approved equal prior to applying exterior or interior panels.
- Welded joints of the monocoque construction shall be sealed with a polyurethane type adhesive sealant for additional corrosive resistance. Care shall be taken to prevent corrosion from dissimilar metals, such as adhesion tape/double sided bonding strips. Corrosion resistance process shall be provided with bid package.

EXTERIOR BODY PANELS

- Stainless Steel, Aluminum, or FRP composite durable materials may be used in

providing the required sleek, streamlined appearance. These panels shall be installed using methods which provide a smooth surface without exposed fasteners except at window line lap seam.

- The bus sidewalls below the window line shall be made with removable sections. Panels are to be held by an aluminum or stainless extrusion just below the window line and fastened for quick removal. Panels are to be cleaned and applied to the side framing with double faced 3M tape, rivets and moldings.
- Roof panels shall be composite material and to be installed as one (1) continuous piece from drip rail to driprail.
- Front and rear caps shall be contoured and aesthetically molded, reinforced fiberglass, nominal 1/8" thick. Sections are to be installed with structure caulking, rivets and moldings.
- All panels are to be caulked with paintable sealants prior to prime treatment.

FLOOR

- Subfloor shall be 3/4", ACQ marine grade, pressure treated plywood flooring, or composite pattern cut, edge sealed and installed with sealant caulking and fastened with floor-tight huck bolts. The subfloor shall be sealed/undercoated before installation for maximum allowable protection against corrosion.

INSULATION

- The complete sides, roof and rear cap shall be insulated with a minimum of 2- 1/2" thick R-7, fiberglass batt insulation. The insulation shall be applied to the inner surface of the exterior panels. Insulation shall provide maximum thermo-barrier and sound absorption.

WHEELHOUSINGS

- Front and rear wheel housings shall be made from a minimum of 12 gauge. Housings will be installed as part of the frame structure, properly sealed with caulking and undercoating.

FENDER TRIM AND MUD FLAPS

- Fender trim shall be rubber, forming a smooth contoured wheel opening. Mud flaps are to be installed behind both front and rear tires extending to within three inches (3") of the ground. The rear mud flaps are to run the full width of the coach.

REAR ENGINE BULKHEAD

- The bus shall be equipped with a welded stainless steel rear engine bulkhead from the floor to the roof structure.

BUMPERS

- Front and rear bumpers shall be reinforced HELP energy absorbing type. Rear bumper

shall be anti-ride type. Bumpers will attach to frame with a minimum of 2" diameter bolts.

TOWING HOOKS/EYES

- Bus shall be towable at both front and rear of the bus. The front of the bus will utilize two (2) screw in-place tow eyes. The rear will utilize two (2) rear towing hooks, accessible under the rear bumpers.

INTERIOR BODY PANELS

- The interior body panels shall be made from Melamine, graffiti resistant, providing a color-coordinated interior, per customer preference. Interior color coordination shall be determined at time of pre-construction meeting.
- Sidewalls shall be reinforced 1/10" thick laminated melamine panels or approved equal installed sectional with double-faced tape and trim moldings without exposed fasteners.
- Rear wall shall be finished in 1/10” thick laminated melamine panels. This material is to be installed with adhesives and trim moldings without exposed fasteners.
- Front ceiling end closure shall be aluminum, stainless steel, FRP, melamine or approved equal. Panels shall provide accessibility for wiring harness connections and front destination sign.
- Coach headliner shall be reinforced 1/10" thick laminated melamine panels or approved equal, installed sectional with double faced tape and trim moldings without exposed fasteners.
- The driver’s area shall incorporate black finished materials for glare reduction. This shall include all walls, ceiling, compartments, dash, left had driver’s console and door panels forward of the standee line.

FLOOR COVERING

- Transit flooring, coved up the sidewalls to the side seat track shall be supplied. Driver's area is to be covered with same flooring and trimmed with anodized aluminum or stainless-steel molding. A three inch (3") wide standee line shall be installed in line with the back edge of the step well of contrasting color.

GLAZING

- All windows must meet State and Federal safety regulations. Windshield shall be AS-1, driver's side windows to be AS-2, and passenger windows to be AS-3 in quality.
- Windshield and overall design of the front of the bus shall be of a sloped, BRT style. The windshield shall be two (2) piece 1/4" thick, 73% single density, laminated safety float type glass. Windshield shall have a dark tinted sunshade band across top. Windshields shall be glazed with two-piece black ozone treated extruded lock and key rubber. Driver's roadside window shall be a painted black extruded aluminum sash with full height sliding section design. Window shall be glazed with 7/32” thick, 73% single density, laminated safety sheet glass.

- Passenger side windows shall be a painted black extruded aluminum sash and have an solid pane design. Windows shall be glazed with 7/32" thick, 28% gray density, and laminated safety sheet glass. Emergency windows on each side shall be so designed as to meet FMVSS 217 for emergency egress.
- Door windows shall be glazed with 1/4" thick laminated safety sheet glass. Front door window shall be tinted to 73% light transmittance.
- Side destination sign window, the first curbside passenger window behind the front door, shall be glazed with 3/16" thick clear tempered safety glass in the upper transom section for sign viewing.

PAINT

- The entire exterior body surface shall be completely sealed, cleaned, sanded and primed prior to final finish. The final finish surface shall be coated with a AkzoNobel / Sikkens paint system or approved equal. The exterior paint shall be a polyurethane enamel finish meeting all State and Federal health and safety regulations. Paint preparation and application process shall be provided with bidder's package.

FRONT/CENTER PASSENGER DOORS

- A two (2) panel, door panel design providing a minimum of 37" x 78" door panel opening and a minimum clear opening, measured at the door mounted hand rails of 33". The door operation and controls will be identical at the front and center door for parts commonality. The door shall be driver controlled by a five (5) position handle type lever. Passenger doors shall comply with all FMVSS and ADA regulations. Front passenger door shall be located before the front axle and under direct observation of the driver. Curbside rear exit door shall be located in the low floor area between the front and rear axle.
- Each door panel shall be actuated together by a single air differential motor mounted overhead. Actuator shall be equipped with an emergency air release valve.
- The top portion of the shaft shall be splined to prevent the door panels from rotating out of alignment. Shafts are to be pivoted on a top mounted sealed ball bearing and a lower stud mounted pivot roller.
- Perimeter door edges shall be sealed with edge seals. Center edge of doors shall be equipped with overlapping neoprene 2" leading edge seals. Seals shall overlap front to rear providing an air and water tight seal.
- Center doors shall be interlocked so as to prevent movement of the bus below 2 mph when the doors are open and shall not allow doors to open above 2 mph.
- Provisions for an open/close switch shall be provided on exterior of coach to operate the front door.

SENSITIVE DOOR EDGES

- The rear doors shall be equipped with sensitive door edges.

WINDSHIELD WIPERS AND WASHERS

- A two (2) speed electric or air operated wipers shall be provided, one (1) on each side with a single control.
- Wiper arms shall be pantograph type, a minimum of 27.5" long. Wiper blades shall be a maximum of 23.5" long. Blades are to park at the center of the windshield.
- Washer shall be electric pump with a minimum 2-gallon washer reservoir supplying nozzles located on the wiper wet arms.
- Intermittent wiper system shall be variable speed control allowing timed intermittent windshield cleaning in light rain and/or foggy conditions.

ELECTRICAL SYSTEM

- The electrical system shall be designed to provide and safely distribute 24-volt DC power to all electrical components in the bus, excluding selected ancillary items requiring 12-volt power.
- All general purpose wiring shall be cross linked polyethylene insulated, number coded for positive identification, and shall meet the requirements of SAE recommended practice J878a, Type SXL. Precautions shall be taken to avoid damage from heat, water, solvents or chafing by proper routing, clamping and the use of grommets or suitable electrometric cushion materials. Harnesses shall be designed to resist abrasion by the use of machine woven mesh plastic loom. Harnesses shall be sectional and shall terminate at insulated multi-pin quick disconnect plugs or junction blocks. All harnesses shall provide a minimum of one (1) spare conductor marked in each separate harness.
- For the 40’ bus design a heavy duty junction panel shall be provided located inside the bus accessible through an electrical compartment tower, located rear of the driver’s seat. The 35’ and 32’ bus design electrical panel location shall be located on exterior of vehicle, below the driver’s window. Junction board shall be equipped with heavy-duty 24-volt DC relays and 24-volt DC circuit breakers. Panel shall be equipped with a complete, (as-built) circuit legend.
- The electrical control and wiring system shall be a Multiplex System or approved equal. The system components shall be capable of performing reliable operation in an environment of between minus 30° C to plus 80° C while encountering mobile shock and vibrations. Each module shall be adequately shielded to prevent interference by EMI and RFI.
- The program for operating the bus shall be contained in a MBC (Master Bus Controller). A single downloading point shall be located on the bus for reprogramming. The components of the multiplex system shall be modular design, providing for ease of replacement by field maintenance personnel. Furthermore, each module shall utilizes LED’s to indicate input status, output status, circuit integrity and assist in rapid circuit diagnostics and verification of the load and wiring integrity. The internal control device

shall be a solid-state device, providing an extended life service cycle. Non-self-resetting circuit breakers or fuses shall be provided to protect each individual circuit.

- All exterior lighting shall be of LED type (excluding headlamps) and conform to all applicable Mississippi State regulations, and FMVSS 108.
    - Headlamps shall be dual round sealed beam automotive type and shall have high beam feature controlled by a foot operated switch mounted on the floor.
    - Stop, tail, back-up and directional signal lights shall be LED type, 4" in diameter and vertically mounted.
    - Front directional lights shall be LED type, and a minimum of 4", one (1) on each side, with an amber lens.
    - Side directional lights shall be armored LED type, 1.75" x 4" min. mounted horizontally at both front and rear axle locations on each side.
    - Side marker and ICC lights shall be LED type, and roof mounted. Five (5) amber front, and five (5) red rear. Side marker lights shall be two (2) amber located before the rear axle on each side of the bus, and one (1) red located behind the rear axle on each side of the bus.
    - A red LED strip. center mounted brake light shall be installed on the rear of the bus. The light shall be located on the centerline of the bus immediately above the rear engine door.
    - Exterior LED step well lights shall be mounted so that entire step well and a portion of the ground area outside the bus are sufficiently illuminated. The step lights shall be extinguished when the front and/or rear door has closed.
    - Front and rear side reflectors, amber front and red rear, shall be applied above the bumpers on each side.
    - Provisions to mount front and rear license plates are to be provided. A white LED license plate lamp shall be provided.
- Interior LED lighting shall be ceiling cove type mounted continuous front to rear on each side of the transit bus. The first light fixture on each side behind the driver shall be extinguished when the front door is closed in day and night time operation mode. A single driver's LED light fixture shall be provided with a separate driver control switch.
- The driver's area shall consist of an ergonomically designed molded fiberglass, plastic, or aluminum dash console complete with the following minimum controls and instrumentation.
    - The control panel shall provide labeled and illuminated system control switches when equipped, such as, but not limited to: day/night run switch with ignition, headlights, interior lights, air conditioning, high idle, door control - three position, kneeling etc.
    - Instrument panel shall be equipped with, but not be limited to, speedometer, fuel gauge, voltmeter and dual air gauge.
    - Telltale lights shall indicate, but not be limited to, check engine, transmission oil temperature, low coolant, ramp deployed, engine shut-

down, park brake, high beam, air conditioning inoperative, and low air.
- A separate driver's dash mounted HVAC control panel shall be provided.
- Foot controlled directional switches shall be installed in a tapered steel box, one each for left and right directional lights. Foot operated switches shall be provided for high beam, and 4-way flashers.
- Adjustable accelerator and brake pedals shall be provided.

DRIVER'S SEAT

DIMENSIONS

- The operator's seat shall be comfortable and adjustable so that persons ranging in size from the 95th-percentile male to the 5th-percentile female may operate the bus. While seated, the operator shall be able to make all of these adjustments by hand without excessive effort, or being pinched. Adjustment mechanisms shall hold the adjustments and shall not be subject to inadvertent changes. Graphical Symbols shall conform to SAE Recommended Practice (Proposed) J1458, Universal Symbols for Seat and Suspension Adjustments.

SEAT PAN CUSHION LENGTH

- Measurement is from the front edge of the seat pan to the rear at its intersection with the seat back. The seat pan length shall be no more than 16" at its minimum length and no less than 20" at its maximum length adjustment. 2" of seat cushion adjustment is required.

SEAT PAN CUSHION HEIGHT

- Measurement is from the cab floor to the top of the level seat at its center midpoint. The seat shall adjust in height from no more than a minimum of 13" and no less than a maximum of 19", with at least a 6" range of adjustment.

SEAT BASE FORE/AFT ADJUSTMENT

- Measurement is the horizontal distance from the heel-point to the rear front edge of the seat. The minimum and maximum distances shall be measured from the front edge of the seat when it is adjusted to its minimum seat pan depth (around 16"). On all buses, the seat-base shall travel horizontally a minimum of 9.45". It shall adjust no closer to the heel-point than 6". Seat must have dual locking seat tracks with a manual release and an automatic release.

SEAT SUSPENSION

- The operator's seat shall be appropriately dampened with dual shocks and one shock must be adjustable. The operator's seat must be able to support a 100-450 lb. Driver.

SEAT BACK LUMBAR SUPPORT

- Measurement is from the bottom of the seat back at its intersection with the seat

pan, to the top of the lumbar cushioning. The seat back shall provide adjustable depth lumbar back support in at least 3 air bags located between 3" – 10", minimum.

SEAT BELT ADJUSTMENT

- The Type I seat belt shall attach at a point that moves with the assembly. Minimum length of 72". Buckle to have a top release mechanism. Seats belts shall be extended length to a accommodate operators of all within the 5^{th}-95^{th} % male/female. The seat and seatbelt assemblies as installed in the bus shall withstand static horizontal forces as required in FMVSS 207 and 210. Seat belts shall be provided across the operator's lap. The belt webbing shall be black in color. The seat shall be equipped with a single buckle on the left side of the seat cushion. The belts shall be fastened to the seat and/or the bus structure so that the operator may adjust the seat without resetting the seat belt. Seat belts shall be stored in automatic retractors. The seat and seatbelt assemblies as installed in the bus shall withstand static horizontal forces as required in FMVSS 207 and 210.

ADDITIONAL REQUIREMENTS

- Seat must include a 2-year parts and labor warranty; Seat back must have dual recliner gears for added support; Seat back must include a stamped steel back to fully support the foam; Seat must include a 4-way adjustable headrest; Seat back must be protected with a full seat back protector; Seat must meet all applicable FMVSS standards; Seat belt shall be equipped with alarm.

PASSENGER SEATS

- Transit-style seat shall be supplied in the bus. Vandal resistant inserts must be supplied. The seating configuration shall match the floor plan as attached at the end of these technical specifications. Back and seat inserts shall be easily replaceable.
- Passenger seating capacity shall be the maximum allowable seating configuration. The 40' bus shall have a minimum of 38 seated passengers and 34 passengers for the 35 ft bus. The 32' bus shall have a minimum of 28 seated passengers. Passenger seating configuration shall be designed to provide Two (2) wheelchair positions, meeting all applicable ADA guidelines. Wheelchair positions shall be of forward and aft configuration. Bidders are required to submit floor plans with their proposals demonstrating seating count and configuration compliance at the time of request for approved equals' process.

EXTERIOR MIRRORS

- Shall be fully adjustable 9" x 13" overall, two (2) section mirrors mounted to reinforced plated on each side of the windshield. Upper section shall be a minimum of 7" x 10" fixed flat glass. Lower section shall be a minimum of 6.25" x 3.75" convex adjustable diminishing glass. Mirror heads shall be mounted to rigid, adjustable support arms and shall be a black powder coated finish.

INTERIOR MIRROR

- For driver's viewing of the passenger compartment, a minimum 8" x 15" fully adjustable rearview mirror shall be furnished and mounted in easy reach of the driver. A 12" round convex mirror shall be installed above the passenger exit door to assist the driver with viewing passenger egress off of the bus.

PASSENGER ASSISTS

- All stanchions, overhead grab rails and modesty panels shall be so designed as to use 1-1/4" diameter, 304 stainless steel tubing with a polished finish. Stanchions shall be fitted floor to ceiling meeting ADA requirements. Overhead grab rails, shall be fitted horizontally from the roof supports. Modesty panel assemblies shall be fitted behind and forward of the door step wells as required. Modesty Panel shall also be mounted between the forward and aft wheelchair position.

MODESTY PANELS AND DRIVER'S BARRIER

- For the 35 & 32' buses a modesty panel and driver's barrier shall be provided directly behind the driver's area. Modesty panel shall be ¼" thick, gray melamine one piece fitted to 1-1/4" O.D. stainless steel tubing passenger assists. There shall be a driver's barrier mounted above the modesty panel which shall be a minimum ½" of tinted lexan, or approved equal.
- Provisions are to be provided for prewire for a two-way radio system, fare collection device and fare box assist rail
- If and when seats are not utilized over curbside wheel well, provision for storage is to be provided.

DRIVER'S HVAC

- Driver's area shall be heated and/or cooled by a dash mounted, forced air heater/defroster and air conditioning system. Proposed buses, which are manufactured without an in- dash air conditioning evaporator, will not be accepted as equal. The need for conditioned air on the windshield is a necessity in our operating environment.
- The driver's heater and defroster shall provide a minimum of 60,000 BTU with 475 CFM air flow.
- The driver's air conditioning shall provide a minimum of 24,000 BTU with 475 CFM air flow. Driver's HVAC system shall have 4-speed fans with fresh air mode.
- Both heat and cooling shall be controlled by electric dash mounted controls. The driver must have total control of the dash mounted heating and air conditioning system, separate from the passenger compartment HVAC to allow for a comfortable driving environment.
- Windshield airflow shall be through molded dash air ducts, which shall provide constant and even air diffusion.
- An additional forced air ducting system shall be located overhead of the driver's seated position utilizing a brushless booster motor. Two adjustable vents distribute

heated or air conditioned air from the passenger compartment HVAC street side duct. A left hand console mounted two-speed switch shall be provided.

PASSENGER COMPARTMENT HVAC

- The passenger compartment shall be heated and cooled by a single integrated heavy-duty system. This system shall be a roof mounted system using R 134a refrigerant or approved equal. Air conditioning / heating systems shall meet the following capacity minimums as listed below.
- Heating shall be hot water, forced air, 100,000 BTU minimum system.
- Air conditioning shall be R-134A, 92,000 BTU minimum system.
- A heavy duty 4 cylinder, minimum of 30cu.in. displacement freon compressor shall be supplied. The compressor shall be designed for heavy duty transit use installed on the right side of the engine compartment in a location for ease of maintenance.
- The bus must be equipped with a base board radiant heating system located on both sides of the bus, installed in the low floor area of the bus.
- Pricing for an additional warranty for 3 years/unlimited miles shall be provided in the additional options section located in section 8.0 of this solicitation .
- Pricing for diagnostic hardware and software for A/C diagnostics shall be provided in the additional options section located in section 8.0 of this solicitation.

WHEELCHAIR ACCESSIBILITY SYSTEM

- Shall be so designed to meet Federal ADA regulations. This system shall provide safe and comfortable accessibility for disabled passengers.
- A wheelchair ramp, 1:6 ramp or approved equal will be supplied. The ramp shall be mounted at the front entrance door to accommodate all sizes of wheelchairs and scooters. The ramp shall be fabricated of stainless steel construction with non-skid covering and will deploy when the vehicle is at ride height, or in the kneeling position. Ramp measures 48" x 32" with 950 lb. rated load capacity. The ramp deployment shall interlock brakes and throttle, and provisions for a manual backup to be provided. The ramp design shall meet all applicable ADA requirements with a 6:1 ramp angle.
- Accommodations shall be made for two, (2) wheelchair tie-downs. The wheelchair securing locations shall be located per the attached provided floor plan.

SUN SHADES

- A scissor style driver's sunshade shall be supplied on the windshield & parallel to the windshield and driver's street side window. The rollers will allow easy deployment when pulled downward, remaining where placed.

EMERGENCY EQUIPMENT

- The bus shall be equipped with a minimum 5 lb. ABC rated fire extinguisher, 24-unit first aid kit, and triangular hazard kit. Emergency equipment shall be stowed in the driver area, or in a storage compartment mounted behind the driver on the street side wheel well.

ROOF HATCH

- Five (5) position roof ventilators and emergency escape hatch shall be installed in the roof over the rear axle. Roof ventilators and hatches will be flush to the roof or not higher than roof-mounted air conditioning units when fully open. An alarm shall sound alerting the driver that the escape hatch is open.

DRIVER'S STORAGE COMPARTMENT

- An overhead storage compartment is to be located within the electrical tower when utilized. When an electrical tower is not provided, drivers storage will be provided in compartment overhead of the driver. The driver's storage compartment latch shall not be key locked.

PUBLIC ADDRESS SYSTEM

- A public address system with gooseneck microphone shall be supplied. Eight (8) baffled speakers shall be provided. An exterior speaker must also be provided meeting applicable ADA requirements.

DRIVER'S COAT HOOK

- A coat hook for the driver shall be provided in the driver's compartment.

DRIVER'S FAN

- For the driver's comfort, a 6" heavy duty 12-volt, 2-speed fan is to be mounted in the dashboard and controlled by a 3 position switch left of driver.

TWO-WAY RADIO BOX AND PRE-WIRING

- The pre-wiring is to include a 12-volt DC supply, ground harness, antenna cable conduit and access plate shall be installed.

PASSENGER STOP REQUEST SIGN

- A back lighted, with white letters on red background stop request sign shall be mounted overhead on the front ceiling end closure. The sign shall be so designed as to remain illuminated when activated (by the passenger signal system) until it is extinguished by opening the front and/or center doors.

PASSENGER SIGNAL SYSTEM

- A chime is to 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 and at

each window mullion, accessible to all passengers and must meet ADA Regulations. The cord is to be plastic coated, 1/8" diameter wire strain cable supported by chrome plated brass cable eyelets. The cable coating color shall be yellow. Wheelchair passengers will have access to the stop request system via push button or touch tape type signaling device located adjacent to the wheelchair position on the bottom of the folding seat.

FRONT, SIDE AND REAR DESTINATION SIGNS:

- L.E.D. "A M B E R" electronic destination signs shall be provided. Destinations signs shall be provided and mounted in the upper windshield area, the first curbside window. The sign control console shall be mounted overhead in easy reach of the driver. Destinations will be provided by the owner during the pre-construction meeting after award.
- The front destination sign compartment shall have access for cleaning of the sign glass and the sign interior of the sign window glass without removing the destination sign. Front destination sign display shall be a minimum of 9.25 x 63.75. Side destination sign display shall be a minimum of 4.25x42.25.

DASH MOUNTED HANDRAIL

- A 1.25" OD polished stainless steel grab rail and fare box guard is to be attached to the dash of the bus to allow continuous support for boarding passengers.

ENGINE COMPARTMENT CONTROLS

- Rear engine controls shall consist of engine prevent start switch, light switch, oil pressure and water temperature gauges.

INTERIOR AD DISPLAY

- Shall be installed along the interior of the bus along each side for the full length of the passenger area excluding areas where it will interfere with any options. Displays shall be attached to the light bar w/ a 3/16" J Rail.

POWER GROUP SPECIFICATIONS

GENERAL

- The structure of the bus shall be designed to withstand the transit service conditions typical of an urban or intercity duty cycle throughout its service life. The vehicle structural frame shall be designed to operate with minimal maintenance throughout the 12-year design operating profile. Buses shall be constructed with welded, low floor monocoque construction with accessibility to major components a key feature. This construction is to be a rear engine forward control design and shall include the following minimum components and systems.

FRONT AXLE ASSEMBLY

- 40ft buses shall utilize aa wide track, drop center, I-beam type providing a minimum design load rating of 16,000 lbs. capacity or North American produced approved equal.
- 32ft & 35ft buses shall utilize a wide track, drop center, I-beam type providing a minimum design load rating of 13,200 lbs. capacity or North American produced approved equal.
- King pin bushings shall be replaceable at all lateral joints. Top and bottom king pin bushings and tie rod end joints shall be equipped with zerk type grease fittings.

REAR DRIVE AXLE

- 40ft buses shall utilize a rear axle, or North American produced approved equal. The rear axle must be of a full floating type and providing in excess of 60 MPH road speed and a minimum design load rating of 28,660 lbs. capacity.
- 32ft & 35ft buses shall utilize a full floating type and providing in excess of 60 MPH road speed and a minimum design load rating of 23,000 lbs. capacity
- Carrier housing shall be separable construction with bolted ring gear and shall be equipped with magnetic internal hex head lubricant drain plug.
- Carrier and hubs are to be internally oil lubricated with multi-grade, multi-purpose gear oil.

FRONT SUSPENSION

- 40ft buses shall utilize an air ride suspension providing the driver and passengers with the highest level of ride quality and safety. The front suspension shall incorporate multi V-links with a minimum capacity of 12,000 lbs., or approved equal.
- The 32ft & 35ft front suspension shall utilize a trailing arm, taper leaf with two air bags and two shocks with a minimum capacity of 12,000 lbs., or approved equal
- Two (2) air bags per axle shall be provided. Air pressure shall be maintained by a single time delayed height control valve. Air springs shall be internally equipped with jounce rubber stops.
- Springs shall be dampened by two (2) air suspension valve shock absorbers.
- The front suspensions shall be designed to incorporate a kneeling feature. When activated, the bus shall lower by a minimum of three (3) inches from the standard ride height in 4± .5 seconds and recover to full ride height in 6 ± 1 seconds. Bus movement shall be inhibited when bus is kneeled and shall not release until at a safe height.

REAR SUSPENSION

- 40ft rear suspension shall be of a multi-link type with four air bags and four shocks with a minimum capacity of 28,660 lbs., or approved equal.
- The 32ft & 35ft rear suspension shall have a trailing arm, taper leafs with two air bags

and two shocks with a minimum capacity of 23,000 lbs., or approved equal.

- The 40ft bus shall utilize four (4) air bags per axle shall be provided. 32ft & 35ft shall provide Two (2) air bags per axle. Springs air pressure shall be maintained by two (2) zero time delayed height control valves. Air springs shall be internally equipped with jounce rubber stops.
- Lateral and longitudinal stability shall be provided by rubber bushed radius rods. Roll stability is to be controlled by zero delay constant height control valves, one (1) each on the road side and curb side.

STEERING

- A North American produced, full integral hydraulic powered type shall be provided, designed for the rigors of heavy transit with a minimum design capacity of 20,000 lb. rating, for the 40ft buses. The 32ft & 35ft bus shall provide a minimum capacity of 14,000lb. rating
- A hydraulic pump shall be gear driven with remote mounted reservoir with a minimum two (2) gallon capacity.
- Driver's steering column shall be provided with a minimum 6-way lever controlled tilt/telescopic adjustment and a padded 20" minimum diameter steering wheel.

BRAKE SYSTEM

- The brake system shall be an ABS system meeting all FMVSS#121 requirements, or approved equal. Air shall be supplied by an engine driven, (gear driven) air compressor and regulated by an air governor.
- The 40ft bus front brakes shall be Disc Brakes
- The 40ft bus rear brakes shall be Disc Brakes.
  The 32ft & 35ft bus front brakes shall be S-cam type drum type brakes with 15" X 6" lining, 20" brake chambers and automatic slack adjusters.
- The 32ft & 35ft bus rear brakes shall be S-cam type drum type brakes with 16.5" X 7" lining, 30/30 brake chambers and automatic slack adjusters.
- Parking Brake/Emergency Brake shall be spring controlled by a push-pull dash mounted control valve.
- Airlines, except flexible lines shall be color-coded.
- An all-wheel anti-lock braking system (ABS) shall be provided.

WHEELS AND TIRES

- Wheels and tires shall be interchangeable front and rear and be of a tubeless type. All buses shall come with a spare tire & wheel, matching the below specifications, shipped loose on each bus provided.
- The 40ft bus front wheels shall be machined finished aluminum disc type minimum of 22.5" x 8.25" with a 10-bolt bolt circle.
- The 40ft bus rear wheels shall be machined finished aluminum disc type minimum of 22.5" x 8.25" with a 10-bolt circle.

- The 40ft bus tires shall be highway radials sized - 305/70R 22.5, single front and dual rear.
- The 32ft & 35ft bus front wheels shall be machined finished aluminum disc type minimum of 22.5" x 7.50" with a 10-bolt bolt circle.
- The 32ft & 35ft bus rear wheels shall be machined finished aluminum disc type minimum of 22.5" x 7.50" with a 10-bolt circle.
- The 32ft & 35ft bus tires shall be highway radials sized - 275/70R 22.5, single front and dual rear.
- Extended valve stems on rear wheel duals shall be provided.

FUEL SYSTEM

- A Federal DOT approved diesel fuel storage system shall be provided.
- The 40ft bus shall utilize a fuel tank fabricated of stainless steel with a minimum 120 gallon capacity must be provided. Tank is fitted with hex head drain plug, electric fuel gauge float switch.
- The 32ft & 35ft bus shall utilize a fuel tank fabricated of stainless steel, with a minimum 80-gallon capacity shall be provided. Tank is fitted with hex head drain plug, electric fuel gauge float switch. The fuel tank must be located rear of the rear exit door, outside of the passenger compartment.
- An electronic rotary fuel pump shall be installed in the engine providing continuous fuel pressure to the engine fuel injection pump and full electronic control over engine fueling and timing.

ELECTRICAL SYSTEM

- A bus charging system of 24/12-volt DC with negative ground shall be provided.
- Alternator shall be 24V, air cooled 525 amp. Alternator shall provide electrical power to all systems on the bus, including Air Conditioning
- 4-group 31AGM batteries with a total of 650 cold cranking amps each shall be provided and located for service accessibility through a road side service access door on a sliding stainless steel tray integrating stainless steel rollers. The battery tray shall be housed in a stainless steel enclosure.
- Cables shall be color coded for positive and negative 2/O battery cables. Cables shall be sleeved with high abrasive resistant Electric Flex-Guard loom and supported with lined steel clamps on a maximum of 15" centers. In an effort to maximize battery cranking strength, the maximum distance between the battery compartment and the engine compartment shall be no more than 10 feet.
- Master battery disconnect switch shall be capable of carrying and interrupting the total circuit load. The switch shall be located near the battery and shall be accessible through the service door

ENGINE

- The 40’ bus shall be rear T-mounted engine design, 8.9L, heavy-duty, diesel fueled engine, or approved equal. Peak horsepower shall be a minimum of 280 BHP @

2,200 RPM and peak torque of 800 ft. - lbs. @ 1,300 RPM.

- 32ft & 35ft bus powertrain shall be rear T-mounted engine design, 6.79L, 2017 EPA compliant turbo-diesel fueled engine. Peak horsepower shall be a minimum of 280 BHP @ 2,600 RPM and peak torque of 660 ft. - lbs. @ 1,600 RPM.
- The engine cooling system shall consist of a side mounted high capacity charge-air cooler and radiator with a minimum of 600 square inch core frontal area with stainless steel bolt-on inlet and outlet tanks.
- A thermostatically controlled, electric fan cooling system is required. Electric fans shall be brushless, variable speed, reversible and have a corrosion resistant metal shroud with finger guards that meet SAE spec J1308 200808. The fans should provide electronic feedback Control and have diagnostics capability through the standard SAE J1939 diagnostics port.
- The cooling system shall consist of multiple electric DC brushless pusher type variable speed fans with electronic feedback controls. Electric fan motor speeds shall have a minimum operating range of 0-5500 rpm with capability of manual or automatic reverse operation in order to assist in debris removal. The cooling system shall be equipped with a master controller with the following capabilities; automatically reduce fan speed when the vehicle stops to minimize noise at the curbside, communicate on the J1939 CAN data link with system diagnostic retorting via DM1 messaging, review and download data via a laptop with service tool software, capable of software and calibration up-dates, receive commands from the engine or transmission ECM, report fault codes by lighting an engine compartment LED flashing light, sense engine compartment temperature and activate fans if maximum temperature is exceeded, collect and store cooling system and vehicle performance histogram data. If system controller loses communication with the engine or sensors it shall direct all fans to go into a default speed mode to avoid vehicle shutdown. If fans lose communication with system controller, they shall go into a default speed mode to avoid vehicle shutdown. This communication shall use the industry standard RP1210 compliant data link adapters connected via the standard 9-pin diagnostic connector found in the engine compartment and interior of the bus. Independent diagnostic detection shall be capable of identifying specifically which fan, measured input parameter, or data link input parameter is experiencing a fault condition. Report both active and previously active fault codes with the number of detections/occurrences, time of the first and most recent fault detection, and cumulative time the fault was active. Where electric fans are used for cooling there shall be ample field experience.
- As a minimum, 50 electric fan based cooling systems shall be in transit revenue generating operation for at least 2 years. The radiator shall be baffled top and bottom and both sides, and equipped with a stainless steel fabricated, minimum two (2) gallon capacity coolant de-aeration reservoir. Heat producing components shall not be located in front of engine radiator, including the charge air or hydraulic coolers.

- All flexible heater lines and radiator water lines shall be made of silicone rubber. All water lines shall incorporate stainless steel constant torque clamps.
- The engine and transmission system shall be mounted for ease of powertrain removal..
- Exhaust system shall be aluminized steel exhaust pipe and muffler properly installed with heat shields, baffles and vibration mounts as required. Tailpipe shall be so designed to direct exhaust vertically at the rearmost roadside corner of the bus body. This shall provide for a lower DBA exterior sound level and also protect associated components while providing maintenance safety.
- The rear engine compartment shall integrate a stainless-steel belt guard. All guard fasteners must be captive.
- A 110-volt engine block heater with all-weather external connector shall be supplied.
- Current Federal EPA emissions standards certifications for 49 states with Ultra low sulfur diesel fuel, diesel particulate filter (DPF) and selective catalytic reduction (SCR) will be provided. A ten (10) gallon minimum diesel exhaust fluid (DEF) tank must be integrated into the emission after-treatment system.
- Pricing for diagnostic hardware and software for engine diagnostics shall be provided in the additional options section located in section 8.0 of this solicitation.
- Pricing for an additional warranty of 5 years/ 300,000 miles shall be provided in the additional options section located in section 8.0 of this solicitation.

TRANSMISSION

- The 40ft bus shall be a five (5) speed automatic transmission with an internal output hydraulic brake retarder. The transmission shall have a minimum duty cycle rating of 45,000 lbs. GVWR.
- The 32ft & 35ft bus shall utilize a five (5) speed automatic transmission with an internal output hydraulic brake retarder. This transmission shall have a minimum duty cycle rating of 38,000 lbs. GVWR.
- Transmission shall be equipped with one (1) internal oil filter replaceable element integrally mounted.
- Transmission oil shall be cooled by an auxiliary heavy-duty water to oil heat exchanger in the outlet tank of the radiator.
- Transmission shall be controlled electronically. Retarder is to be controlled by the driver by a multi-stage switch located on the brake pedal.
- Driveline shall be minimum universal cross bearings for the 40ft bus. The driveline for the 32ft & 35ft buses shall be minimial universal cross bearings for the 32ft and 35 ft buses. Driveline guard shall be located behind cross bearing.
- Optional pricing shall be provided for diagnostic hardware and software for transmission diagnostics. Pricing shall be provided in Section 8.0/Additional Options.
- Pricing for additional warranty of 5 years/ unlimited miles shall be included.

ENGINE HIGH IDLE SYSTEM

- An electro-pneumatically controlled high idle system shall be provided. System to be activated when transmission is in neutral, air conditioning is operating and / or the driver switch is on. Engine idle shall increase to 1100 RPM.

ENGINE GUARD (AUTOMATIC SHUTDOWN)

- An electronically controlled engine shutdown system shall be provided. This model shall sense engine low oil pressure, hot transmission, low transmission fluid, and high coolant temperature. Driver's console is to be equipped with an override switch which allows the driver to safely maneuver the bus to safety in case of a shutdown situation.

BACK UP ALARM

- Shall be waterproof 12-volt DC, 97 dbA min. alarm. Alarm is to be controlled by the transmission reverse switch.

TWO-WAY RADIO PRE-WIRE

- The bus shall be pre-wired for installation of a two-way radio and antenna system. Two-Way radio pre-wire locations and details shall be provided at pre-construction meeting.

SHOP AIR SUPPLY

- Schrader valve for shop air is to be provided below front bumper as well as at the rear of the bus.

DIAGNOSTIC READER PORTS

- Diagnostic reader ports must be supplied within the interior mounted electrical tower as well as within the rear engine compartment.

TORSIONAL VIBRATIONAL DAMPENER

- The bus must integrate a torsional vibration dampener on the engine belt system. Idler pulleys will not be accepted as equal.

MATERIALS GENERAL SPECIFICATIONS

- All piping, tubing, cables, and wiring shall utilize brackets designed for heavy duty transit application, as well as grommets strategically placed to prevent the possibility of wire damage.
- All mounting of assemblies and sub-assemblies including the power plant and accessories shall be mechanically isolated to minimize the transmission of vibration of the body structure.

- All pipe fittings shall be of heavy-duty type and shall be designed to withstand the maximum pressure that could be generated under normal or overload conditions within the air or fluid system of which they are a component.
- All burrs and sharp edges shall be dressed to prevent injury to passengers, operators and maintenance personnel.
- Drain and filler plugs on rear axle, transmission drain and engine drain plugs shall be of the magnetic type, have hexagon heads, and be of high strength material.
- Lumber shall be thoroughly air seasoned or kiln dried; shall be straight grained and shall be free from rot, knots, checks and other defects which may impair its strength or durability or mar its appearance. Lumber shall be dressed on all sides to full dimensions.
- All welding shall conform to the American Welding Society Structural Welding Code, Steel, D1.1-84 or D8.8-79 or approved equal standard applicable to the steel used. Where visible, welding shall have finished appearance. All welding on the vehicle shall be done by welders certified to AWS D1.1 or approved equal standard applicable to the steel used.
- All surfaces to which springs are attached shall be of such a design as to prevent excessive grooving or wear of the parts.
- All grease and oil fittings shall be readily accessible for lubrication.
- All steel bolts, nuts, screws and washers shall be zinc plated, except where otherwise requested. The thickness and method of zinc coating shall conform to ASTM Specifications No. A165, latest revision for Type TS coating. All cap screws, nuts and bolts shall be of SAE, Grade 5 material, unless the application requires a higher grade material.
- All sheet metal screws shall comply with ASTM and ASA recommendations relative to quality and installation.
- All air, oil and water lines and openings into equipment units shall be sealed, plugged or adequately protected against entrance of contaminants until connected.
- Mounting of major assemblies including engine, transmission, axles, power steering and suspension components shall be such that dismounting shall be easily carried out by conventional shop methods.
- All components, assemblies, and sub-assemblies shall be readily accessible for service, repair, removal and replacement.

WARRANTY

- The buses furnished shall be warranted and guaranteed to be free from defects and related defects for the minimum time mileage given below:

COMPONENT	STANDARD WARRANTY (whichever comes first)
Engine	2 Years/300,000 miles
Transmission	2 Years/unlimited miles
Air Conditioning System	3 Years/unlimited miles
Basic Body/Chassis Structure	5 Years/250,000 miles
Bus Body, Excluding Structure	2 Years/50,000 miles

- The warranty shall begin on the date the unit is determined to meet specifications and is accepted into the fleet. Bidder must include copy of all warranties with bid.

PARTS AND SERVICE

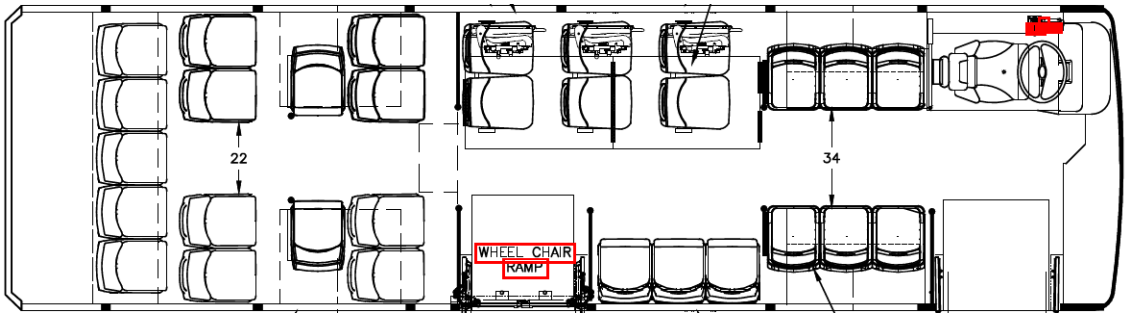
- The manufacturer of the equipment furnished shall have an authorized dealer within the state of Mississippi. The authorized dealer shall have factory-trained personnel available for warranty repairs and the performance of service. The dealer shall also maintain an inventory of high-usage parts and a quick source for low-usage parts. The dealer shall be able to provide a single point of service for all warranty and parts for both chassis and body components. All bids must include verification to satisfy this section.

MANUALS

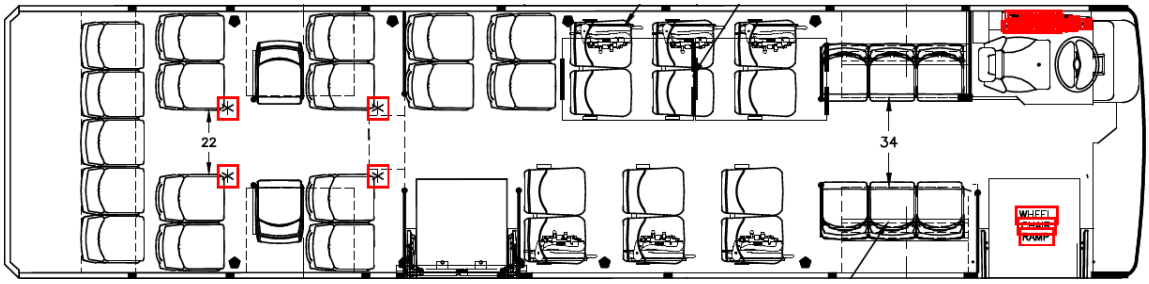
- Upon delivery, the following Parts and Service manuals are to be provided per purchase order:
    - Engine parts manuals
      Air Conditioning parts manuals and service manuals
      Driver Seat parts manuals and service manuals
      Passenger Seating and Handicap Restraint System parts manuals
      Transit Manufacturer Parts and Service Manuals shall consists of front axle, rear axle, brake system, brake retarded, air system, suspension system, steering, wheels and tires, chassis, non- engine manufacturer controls and accessories, non-transmission manufacturer controls and accessories, fuel system, cooling system, electrical system, interior and exterior lighting, starter and alternator, interior and exterior body panels, charging system, passenger doors, glass, interior accessories, bumpers.
    - Electrical Schematics - one set of electrical schematics shall be provided.
    - Timeliness of Literature - Only current literature for make and model of equipment and accessories will be accepted.
    - Electronic Format - one set of parts and service manuals on a flash drive shall be provided.

POSSIBLE / SAMPLE FLOORPLANS

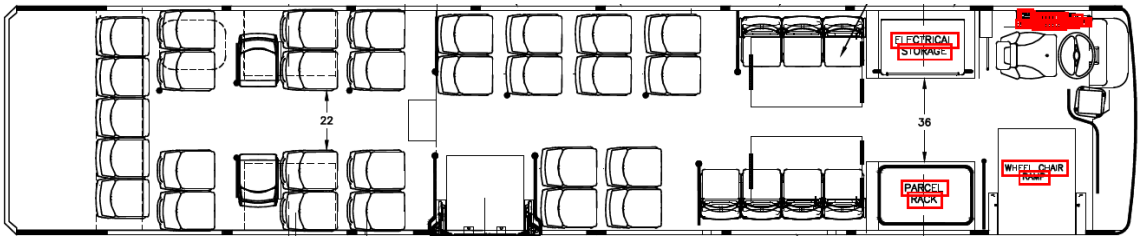
32 ft



35 ft



40 ft



NOTE:

Final floorplan shall be decided during the pre-production meeting after the award and prior to the build of unit 1

HEAVY DUTY BUS BID PROPOSAL FORM

The undersigned, having carefully examined the appropriate specifications does hereby agree to furnish and deliver the following items at the price(s) indicated:

SCHEDULE OF ITEMS	UNIT PRICE DELIVERED	TOTAL PRICE
2023 Price for 32 ft Buses as specified.		
2023 Price for 35 ft Buses as specified.		
2023 Price for 40 ft Buses as specified.		
OPTIONS TO BE PURCHASED		
Composite subfloor		
LED headlamps high and low beam		
Delete center door – (deduct 4 seats)		
Base coat clear coat paint		
Frameless passenger windows		
32-hour training – bus training		
HVAC diagnostic software and hardware		
Multiplex diagnostic hardware and software		
Additional wheelchair position		
Additional seated passenger		
Remove seated passenger (credit)		
wheelchair tie down position		
v25 fire suppression system		
3 Position Bikerack		

OPTIONS TO BE PURCHASED	UNIT PRICE DELIVERED	TOTAL PRICE
2 Position Bikerack		
Nylon Assist Rail Grab Straps (Ea)		
Cng Propulsion Option 32 Ft Transit Bus 35,000 Gvwr (Includes Fire And Methane Detection)		
Cng Propulsion Option 35 Ft Transit Bus 43,420 Gvwr (Includes Fire And Methane Detection)		
Cng Propulsion Option 40 Ft Transit Bus 43,420 Gvwr (Includes Fire And Methane Detection)		
Battery Electric Propulsion Option 32 Ft Transit Bus/45,000 Gvwr (Includes 492 Kw Battery Capacity-Disc Brakes-Electric Propulsion- V25 Fire Detection And Suppression)		
Battery Electric Propulsion Option 35 Ft Transit Bus/45,000 Gvwr (Includes 492 Kw Battery Capacity-Disc Brakes-Electric Propulsion- V25 Fire Detection And Suppression)		
Battery Electric Propulsion Option 40 Ft Transit Bus/45,000 Gvwr (Includes 492 Kw Battery Capacity-Disc Brakes-Electric Propulsion- V25 Fire Detection And Suppression)		
Additional Battery (123 Kw Each Pack)		
Hydrogen Fuel Cell Propulsion Option 32 Ft Transit Bus/45,000 Gvwr (Includes Fuel Cell Dominate /Electric Propulsion Drive Design For Extended Range- Hydrogen Detection System-Minimum 57.5 Kg Of Hydrogen Fuel Capacity – 125kwh Fuel Cell-37kwh Battery Capacity)		
Hydrogen Fuel Cell Propulsion Option 35 Ft Transit Bus/45,000 Gvwr (Includes Fuel Cell Dominate /Electric Propulsion Drive Design For Extended Range- Hydrogen Detection System-Minimum 57.5 Kg Of Hydrogen Fuel Capacity – 125kwh Fuel Cell-37kwh Battery Capacity)		

OPTIONS TO BE PURCHASED	UNIT PRICE DELIVERED	TOTAL PRICE
Hydrogen Fuel Cell Propulsion Option 40 Ft Transit Bus/45,000 Gvwr (Includes Fuel Cell Dominate /Electric Propulsion Drive Design For Extended Range- Hydrogen Detection System-Minimum 57.5 Kg Of Hydrogen Fuel Capacity – 125kwh Fuel Cell-		

32’ Low Floor Bus per specs: FOB MSU-SMART
Completion time after receipt of order: _____days

35’ Low Floor Bus per specs: FOB MSU-SMART
Completion time after receipt of order: _____days

40’ Low Floor Bus per specs: FOB MSU-SMART
Completion time after receipt of order: _____days

Provide information requested, affix signature and return this page with your proposal:

Name of Firm: _____

Complete Address: _____

_____

Telephone Number: _____

E-mail Address: _____

Authorized Signature: _____

Printed Name: _____

Title: _____

ATTACHMENTS

Bidder must sign and submit all the following attachments with the bid