

Attachment C –Specifications

Under-Bridge Inspection Unit-Truck Mounted

Specification Number: 809-UBIUTKM-40-1032/111

Under-Bridge Inspection Unit – Truck Mounted

Under-bridge inspection unit, truck-mounted, new and of current model, equipped as advertised by the manufacturer, to meet or exceed the following **MINIMUM** specifications:

Under-Bridge Inspection Unit Proposed: Make: _____ **Model:** _____

Cab Chassis Truck Proposed: Make: _____ **Model:** _____

Non-Restrictive
Clause:

Any use of brand name or equal within this specification is to be considered a reference for the purpose of describing the standard of quality, performance, and characteristics desired. It is not intended to limit or restrict competition

SPECIFICATIONS

It is the intent and purpose of these specifications to describe a vehicle to provide underbridge inspection capabilities by positioning workmen and their tools approximately 42' horizontally under a bridge to perform maintenance tasks. With the platform completely extended, the truck can be driven slowly forward or backward to provide continuous or overlapping areas of coverage. The vehicle must operate within 8'-6" of the traffic lane so that lane closures are kept to a minimum.

The vehicle shall be an under-bridge maintenance vehicle and will include a truck chassis, flatbed body, aerial device, and any necessary equipment, components, accessories required to furnish a complete unit ready for operation. The aerial unit shall be truck-mounted, hydraulic-powered with three (3) articulating boom sections, two rotation turrets, and a maneuverable 600 pound capacity aluminum platform with fully proportional controls. The construction and stability of the completed unit shall conform to all applicable requirements of the current ANSI 92.8 regulations.

Comply Yes/No: _____

Performance: The under-bridge maintenance vehicle shall be capable of placing the workers in positions under and along the side of the bridge, allowing the worker to make physical contact with the bridge, as needed.

It shall be the bidder's responsibility to meet all specifications and performance requirements mentioned herein for the under-bridge inspection vehicle. The bidder shall submit drawings of the proposed device with dimensions and clearances within the submittal package

Comply Yes/No: _____

GWWR: 60,000 pounds, minimum.

Comply Yes/No: _____

Cab-Trunnion: 169" approx.

Comply Yes/No: _____

Engine: Diesel, 350 horsepower, 1350 ft-lbs torque, by 950 RPM minimum, provide remote PTO throttle control capability (body builder connection) for under-bridge inspection unit. Engine RPM shall be set for 2 speed throttle.

Make: _____ Model: _____

HP: _____ Torque: _____

Comply Yes/No: _____

Engine Protection: Unit shall have automatic engine shutdown system to include; oil pressure, oil temperature, coolant temperature, high temperature protection warning light with gauges for oil pressure, oil temperature and coolant temperature

Comply Yes/No: _____

Cooling System: Heavy-duty, high capacity radiator, silicone hoses

Comply Yes/No: _____

Exhaust: Vertical or horizontal muffler with vertical tailpipe with bright shield to protect personnel from burns Exhaust system shall not interfere with the operation of the body or under-bridge inspection unit

Comply Yes/No: _____

Transmission: Heavy-Duty, 6-speed fully automatic transmission, geared for highway speeds up to 72 MPH with fully loaded truck

Make: _____ Model: _____

Type: _____ Speeds: _____

Comply Yes/No: _____

PTO: The power take-off shall be transmission mounted power shift type, cab controlled, and shall have a ratio to provide optimum performance of the hydraulic pump operating upper structure components further described in the specs. Unit shall be equipped with a PTO engaged light.

Comply Yes/No: _____

Frame: The minimum acceptable frame side rail shall meet or exceed the required section modulus of 30 cubic inches minimum, and an RBM of 3,500,000 inch pounds minimum. Full C channel liner required. Section modulus, RBM, frame reinforcement, and chassis shall meet under-bridge inspection aerial device manufacturer's minimum requirements.

Comply Yes/No: _____

Electrical: 12-volt, 160-amp alternator. Three 12-volt maintenance free batteries, 1875 CCA

Alternator:

a. Manufacturer: _____

b. Amp rating: _____

Battery size and capacity: _____

Comply Yes/No: _____

Fuel System: 100-gallon (minimum) tank capacity (any configuration) dual stage fuel filters

Number of tanks: _____

Capacity per tank: _____

Comply Yes/No: _____

DEF Tank: 9.5-gallon frame-mounted, minimum

Number of tanks: _____

Capacity per tank: _____

Comply Yes/No: _____

Steering: Power – integral

Comply Yes/No: _____

Back-up Alarm: Smart alarm system which is activated upon backward movement of the vehicle; audible above normal outdoor and construction sounds

Comply Yes/No: _____

Brakes: Full air, disc, ABS with 6 channel/6 sensor/6 modulator configuration for front and rear axle compatibility, dash mounted warning light for low air pressure, air pressure gauge dash mounted, and air release parking brake with dash mounted light, sized to meet all applicable state and federal safety standards for size, weight, and application of truck

Brake system specified: _____

Rotor size: _____ Caliper size: _____

No. of caliper pistons: _____ Air tank capacity: _____

Air compressor size (GPM): _____ ABS system: _____

ABS configuration used: _____

Comply Yes/No: _____

Axle Rating and
Suspension:

Front Axle: 20,000 GVWR minimum. The axle shall include 20,000 pound capacity suspension with heavy duty shock absorbers.

Rear Axle: Heavy duty tandem at 46,000 pound minimum capacity, 54" axle spacing, provided with 46,000 pound capacity heavy-duty, steel leaf spring RT type suspension. Gear ratio shall allow the vehicle to travel 72 mph.

Axle rating:

Front: _____ Rear: _____

Axle description:

Front: _____ Rear: _____

Comply Yes/No: _____

Driveline: Heavy-duty main u-joint with inter-axle

Comply Yes/No: _____

Tires, Radial: Front – (2) 425/65R22.5, 16-ply radial, highway tread, steer tire pattern

Rear – (8) 11R22.5, 16-ply radial, highway tread

Must be rated equal to or higher than axle and suspension weight specifications and rated for top governed speed of 72 MPH

Front:

Brand: _____ Size: _____

Load Rating: _____ Speed Rating: _____

Rear:

Brand: _____ Size: _____

Load Rating: _____ Speed Rating: _____

Comply Yes/No: _____

Wheels: Front – (2) 22.5 x 12.25, 10-hole disc, steel, hub piloted

Rear – (8) 22.5 x 8.25, 10-hole disc, steel, hub piloted

Must be rated equal to or higher than axle and suspension weight specifications and rated for top governed speed of 72 MPH, disc brake compatible

Front:

Brand: _____ Size: _____

Load Rating: _____ Speed Rating: _____

Rear:

Brand: _____ Size: _____

Load Rating: _____ Speed Rating: _____

Comply Yes/No: _____

Corrosion
Protection:

Rust proofing of the platform deck shall include the following standards:

Full undercoating shall be applied in a continuous and uniform coating, including all under deck body sheet metal. Drive shafts, drain holes, lubrication points, engine crank-case, heavy castings and suspension components shall be kept free of coating material. Chassis shall have standard factory undercoating.

Comply Yes/No: _____

Paint: Unit shall be painted to manufacturer's specification, but shall include as a minimum, a rust inhibitor primer and a finish coat. The complete paint film, to include primer and finish coat, shall have a minimum thickness of 2.5 mils.

The chassis shall be the truck manufacturer's standard white and the under-bridge inspection unit shall be the manufacturer's standard color.

Comply Yes/No: _____

Cab and Equipment: Conventional-type, aluminum or steel construction with fiberglass front hood and fender assembly, tilting hood and fender assembly, equipped with door pads and back of cab pads for sound deadening and insulation.

All standard equipment including, but not limited to: five cab-mounted marker lights, deluxe high-back air suspended driver seat and passenger seat, high-visibility orange safety belts, factory air conditioning and heater with defroster, outside assist handles both sides (if exhaust is in the way then an inside assist handle will be acceptable for the side affected), 12-volt dash mounted accessory power outlet, all dash switches including spares shall be functional, direct reading gauges for oil pressure, water temperature and air pressure, tachometer, AM/FM Bluetooth stereo radio with hands-free option, dual air horns, warning lights and buzzers for air pressure, oil pressure and water temperature, RH and LH west coast mirrors, convex auxiliary mirrors (LH & RH), tinted glass all around, multi-speed electric windshield wipers and washers with intermittent mode, tilt steering column, front tow hooks, heavy-duty front bumper, circuit breaker for clearance and identification lights.

Comply Yes/No: _____

Deck Body: The body shall be constructed of 1/4" diamond plate steel. The deck shall be welded to the heavy-duty structural steel cross-members and longitudinals with side and end rails. Deck surface shall be finished with non-skid paint.

The body shall have two (2) locations with access steps installed on the left and rear of the deck. The steps shall be constructed with non skid material. First step shall be 15" to 18" from ground.

Two (2) under deck tool boxes approximately 18" x 18" x 48" shall be installed, one on the right side and one on the left side of the body. Boxes shall be constructed of 16-gauge steel. Doors shall be downward opening with chain stops and lock.

Doors shall have automotive neoprene d-type seals for weatherproofing. Boxes shall be painted inside and out. Drain holes shall be provided. Locks and keys provided.

The unit shall have four (4) anti-sail flaps, installed in front and back of rear tandem wheels.

Comply Yes/No: _____

Under-bridge Inspection Unit:

Overall
Dimensions: Overall stored length: 40', 0" (maximum)
Overall stored height: 13', 0" (maximum)
Overall stored width: 102" (maximum)

When in operation, only 8'-6" maximum of the traffic lane shall be occupied.

Comply Yes/No: _____

Under-Bridge Inspection Aerial Device Components:

Assembly: The under-bridge maintenance aerial device assembly shall consist of the following minimum components:

- Pedestal and sub-frame
- Two (2) hydraulic rotation turrets
- Three (3) hydraulic articulating boom sections
- 600 lb. capacity platform
- Auxiliary diesel engine and PTO power sources
- Hydraulic system
- Controls and safety system
- Truck stabilizers
- Communication system
- Accessories

Comply Yes/No: _____

Pedestal &
Sub-frame: Both the pedestal and sub-frame shall be constructed of high strength steel and shall have sufficient strength to withstand all torsional stress imposed by the boom assemblies with the maximum rated load in the work platform.

The pedestal shall be mounted behind the truck cab. The pedestal shall be welded to a tubular or beam type sub-frame which shall extend the full length of the chassis frame.

The sub-frame shall be fastened to the chassis frame with mounting plates and grade 8 bolts.

Comply Yes/No: _____

Rotation
Turrets: **Turret No. 1:** The main turret shall be mounted on top of the pedestal and hinged to Boom No. 1. It shall rotate the booms off of both the right and left side of the vehicle.

Turret No. 2: The second turret shall be mounted at the end of Boom No. 1 and hinged to Boom No. 2. It shall rotate a minimum of 180° when boom No. 3 is telescoped.

Bearing: Each turret shall rotate on a heavy-duty shear ball-type bearing protected against dirt and moisture, and provided with means for pressure lubrication.

Motor and Gear Box: Rotation shall be powered by a reversible hydraulic orbital motor driving a self-locking gear box, which shall prevent free wheeling in case of hydraulic failure.

Counterweight: A counterweight shall be attached to the pedestal assembly and shall rotate with the under-bridge inspection unit on the opposite side, and stay within the width of body when the booms are deployed.

Comply Yes/No: _____

Booms: The under-bridge inspection aerial device shall be equipped with two articulating, hydraulically operated booms.

Boom No. 1: The main boom shall be hinged to the mainframe pedestal turret and shall clear a 10' sidewalk.

Boom No. 2: The second boom shall be attached to the end of Boom No. 1 and shall be a minimum of 20' long.

Boom No. 3: The 3rd boom shall include a hydraulic telescoping section. It shall be able to extend the platform a minimum of 42' under the bridge. It shall also be capable of being placed in a vertical position enabling the platform to work 35' above.

Platform: The Platform shall be constructed out of aluminum, measuring 3'x5' with a 600lb. capacity. An automatic leveling system shall be provided.

Boom Swivel Pins: Boom swivel pins shall be of high strength steel. Pins shall be threaded and secured with self-locking nuts. Swivel bearings shall be of high strength material with provision for lubrication and replacement.

Boom Cylinders: Booms shall have full hydraulic powered cylinders. All cylinders shall be pilot operated, double-acting with integral safety holding valve. All boom actuation shall be by cylinders that are directly attached to the booms.

Cylinder Swivel Pins: Cylinder shall be attached to the booms with high strength steel pins. Cylinder pins may be secured with high strength steel snap rings or roll pins with tolerances that prevent side to side movement of pins. Cylinder pivot points shall be equipped with self-aligning ball bushings with provision for lubrication.

Comply Yes/No: _____

**Aluminum
Platform:**

One 3'x 5' wide aluminum platform with a minimum 600 lb. capacity shall be hinged at the end of the third boom. An automatic leveling system shall be provided.

An access gate shall be provided on the platform for easy entry without climbing.

Comply Yes/No: _____

**Safety
Harnesses and
Accessories:**

Three (3) safety harnesses and lanyards shall be furnished. Attachments for safety harnesses shall be installed in the platform.

Comply Yes/No: _____

Auxiliary Diesel
Engine & PTO Power
Sources:

The primary source of power for operation of the under-bridge inspection aerial device shall be provided by a PTO-driven, transmission-mounted hydraulic pump equipped with the following:

- a. An alternate 18 hp minimum, liquid-cooled diesel engine shall be installed to operate the unit in the event of truck engine stoppage.
- b. Engine pump shall have capacity to perform two or more functions simultaneously.
- c. 12-volt electrical system with keyed ignition and electric starter. The system shall allow engine to be started from the truck batteries.
- d. Fuel connection to the truck fuel tank(s)
- e. Diesel engine fuel filtration system
- f. Engine compartment which allows complete access to engine and hydraulic system components

Comply Yes/No: _____

Hydraulic
System:

All movements of the under-bridge inspection aerial device shall be made by hydraulic pressure. All hydraulic cylinders shall be double acting with direct coupled safety check valves as protection, in the event of pump or hose failure.

Reservoir shall be of steel welded construction with 50-gallon (minimum) storage capacity. Reservoir shall have baffles, clean out access, exterior oil sight level gauge, and magnetic drain plug.

Hydraulic oil shall be filtered through a return line 10 micron filter with replaceable element. A 100 mesh strainer shall be located on the suction side of the reservoir. All filters shall be accessible for easy element replacement.

Filter elements shall be installed to allow for easy cleaning or replacement.

Hydraulic fluid transmission lines shall be flexible hoses.

Flexible hoses shall be wire braid reinforced and shall have a weather and abrasion resistant covering. Working pressure rating shall be at least 200% of the bursting pressure.

Hydraulic cooler shall be oil to air type.

Pressure gauge shall be provided for hydraulic system to allow for checking the manufacturer's specified pressure settings.

Comply Yes/No: _____

Controls:

Three complete sets of controls shall be provided:

- a. One set of hydraulically operated controls at the pedestal
- b. One set of controls at the platform
- c. One set of remote controls for operation from edge of bridge

The hydraulic pedestal control shall be capable of overriding the remote controls.

All controls must be equipped with two-way, return to neutral type levers. All control valves shall have proportional flow control and precise metering capability to provide smooth operation of the unit in all working positions and to insure the safety of operating personnel at all times.

Controls shall be located to facilitate maintenance access. Manual overrides shall be provided for all functions.

Comply Yes/No: _____

Safety System: Interlock to prevent operation of under-bridge inspection aerial device if suspension lockouts are not engaged.

Limit switches to prevent rotation or articulation of booms into unstable positions.

Relief valves and switches to prevent overloading hydraulic system with excessive pressures.

Emergency kill switches at the work platform of truck and auxiliary engines.

Automatic check valves on hydraulic cylinders in the event of pump or hose failure.

Automatic audible alarm to signal excessive slope conditions.

Boom lifting cylinder shafts shall be sufficiently protected against corrosion using chrome rods.

Comply Yes/No: _____

Truck Stabilizers: The frame shall be equipped with four (4) hydraulically operated suspension lockouts, two at the front axle and two at the rear axle, controlled from the pedestal station. The lockout system shall include indicator lights to alert the operator that the lockouts are engaged or disengaged. Lights shall be installed in the cab and at the pedestal.

An interlock shall be installed to prevent operation of the under-bridge inspection aerial device when the suspension lockout system is disengaged. A manual override (to allow booms to be stowed in case of system malfunction) shall be installed at the pedestal.

When lockouts are engaged, the truck shall be capable of withstanding all tipping forces generated by booms in all positions in both stationary and moving applications.

Outriggers are unacceptable.

Comply Yes/No: _____

Communication System: An intercommunication system between personnel in the truck cab, the pedestal control station, and the work platform shall be provided and installed. At a minimum, the system shall consist of:

- A fully transistorized amplifier (powered by the truck batteries) with on/off switch, volume controls and an integral press-to-talk switch mounted in the truck cab convenient to the driver, and at the pedestal. The basket speaker shall be activated in a hands free mode.
- One lightweight headset with an ear piece and microphone. Jacks for the headsets shall be provided in the cab and at the pedestal location.

Comply Yes/No: _____

Accessories: A 1/2" air line with a minimum 125 PSI working pressure rating shall be provided to the platform. The airline shall be routed along the booms in protected areas and shall terminate at the platform with a quick disconnect coupling.

The unit shall have a hydraulically driven air compressor with a minimum output of 40 CFM at 125 PSI.

Four (4) 115-volt, three (3) contact, weatherproof, and grounded receptacles shall be provided; two (2) at the work platform, one (1) in the bucket, and one (1) at the right rear of the truck at ground level. Receptacles shall include ground fault circuit interruption (GFCI) protection.

Unit shall be equipped with a minimum 60 Hz, AC generator. It shall be a min. 5 KW.

Comply Yes/No: _____

ADDITIONAL REQUIREMENTS

Inspection
Requirements:

The following described schedule shall be followed by MDOT (Mississippi Department of Transportation), and successful bidder in the delivery, inspection, testing, and technical services for the under-bridge inspection vehicle.

A pre-delivery inspection upon near-completion of the unit, at the factory, by two (2) appointed MDOT employees, may be conducted. Vendor shall notify MDOT 30 days prior to the unit's completion.

Upon delivery of the under-bridge inspection vehicle to MDOT it shall be thoroughly inspected for total compliance with these specifications. Performance test shall not begin until the equipment is in exact compliance with all requirements as specified.

Following completion of inspection, the vehicle shall be put through a performance test. The performance test shall be made to determine the capability of the under-bridge inspection vehicle to insure that said equipment has the built-in capacity, stability, and necessary safety features required to fully comply with the specifications without showing evidence of stress or failure.

Upon completion of the performance tests and acceptance of the unit by MDOT, technical services supplied by the manufacturer shall be set up.

Onsite technical training for two (2) each mechanics and operators shall be provided by factory technician personnel, for a period of not less than two (2) days. The dates for this training shall be determined by MDOT personnel.

The successful bidder shall provide a complete and comprehensive inspection program for the under-bridge inspection vehicle and all components so that the MDOT personnel will be able to periodically inspect the unit thoroughly as a preventive measure.

Acknowledge Yes/No: _____

Service:

Unit shall be delivered fully assembled ready to operate. Factory-trained dealer representative is to inspect equipment on delivery and provide receiving MDOT equipment manager with information on operational, service, and maintenance requirements.

Acknowledge Yes/No: _____

Warranty: Clearly stated terms and conditions of all manufacturer warranties shall be included with the bid packet. Any and all materials, specialty equipment, or accessories that prove defective in normal operation within the warranty period shall be replaced or repaired by the manufacturer free of any and all cost to MDOT, including all material, labor, and transportation costs. Warranty replacement and/or repairs shall be furnished promptly by the successful bidder within a time period not to exceed thirty days. **The bidder shall provide written assurance with the bid package regarding warranty repairs.**

The delivering dealer will have sole warranty responsibility (**all components**) for the first ninety days after acceptance of vehicle.

The manufacturer shall provide, with bid packet, a list of warranty service locations within the State of Mississippi for all components of the vehicle (A/C, body, chassis, electrical, etc.) which may need warranty repair beyond the first ninety days.

Acknowledge Yes/No: _____

Workmanship: Workmanship throughout the vehicle shall conform to the highest standard of commercially accepted practice for the class of work and shall result in a neat and finished appearance. The design of the body and equipment which the manufacturer proposes to furnish must provide a vehicle of substantial and durable construction in all respects.

All parts shall be new. Used, reconditioned, or obsolete parts will not be accepted.

Acknowledge Yes/No: _____

Parts Availability: Dealer name and location within the State of Mississippi (if applicable):

Acknowledge Yes/No: _____

Tests and Testing: The complete vehicle and all working and moving parts and operating devices shall be thoroughly tested and put in operating condition by the manufacturer.

Prior to acceptance of vehicle by MDOT, the manufacturer shall service and adjust vehicle for operation.

Acknowledge Yes/No: _____

Literature: Technical manuals: Operator's manual, service/maintenance manual, and parts book are to be made available in both hard copy and electronic (cd, flash drive, etc.) versions. One set of technical manuals shall be provided with each unit upon delivery. Additional manuals may be ordered at a later date.

Technical service bulletins: Successful bidder shall provide TSBs (technical service bulletins) for all equipment delivered to MDOT as they are published, regardless of the date of delivery. TSBs may be furnished in paper or electronic format, and shall be updated regularly.

The following additional information shall be provided by the vendor at time of delivery (electronically if possible):

Manufacturer's recommended service/preventive maintenance intervals
Recommended fluids, lubricants, and their SAE equivalents

Descriptive literature shall be furnished to substantiate the details specified in bid.

Acknowledge Yes/No: _____

Certification: The manufacturer(s) shall furnish certification that this machine meets or surpasses current U.S. Department of Labor Occupational Safety and Health Administration (OSHA) Regulations, U.S. Department of Transportation Federal Motor Vehicle Safety Standards (FMVSS), and any other applicable Federal regulations.

Acknowledge Yes/No: _____

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NOTE: The Mississippi Department of Transportation is exempt, by way of contractual purchases, from Regulation Eleven and the protections provided by the Mississippi Motor Vehicle Commission. A written notice, established by public hearing on April 21, 2010, at 10:00 a.m., is on file with the Mississippi Motor Vehicle Commission, 1755 Lelia Drive, Suite 200, Jackson, MS 39216.

As a second stage or "specialty vehicle" manufacturer, you are not required to hold a Mississippi Manufacturer or Dealers' License and if you choose, may sell the finished motor vehicle directly to the Mississippi Department of Transportation.

Acknowledge Yes/No: _____

Vehicle Title or
Certificate of Origin:

Assignment: **State of Mississippi/DFA – 941**

Mailing address: Mississippi Department of Transportation, 9301
P.O. Box 1850
Jackson, MS 39215

Acknowledge Yes/No: _____

Lienholder: Upon award, if MDOT issues a **Notice to Proceed** instead of a **Purchase Order**, the vehicle is being purchased through the State's Master Lease Purchase Program, and the following shall be shown as the **1st Lienholder on the Title Application**:

U.S. Bank National Association
Attention: Jacqueline McNeil
6810 Crumpler Blvd., Suite 200
Olive Branch, MS 38654

Lienholder Number: 90018867500

Acknowledge Yes/No: _____