

Specifications for Four Wheel Drive Backhoe Loader
City of Natchez – Public Works Department November 2023

All Equipment offered for consideration must be new and current year model. Used, demonstrator, or discontinued models are unacceptable. Bidders shall include printed literature for the equipment offered.

The following specifications are considered minimum acceptable.

Engine:

- Four (4) cylinder, turbocharged isolation mounted diesel engine and shall be designed and built by the manufacturer
- Engine shall be certified to meet EPA Tier 4/EU Stage IV emission without requiring the use of a DPF (Diesel Particulate Filter) or EGR (Exhaust Gas Recirculation) aftertreatment components for increased uptime;
- Engine displacement shall be no less than 4.5 liters (276 cu. In.);
- Engine net peak power (ISO9249) shall be no less than 113 hp (84 kW) at 1,900 rpm;
- Daily check points shall be accessible from the right side of the engine and shall be done from ground level;
- Under hood engine air cleaner shall be dry type, dual element with evacuator valve, restriction sensor and in-cab restriction warning light;
- The backhoe shall have a one-piece tilt hood for easy engine access without having to remove engine side shields;
- The backhoe shall have an under hood after treatment device (DOC) with curved-end exhaust stack;
- Engine shall have no more than 10-micron rated primary fuel filter with water separator

Cooling:

- Engine coolant shall be rated to -40 degrees (-40 C)
- The backhoe shall be equipped with an oil-to-water engine oil cooler;
- Unit shall have an electronically controlled, variable rate suction-type fan with fan-guard
- The AC condenser will be swing-out for fast radiator clean-out. Remote mounted transmission and hydraulic coolers will offer better air exchange and fewer stacked cores;
- The hydraulic circuit is oil to air system and transmission circuits will be water cooled for fast winter warm-up for increased productivity

Power Train:

- The transmission shall be a hydraulically actuated powershift with Autoshift control and a torque converter with maximum transport speed of 24.9 mph. Clutch-free; fully synchronized five forward (automatically shifts between 2nd and 5th gear when Autoshift is engaged), three reverse speeds;
- The sealed axle, with no breather, will be mechanical front-wheel drive with traction control limited-slip differential with electronic on/off control;
- The machine will disengage MFWD in 4th gear to allow for longer life of tires and drive train but will engage MFWD when brakes are applied for four-wheel braking;

- The axle will be sealed to protect against contamination;
- The driveshaft will be painted for protection and will have an optional, factory installed, full guard;
- The clutch engaged MFWD can be engaged on the fly during operation;
- The rear axle shall be 100% hydraulically locking;
- The single electronic Transmission Control Lever will have gear selection fully integrated in the lever as well as forward, neutral and reverse (FNR power shuttle);
- Transmission oil cooler shall be provided as standard equipment;
- The backhoe shall have hydrostatic power steering with emergency manual mode
- The backhoe shall be equipped with Ride Control
- The final drives shall be heavy-duty outboard planetary distributing loads over three gears sealed in a cooling oil bath for long-life and trouble-free service
- The service brakes shall be inboard, wet-multiple disks, self-adjusting and self-equalizing and hydraulically actuated for a long and trouble-free life, sealed from water, mud and dust contamination;
- The parking brake shall be independent of service brakes, spring applied, hydraulically released, wet multi-disk and sealed from water, mud and dust contamination.

Hydraulic System:

- Hydraulic cooler will have an independent reservoir for continuous running of attachments at high ambient outside air temperatures
- Machine shall be equipped with Auto Idle to lower rpm when hydraulics are not active to conserve fuel and reduce noise levels;
- Machine shall be equipped with Economy Mode with dual feature that can be applied to backhoe or loader functions separately or together for improved fuel economy;
- The hydraulic filter shall be no more than 4 micron and will be vertically mounted, spin on design for ease of installation and leak-free replacement;
- An automatic bucket return-to-dig control will be standard;
- Hydraulic pump shall be 43 gpm (163L/min.) @ 2,200 rpm at 3,625 psi (24,993 kPa) closed center hydraulic pressure compensated load sensing (PSLS) axial piston driven.

Electrical:

- The backhoe shall have a 12-volt system with 145-amp alternator;
- Optional dual maintenance free batteries shall be included, 350-min reserve rated capacity, 1900 CCA with disconnect and jump posts;
- The starter shall have a bypass start safety cover;
- Cab will be pre-wired for rotating beacon and radio-ready
- Unit shall be equipped with 10 LED driving/working lights, (4) front driving/working; (4) rear; and (2) side docking lights. The front lights shall be adjustable and LED;
- Unit shall be equipped with two front and two rear turn signal/flashing and two rear stop and taillights and two rear reflectors;
- Unit shall be equipped with optional LED lights;
- Machine connectivity to be free from subscriptions or annual renewals that can provide machine data, tack utilization and review diagnostic alerts remotely.

Operator Station:

- Unit shall be equipped with isolation mounted modular design ROPS/FOPS canopy and molded roof;
- Access to the cab shall be from the right and left side with protected, wide, rigid, slip-resistant steps
And ergonomically located hand holds;
- 3" (76mm) retractable seat belt shall be provided;
- Coat hook, built-in beverage holder, operator manual storage compartment, interior rearview mirror
And two 12-volt outlets shall be provided;
- Unit shall be equipped with illuminated electronic gauges with audible warning for: engine coolant
Temperature, oil temperature and fuel level;
- The monitor system shall have audible and visual warnings: engine air restriction, low alternator voltage,
Engine oil pressure, hydraulic filter restriction, hydraulic oil temperature, parking brake on/off and
Low brake pressure. The seat belt will have a visual warning;
- Machine manufacturer will provide a factory installed onboard security system for total machine
Integration. System will have the ability to accommodate no less than ten operator codes;
- Unit will have a machine security electronic protection system provided through the monitor or sealed
Switch module;
- Unit shall have digital display for engine rpm, engine hours, system voltage and hydraulic oil temperature;
- The foot throttle shall be suspended;
- The machine will have a cab with air conditioner and heat;
- The machine will have factory installed pilot backhoe controls with integral
Pattern select;
- The seat shall be suspension vinyl swivel, with fully adjustable armrests and lumbar support. A cloth
Suspension seat option will be provided at no additional charge.

General Specifications:

- Vandal protection shall cover the instrument panel (canopy only). Engine hood, toolbox, hydraulic
Reservoir and fuel filler shall be lockable;
- Fuel tank capacity shall be no less than 34 gallons (128.7 L) and shall be accessible from ground and
lockable;
- Optional factory installed fluid sampling valves will be available;

Frames and Structure:

- The mainframe shall be a one-piece unitized construction for maximum strength
- Unit shall have four built-in vehicle tie downs, two in front and two in rear for safe transport between
jobs;
- The side plate thickness on the loader boom, backhoe boom and mainframe shall be 4.5 mil or greater;
- Machine shall be equipped with an exterior mounted, ground level accessed and lockable storage
compartment;

Backhoe:

- The backhoe with standard dipperstick digging depth shall be at least 14 ft. 3 in. (4.34 m);
- The boom lift capacity at ground level shall be no less than 3,283 lb. (1,489 kg);
- Maximum SAE dig depth with extendable dipperstick extended shall be no less than 18 ft. 2 in. (5.53);
- The swing lock pin shall be stored in the operator's station;
- The stabilizer shall have reversible pads;

- Optional extendible dipperstick shall extend no less than 3 ft. 6 in. (1.07 m)
- Digging force with standard backhoe, bucket cylinder shall be at least 12,356 lbs. (55.0 kN)
- Unit shall have pilot joystick controls;
- Unit to include thumb attachment on bucket

Loader:

- Dump clearance @ 45 deg. shall be no less than 8 ft. 10 in. (2.7 m);
- Bucket breakout force shall be no less than 10,541 lbs. (46.9 kN);
- Single, greaseless bucket tilt cylinder and bucket level indicator;
- The loader shall have hydraulic self-leveling and bucket-level indicator;
- The loader control will be single-lever with electric clutch disconnect;
- The loader shall have a non-removable, hinged loader boom service lock;
- The loader shall have a 1.31 yd. multi-purpose bucket;
- The loader shall have a 24" digging bucket with thumb;
- The unit shall include tires with sizes as follows: Front- 12.5/80, Rear- 21-24.

Warranty:

- Full machine warranty for 60 months or 5,000 hours, including any travel time and mileage

Other:

- Bidder shall have a certified parts and service center located within 50 miles of Natchez, MS Adams County;
- Must give estimated time of delivery;
- Must include delivery to City of Natchez Public Works Department;
- Must include full-service manual.