



Johnson County Commission

William Brenner
Presiding Commissioner

Scott Sader
Commissioner, Eastern District

Destry Hough
Commissioner, Western District

Gilbert Powers
County Clerk

Johnson County Courthouse, 300 N Holden, Warrensburg, MO 64093
(660) 747-6161 - Fax 747-9332 countyclerk@jococourthouse.com
www.jococourthouse.com

December 15, 2008

INVITATION TO BID:

The Johnson County Commission is requesting bids for the purchase of one 2008/2009 motor grader for use by the Road and Bridge Department.

Bid specifications may be obtained by contacting the County Clerk Office, 300 N. Holden, Warrensburg, MO 64093, by phone at (660) 747-6161 or by email at countyclerk@jococourthouse.com.

Sealed bids will be accepted in the County Clerk's Office no later than 9:30 a.m., Monday, December 29, 2008, at which time bids will be opened in the Commissioner's Office. The words "**MOTOR GRADER BID**" must be clearly marked on the outside of the envelope containing said bid.

The County Commission reserves the right to reject any and/or all bids and may select the bid which they determine to be most advantageous.

JOHNSON COUNTY COMMISSION

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MOTOR GRADER BID SPECIFICATIONS

Basic Spec

- Machine shall be designed and built by the manufacturer
- Machine weight not less than 33,356 LBS
- Max Weight of the machine not less than 50,875 (INCLUDING FUEL, ETC)
- Length from front outside edge to end of tow hitch no more than 343 in
- Wheel Base (distance from front axle to mid tandem) not less than 241 in.
- Front frame needs to be formed structural carbon steel tube, with a single, resistant weld
- Rear frame needs to have two box section channels with integrated bumper
- Standard rear hitch will be provided

Engine

- Designed and built by the manufacturer
- Turbo-charged, direct injection, four stroke, 6-cylinder diesel engine
- Electronically controlled for better fuel injection and fuel burn
- Displacement no less than 7.2L
- Develop, as standard, flywheel power of at least 183 HP in 1st gear, 188 HP in 2 gear, 193 HP in 3rd Gear, 198 HP in 4th gear through 8th gear.
- Utilize an increase of 5 HP per gear (in 1st through 4th) as standard when shifting and downshifting HP plus available to increase rated net flywheel power to at least 203 HP in 5th gear, 208 HP in 6th Gear, 213 HP in 7th gear, 218 HP in 8th gear.
- Rated engine power not to be achieved at an engine speed greater than 2000 rpm.
- Peak engine power not to be achieved at an engine speed greater than 1800 rpm.
- Isolation mounted to minimize sound and vibration.
- Meet EPA Tier 3, without utilizing EGR.
- Fan should automatically adjust fan speed per variable hydraulic fan pump for cooling requirements should allow for 500 hours between oil changes
- Enclosure and daily service points should be easily accessible from ground level, and grouped on the left side of the machine.
- Ether starting aid, and must automatically meter ether injection to prevent engine damage.
- Increase its low idle speed to 1000 rpm when battery when battery voltage is below 24.5 for more than 5 minutes to ensure adequate system voltage.
- Jacket water heater be available to assist in cold weather starting

Powertrain/Transmission

- Designed and built by the manufacturer
- Direct drive, power shift, and countershaft type
- Rear axle bolt-on modular design offering easy access
- Load compensating system
- Transmission has to have 8 forward speeds and 6 reverse speeds
- 5 working gears between 0-10,6 mph for dirt applications
- Differential lock/unlock electro-hydraulically controlled
- Differential lock/unlock not to have speed restrictions for engaging/disengaging
- Differential lock/unlock multi-disc design
- Final drive planetary design
- Equipped with an electronic inching pedal for improved modulation

- Equipped with electronic over speed protection to prevent the engine and trans from over
- speeding
- Diameter at the output end should be no less than 2.29 in
- Equipped with built in self diagnostic capability
- Programmable auto-shift trans option should be available
- Transmission should be isolated mounted to reduce sound and vibration

Brakes

- Multi disc, oil cooled and completely sealed
- Hydraulically actuated, dual independent brake circuits
- Brake discs surfaces should be grooved and carry oil between discs and plates w/brakes fully applied
- Meet all requirements of ISO 3450
- Provide a minimum of 3,565 in of total friction material surface area used at each of the four Tandems
- Wheels to eliminate braking loads on the power train.
- Access to check and determine brake wear without removing or disassembling the brake assembly
- Hydraulic brake accumulator
- Parking brake multi disc, oil cooled, spring applied, hydraulically released, sealed, adjustment free and integrated into the transmission
- Parking brake should be serviceable without removing transmission
- Engaged parking brake will need to be neutralize the transmission

Hydraulic system

- Closed center, load sensing type, with a variable displacement, axial piston type pump
- Hydraulic implement pump produce between 0 and 55.7 gallon/min of oil flow at high idle.
- Implement valves be electro hydraulic, designed and built by the machine manufacturer.
- Implement valves be proportional priority pressure compensating for consistence response,
- When multi functioning any combination of implement controls and independent of engine speed
- Lock valves integrated into the mail implement valve to prevent cylinder drift
- Blade lift cylinder has independent float capability, actuated by two, three axis, multifunction Joystick controls inside the cab
- Provision to install up to fifteen modulating hydraulic valve, controlled by two, three axis, and multi-functioning, joystick controls and auxiliary controls inside the cab.
- Hydraulic valves mounted under the cab floor, to minimize sound and vibration
- Implement pump mounted under the cab floor, to minimize sound and vibration.
- Implement pump solely dedicated to implement controls and not shared with any other components.
- Hydraulic system be fully sealed, using duo-cone and o-ring seals to prevent contamination and spillage.
- Hydraulic system has a separate oil tank, dedicated to the implement pump
- Hydraulic tank has a baffling system to reduce potential pump cavitations
- Triple redundant hydraulic relief system to protect machines hydraulic components.

- Implemented hydraulic connections to have o-ring face seals for leak prevention
- Hydraulic system pressure to be no more than 3,500 psi
- Hydraulic stand by pressure, no more than 450 psi

Front axle and tandems

- Front axle, arched design for maximum ground clearance
- Front axle oscillation be no less than 32 degrees total, per side 16 degrees up, 16 degrees down
- Front wheel steering angle be no less than 47.5 left or right
- Front wheel spindle bearings be double tapered design with the larger diameter bearing mounted closest to the centerline of the front tire.
- Front wheel spindle maintenance intervals be no less than 2000 hours
- Wheel spindle be a live spindle design and rotate inside a sealed compartment with lightweight oil for lubrication of the bearings.
- Front spindle be heat induction hardened
- Electronic and mechanical steering stops located at each wheel and steering cylinder relief valves are present to prevent steering system damage during normal operation.
- Maximum front wheel lean shall be no less than 17.1 degrees left or right.
- Machine turning radiuses not exceed 25.6 ft using front steering, full articulation and unlocked differential
- Steering tie rod ends be heat induction hardened.
- Tandem chain pitch not be less than 2.0 in.
- Distance between centers of tandem wheels no less than 60 in
- Tandems be capable of oscillating 15 degrees front tandem up and 25 degrees front tandem down, with full machine articulation and having no interference between tandem wheel and structure.

Tires and Rims

- Available to provide mounting for 14.00-24 tires and 14.00R24 conventional tires

Operators Station

- An enclosed cab with (ROPS)
- Cab isolation mounted to the front frame section of the machine
- Cab doors need to have an hold open clasp with a ground level release in addition to, a release in the cab
- Cab will have wipers with washer s on the doors, front and rear windows
- Wipers be available on side windows
- Rear defroster fan
- Left and right side cab doors
- Cab air filters
- Cab heater with four-speed fan
- 17 adjustable vents to direct air to front windows and operator
- Electronic message system for real time machine performance and diagnostic data
- Real time information system monitor all system data and alert the operator of any faults
- through a digital text display, programmable for multiple languages.
- Instrument cluster, speedometer, tachometer, coolant temp, fuel, articulation angle gauge, and hour meter.

- Air suspension seat, cloth-covered seat, 3-inch retractable seat belts, with adjustable position, Seat height, seat back angle, thigh support, and lumbar support.
- Am/fm radio
- Toolbox on front of machine

Drawbar, Circle & Moldboard

- Moldboard – have a bank slope angle capability of at least 90 degrees on both sides
- No more than 6 replaceable wear inserts between the circle and drawbar, replaceable drop in inserts, made from nylon composite material.
- Circle and drawbar vertical adjustment points be accessible from the top of the drawbar, for ease of maintenance
- Circle outside diameter be no less than 60.2 in, be a single piece, rolled ring forging, with raised wear surfaces on the top and bottom.
- Circle shall be rotated by a hydraulically driven motor with a minimum circle pinion torque capability of 44253 ft-lb
- Circle teeth contact surfaces be induction-hardened on the from 240 degrees of the circle
- Moldboard side shift cylinder shall be installed on the left hand side, to prevent snow wind interference, with the cylinder rod.
- Moldboards have a hydraulic tip control through a range of 40 degrees fore and 5 degrees aft.
- Moldboards - 14 ft long, 24 in high and no less than 7/8 in thick
- Moldboards – slide rails be constructed of a heat treat, high carbon steel, and hardened, continuously welded, and have a replaceable bronze alloy wear insert at top and bottom
- Moldboard wear strips be adjusted with lock screws, providing shim less adjustment capability both vertical & horizontal.
- Blade lift and center shift cylinders have replaceable bronze alloy wear inserts in the ball sockets with removable shims to insure the ability to remove free play throughout the useful wear insert life.
- Link bar 7 positions for increased versatility
- Moldboard – retention system has two retention points located on the left and right side. The surface area not less than 50408 mm.
- Drawbar – feature welded protective wear plates to prevent lift group contact with the primary surface

Electrical

Machine – 70-amp hour, 880 cca, maintenance free batteries

Machine – 80-amp alternator

Starting system be a 24 v direct electric type

A 24 V to 12 V converter with 10-amp capacity

Electrical system has to have a master disconnect switch with a removable key (in addition to The ignition switch), accessible from ground level.

Incandescent white reversing lamps and LED stop lamps

High and low bar headlights with front turn signals

3 x 3 in halogen or 5 x 5 in HID mid-frame toe lights, to illuminate moldboard and surrounding area

Six 3 x 3 in halogen or six 5 x 5 in HID front mounted cab lights

An amber high-speed strobe beacon on machine

Serviceability

Fuel fast fill be at ground level, and capable of fill rates of up to 100 gallons/min

A guard to protect the machine's transmission from debris

Machine – 3 pints of contact on all areas of the machine, for mounting and dismounting

Articulation joint has to have a mechanical locking device to prevent frame articulation

While servicing or transporting machine

Left and right side tandem case assemblies be covered with punched steel plate to provide

An adequate platform for standing and walking

High-speed oil drain system with ground level quick connect access

Sampling ports be accessible from the tandem level and provide access to the engine, hydraulics, coolant, and fuel ports

Minimum Service Fill Capacities

- Standard fuel tank capacity no less than 103 gallons
- Cooling system not less than 10.4 gallons
- Hydraulic tank not less than 16.6 gallons
- Engine oil capacity not less than 6.6 gallons
- Tandem housing capacity not less than 16.6 gallons
- Front wheel spindle bearing housing not less than 0.13 gallons
- Circle drive housing not less than 1.8 gallons

Safety and Environmental

- Standard black glare reducing paint be used on the front frame and engine enclosure to decrease glare from other equipment lights and reflection from the sun and snow
- Hydraulic implement lockout be achieved by actuating a single electrical switch within the operator station.
- Drop down rear lights be available to span the profile of the machine
- Machine has to have a back up lights and sounding alarm as standard reverse gears
- Operator presence system will lockout implements, not allow gear shift out of neutral and lock parking brake if system detects operator not present.
- Circle drive slip clutch be provided to reduce horizontal moldboard impact damage.
- Blade lift accumulator to reduce vertical impact damage
- Outside mounted mirrors, with optional heated
- An external emergency kill switch for ground level engine shut down
- Electrical system with a master disconnect switch with a removable key and lock (in addition to the ignition switch)
- A guard be available to protect the machine's transmission from debris
- Machine provides dual exits allowing for emergency
- Machine needs to have laminated glass for the front windows and doors

Additional Features

- Optional air compressor
- All Owners & Parts Manual are a MUST – Unless we've already got a set, check with Road and Bridge supervisor
- 5 year warranty and no travel time

TRADE-IN

The county is offering one 2000 JD motor grader for trade-in with a buy back plan. This machine currently has 6,150 hours (still in use), 13 ft mow board and comes with parts manual and maintenance records. Bids should be submitted to include the trade-in and with an outright price if the county sells these machines prior to the bid opening date.