

**LIBERTY COUNTY  
ROAD DEPARTMENT  
CHESTER, MONTANA**

**SPECIFICATIONS FOR ONE USED  
DIESEL POWERED, ARTICULATED, SIX WHEEL DRIVE MOTORGRADER**

This attachment shall be considered a continuation of the call for bids, and by reference made a part thereof.

The Board of County Commissioners reserves the right to reject any or all bids, to waive irregularities, or to accept any bid they deem to be in the best interest of Liberty County.

BASIS OF THE AWARD shall be dependent on the most responsible bid submitted. Consideration will be given to purchase price, delivery date, equipment service guarantees, parts and service availability, parts and service facilities location, analyses and comparison of equipment specification details, and past experience of Liberty County with similar or related equipment.

No bid will be accepted without one year and 2500 hour full machine warranty left on the machine.

**Machine must not have more than 2800 hours.**

Pursuant to the call for bids, the following minimum requirement shall be met:

- A. Motor Grader shall meet OSHA requirements and specifications on the date of the bid opening.
- B. Delivery shall be F.O.B. Liberty County Shop, Chester MT.
- C. The bid shall include all operating, service, parts, and technical repair manuals.
- D. Bidders must specify delivery date.
- E. Motor Grader shall be a 2013 model.
- F. Motor Grader shall come with all hydraulics, electronics, controls, etc. to fully operate all functions stated or asked for in bid.
- G. Motor Grade Shall come with Henke V-Plow and Wing.

Please indicate in the following if the machine offered can meet the desired configuration. Any "no" should be clarified on a separate sheet if the bidder desires support for an alternate specification. Failure not to do so may result in non-acceptance of the bid.

**YES NO**

- Typical operating weight no less than 46,700 lbs.
- Automatic dual path hydrostatic six wheel drive. Separate left and right systems
- Engine and Transmission must be designed and built by machines manufacturer.
- Blade pull must be a minimum of 39,800 lbs.

**ENGINE**

- a. Minimum displacement of 9.0 L (548 cu.inch)
- b. Four stroke, six cylinder, direct injection, water cooled, turbo charged diesel engine.
- c. Low temperature starting system.
- d. Ether starting aid.
- e. Block heater, 120 volt.
- f. 110 gallon fuel capacity, minimum
- g. Pre-screener.
- h. Dry-type air cleaner with pre-cleaner, automatic dust ejector and air cleaner, cyclone pre-cleaner
- i. Cooling on demand, hydraulic-driven, variable speed fan with auto reversing, and swing out rear fan door and fold out coolers.
- j. Anti-freeze -35 degrees (Fahrenheit), extended life.
- k. EPA tier IV compliant
- l. Engine shall have variable horsepower starting in 1<sup>st</sup> with a net HP of 225, and ending in 8<sup>th</sup> gear with a HP of 285 or greater.

- \_\_\_ \_\_\_ m. Full engine side cover panels with lockable compartment doors.
- \_\_\_ \_\_\_ n. Net peak engine torque rise must be 50% or greater.

**TRANSMISSION**

- \_\_\_ \_\_\_ a. Power shift with electronic automatic shift, direct drive
- \_\_\_ \_\_\_ b. Transmission to provide eight speeds forward and eight speeds reverse.
- \_\_\_ \_\_\_ c. Single lever for both direction and speed changes.
- \_\_\_ \_\_\_ d. Differential lock/unlock shall be electro-hydraulically controlled
- \_\_\_ \_\_\_ e. Transmission will be such that machine won't move even if engine is started with transmission engaged.
- \_\_\_ \_\_\_ f. Electronically controlled over speed protection.
- \_\_\_ \_\_\_ g. Minimum top speed 28 mph or greater.
- \_\_\_ \_\_\_ h. Precision mode must be standard in gears 1-3.

**FINAL DRIVE**

- \_\_\_ \_\_\_ a. Inboard-mounted planetary sealing in cooled, filtered oil.
- \_\_\_ \_\_\_ b. Minimum distance between center of tandem wheels shall be 60 inches.

**BRAKES, WHEELS & TIRES**

- \_\_\_ \_\_\_ a. Service – brakes shall be multi-disc, oil cooled and completely sealed, tandem mounted.
- \_\_\_ \_\_\_ b. Parking brake - multiple oil disc, spring applied, hydraulically released, adjustment free, sealed, and integrated into the transmission
- \_\_\_ \_\_\_ c. Tires - Michelin X - Sno Plus radial tires, 17.5 x R25
- \_\_\_ \_\_\_ d. Rims –three piece steel

**STEERING, FRONT AXLE & WHEELS**

- \_\_\_ \_\_\_ a. Front wheels shall have 47.5 degrees left or right minimum steering range.
- \_\_\_ \_\_\_ b. Steering shall be hydraulic.
- \_\_\_ \_\_\_ c. 24 ft. maximum turning radius outside front tires.
- \_\_\_ \_\_\_ d. Front axle, height to center not less than 22.5 inches ground clearance.
- \_\_\_ \_\_\_ e. Hydraulic leaning front axle minimum 17.1 degrees right or left.
- \_\_\_ \_\_\_ f. Front axle shall have not less than 32 degrees total oscillation, 16 degrees up, 16 degrees down.
- \_\_\_ \_\_\_ g. Main frame shall be articulated.
- \_\_\_ \_\_\_ h. Due to safety reasons in snow plowing applications, unit must have a steering wheel.

**ARTICULATION JOINT**

- \_\_\_ \_\_\_ a. Articulation joint with mechanical lock.
- \_\_\_ \_\_\_ b. Frame angle to be minimum of 22 degrees.
- \_\_\_ \_\_\_ c. Articulation indicator in operator’s compartment.
- \_\_\_ \_\_\_ d. Bottom joint must have double taper roller bearings.

**HYDRUALICS**

- \_\_\_ \_\_\_ a. Full hydraulic controls.
- \_\_\_ \_\_\_ b. Hydraulic system shall be closed center, load sensing design, with variable displacement, axial piston type pump.
- \_\_\_ \_\_\_ c. Separate hydraulic lock valves shall be provided in each hydraulic circuit in in all control valves
- \_\_\_ \_\_\_ d. Hydraulic tank shall be non-vented, separate of power train oil.
- \_\_\_ \_\_\_ e. Industry standard lever style hydraulic controls. Must have additional valves And levers to operate ripper, front hitch, and snow wing

- — f. Implement valves shall be proportional priority pressure compensating for consistent response when multi-functioning any combination of implement controls.
- — g. All blade controls obtainable from operator's seat.
- — h. Hydraulic plumbing, etc. which is compatible with front lift groups, rear rippers, snow wing, etc.
- — i. Float position on blade lift, rear ripper, front lift group, and snow wing hydraulics.

### **CIRCLE AND DRAWBAR**

- — a. Circle shall be supported by the drawbar with at least six support shoes.
- — b. Circle construction shall be heat treated, welded and machined steel.
- — c. Circle must be capable of 360 degrees rotation and be adjustable for wear.
- — d. Circle and drawbar shall have quick change replaceable wear inserts.
- — e. Circle drive shall be a dual slip clutch with blade impact absorption system.
- — f. Circle and drawbar vertical adjustment points shall be accessible from the top of the drawbar.

### **BLADE**

- — a. High carbon moldboard with hydraulic sideshift.
- — b. Size 16' x 27" x 1" with standard highway bolting, and hydraulic tilt, ¾ inch cutting edge bolting.
- — c. Lift above grade minimum 17.8 inches.
- — d. Blade lift accumulator.
- — e. Moldboard shall have a high bank angle of at least 90 degrees to both sides
- — f. Moldboard side-shift cylinder shall be left-hand side.
- — g. Blade lift and center shift cylinders shall have replaceable wear inserts in the ball sockets with removable shims.

\_\_\_ \_\_\_ h. Moldboard slide shall have quick change replaceable wear inserts and quick-adjust jack screw adjustment.

**OPERATOR COMPARTMENT**

\_\_\_ \_\_\_ a. ROPS cab with heater, defroster, and air conditioning. Heater 40,000 BTU.

\_\_\_ \_\_\_ b. Inside mounted rear view mirror.

\_\_\_ \_\_\_ c. Exterior glare proof convex mirrors. heated (approx. 66 sq.inches).

\_\_\_ \_\_\_ d. Doors lock shut and latch open.

\_\_\_ \_\_\_ e. Air-ride adjustable contour series suspension (cloth) seat fore and aft with seat belt and arm rest.

\_\_\_ \_\_\_ f. Electric wiper/washer front, rear, bottom and side with intermittent control.

\_\_\_ \_\_\_ g. AM-FM radio, speakers, antenna.

\_\_\_ \_\_\_ h. Cab shall be sound suppressed and pressurized with a filter. 75 DB (A) maximum.

\_\_\_ \_\_\_ i. Front and rear auxillary defroster fans.

\_\_\_ \_\_\_ j. Low profile cab

\_\_\_ \_\_\_ k. Toolbox

\_\_\_ \_\_\_ l. Front and rear sun shades

\_\_\_ \_\_\_ m. High-resolution rearview camera with dedicated monitor must be included.

**ELECTRIC SYSTEM**

**YES NO**

\_\_\_ \_\_\_ a. Heavy Duty 1400 CCA batteries.

\_\_\_ \_\_\_ b. High and low bar headlights with front turn signals

\_\_\_ \_\_\_ c. Halogen mid-frame toe lights shall be installed to illuminate moldboard and surrounding area.

\_\_\_ \_\_\_ d. Halogen heel work lamps mounted underneath the cab.

- e. Halogen ripper work lamps.
- f. Halogen front mounted cab lights.
- g. Halogen roof mounted on the right-hand side of car roof bar to illuminate a snow wing. Dealer must supply machines with all the lights that are factory available.
- h. An instrument cluster shall be provided that includes a speedometer, tachometer, coolant temperature, fuel and articulation angle gauge.
- i. Incandescent white reversing lamps and stop lamps
- j. Back-up light and sounding alarm standard when reverse gears are selected.
- k. Interior cab lights and engine compartment service lights.
- l. 150 amp alternator.
- m. 24 volt direct electric start.
- n. A 24V to 12V convertor with 25 amp capacity with circuit to turn on and off with ignition switch.
- o. A orange strobe light installed.
- p. Electronic throttle control –cruise control
- q. Electronic inching control

**OTHER FEATURES**

**YES NO**

- a. Rear ripper shall have five ripper shank holders and 3 included shanks, 9 scarifier shank holders, and rear tow hitch.
- b. Balderson style lift group included.
- c. A snow wing frame ready option shall be included
- d. Front and rear fenders shall meet ISO-3457 requirements and shall not interfere with the ability to fully open any cab or engine enclosure, or service access doors.

## **ALL WHEEL DRIVE**

- a. All wheel drive system – Each front wheel shall be powered utilizing a dedicated variable axial piston pump and variable axial piston motor. Both pumps and motors shall be infinitely variable to provide maximum torque in every gear.
- b. All wheel drive system shall automatically vary individual front wheel speeds by up to 50% during a turn, improving front wheel traction and reducing turning radius.
- c. All wheel drive system shall provide a hydrostatic mode neutralizing the transmission for precise low-speed performance. The ground speed shall be infinitely variable between 0 and 5 mph.

**Please list explanations to any “no” answers to specifications below.**

**BIDDERS CERTIFICATION**

It is hereby understood that Liberty County (owner) has the right to evaluate this bid upon many bases of criteria.

The County Commissioners reserve the right to hold the bids for a period of not to exceed 30 days.

Machine will be available for delivery on the \_\_\_\_\_ day of \_\_\_\_\_, 2017.

We hereby certify that the foregoing is a responsible bid. Any variations from the specifications are noted or attached. Copies of machine warranty are attached.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 2017.

\_\_\_\_\_  
Dealer Name

\_\_\_\_\_  
Telephone

\_\_\_\_\_  
Representative Signature

\_\_\_\_\_  
Fax

\_\_\_\_\_  
Address

\_\_\_\_\_  
City, State, Zip Code

**BID PROPOSAL**

Manufacturer \_\_\_\_\_

Model \_\_\_\_\_

Purchase Price \_\_\_\_\_