

**OCONTO COUNTY HIGHWAY DEPARTMENT
OCONTO, WI 54153**

BID SPECIFICATIONS FOR ONE (1) NEW CURRENT PRODUCTION MODEL QUAD AXLE DUMP BODY & HYDRAULICS

Minimum specifications for one (1) new current production model quad axle dump body and hydraulics.

Oconto County Highway Department will receive bids for the furnishing and delivery of the above listed equipment. Bids shall be submitted on forms provided by and addressed to the Oconto County Highway Department, PO Box 138, 202 VanDyke Street, Oconto, WI 54153. Bids will be received up to 10:15 A.M. on November 1, 2018 at the Highway Office in Oconto. Bid opening is scheduled for 10:15 A.M. on November 1, 2018.

Only bids on bid forms furnished by Oconto County Highway Department will be accepted for award purposes. All bids must be sealed and shall be so indicated on the face of the envelope.

These specifications are a part of the bid and must remain attached to the bid. Manufacturer's full and detailed cuts and specifications for the equipment proposed must be attached. All supplies or equipment sold to Oconto County shall be sold at the risk of the contractor or seller until accepted by Oconto County. Terms of agreement: No payment will be made until after inspection and acceptance by Oconto County or its agent.

Oconto County reserves and has the right to reject any or all bids submitted or to accept any part or combination thereof, to waive any technicalities, and to accept bid deemed most advantageous to Oconto County.

All bids shall be firm bids.

All transportation expenses for delivery, mounting, warranty, etc. are the responsibility of the bidder.

Delivery date will be considered in award of bid.

An authorized representative of Oconto County will publicly open all bids – by order of the Oconto County Highway Committee.

Patrick J. Scanlan,
Highway Commissioner

OCONTO COUNTY HIGHWAY DEPARTMENT

**FOR BID AND MINIMUM SPECIFICATIONS FOR ONE (1) NEW – 19’0”
CROSSMEMBERLESS QUAD AXLE DUMP BODY AND HYDRAULICS.**

A. DUMP BODIES & HOIST

The dump body shall be a heavy-duty contractor body for use on a quad axle chassis. The hoist shall be a single cylinder front mount telescopic type hoist design. The complete body, hoist, and cylinder package must be supplied by a single U.S. manufacturer and be a proven standard production model. Literature must be supplied for all equipment being submitted for approval. To be painted highway orange.

B. BODY DIMENSIONS

- 1. Body Length Total / 19 Feet compatible with chassis cab to axle. _____
- 2. Body Width / 84 Inches _____
- 3. Side Height / 62” F – 52” R _____
- 4. Front Head Height / 62 inches _____
- 5. Tailgate Height / 52 inches _____
- 6. Body floor to side wall needs to be built to accept V Box salt/brine application unit with 850 gallon minimum brine capacity, capable of being placed on floor of dump body (without blocking for elevation). _____
- 7. Body to carry 5 year warranty. _____

C. MATERIAL

- 1. All steels used in the construction of body shall have minimum yield strengths of 45,000 p.s.i. or greater for maximum strength and durability. _____
- 2. Sides / 7 ga 201 Stainless Steel _____
- 3. Box to be of Brace less Design _____
- 4. Tailgate /201 Stainless Steel _____
- 5. Front Head / 201 Stainless Steel _____
- 6. Floor / ¼” AR400 _____
- 7. Long members / 8” I Beam (Not to be enclosed) _____
- 8. Rear Corner Post / 7 ga stainless steel _____
- 9. Design / Less Front Corner Post _____

D. SIDES

- 1. Side panels to be constructed of one 7 ga sheet (or greater) stainless steel with no welded seams. _____
- 2. Top rail to be a fully enclosed dirt shedding stainless steel _____
- 3. Rear corner post shall be of a single sheet of stainless steel formed with no visible welds and shall extend several inches above the top-rail and extend several inches below the bottom of the rub-rail large enough to house needed lighting. _____
- 4. Bottom opening must be protected against contaminates entering from _____

beneath.

5. Full length walk right (Flat stock) both sides 1/4" x 2" - Stainless

6. Complete side assembly shall be assembled 100% with solid full-length welds for added strength. Stitch welding not acceptable.

Horizontal side structure must be 100% welded including the hidden inside surface at side panel match:

Lower side rail to be stainless steel formed with no visible welds

(Failure to comply will result in rejection of body)

(Lower side rail not to be enclosed-see Truck 156)

E. TAILGATE

1. Tailgate panel to be constructed of a one-piece sheet of 7 ga stainless steel with no weld seams for added strength

2. All horizontal tailgate bracing, included top rail, to be Formed with large radius bends to form a completely dirt shedding tailgate for added safety

3. Tailgate sloped 18" with reverse taper for proper Placement in paver operations

4. Upper tailgate hardware (pin, hinge and hinge bearings) shall be of dissimilar metals to reduce wear

5. Upper tailgate hinge to be flame cut and fabricated of no less than 1 1/4" steel

6. Upper tailgate pins shall be a minimum 1 1/2" diameter CRS steel machined with a 7/16" by 20 degree taper to insure easy use

7. For added safety – the upper tailgate pins shall be Designed with a minimum 1 7/8" head and a steel safety span-pin locking device. Cotter pin not acceptable. No spin pin design

8. Lower tailgate pins shall be a minimum of 1 1/4" CRS steel incorporated into the tailgates lower vertical brace for added strength

9. A minimum 3/8" diameter proof coil spreader chain shall be supplied – 60 proof or better

10. The lower tailgate pin latch assemblies shall be a minimum of 3/4" flame cut plate and independently fully adjustable on both sides

11. No less than a 3/4" flame cut plate lower pin cradle shall be supplied

12. Air trip tailgate with 3 1/2" cylinder air-to-air (rear mount closed position to be latched

13. Complete tailgate assembly shall be assembled 100% with Solid full-length welds for added strength. Stitch welding NOT acceptable

F. FRONT HEAD

1. Front head panel constructed of one-piece sheet of 7 ga or equivalent stainless steel with NO weld seams

2. Top rail to be a fabricated three-bend design with a minimum 3” wide top flange, 2” deep side flange and a 7/8” bottom return flange – to be dirt shedding and boxed

3. A 10 ga.stainless steel ½ cab shield shall be supplied

4. Complete front head assembly shall be assembled 100% with solid full-length welds for added strength. Stitch welding NOT acceptable

5 Front head sheet shall be sloped to allow for no dog house at floor level

G. FLOOR

1. Floor to be a maximum 2-piece design with a center seam weld extending from the front head to the tailgate, both sides of floor shall be welded.

2. Floor shall have an inside width of 84” from side to side.

3. Floor to side attachment shall be a minimum 12” upside wall with a 45 degree knee brace to maximize floor to side support.

H. FLOOR UNDER-STRUCTURE

1. Under-structure shall be a fabricated cross-member less design

2. Long-members to be minimum two 8” I Beams-100% Welded.

I. HOIST

1. Conventional cylinder trunion mounted largest stage on bottom / mailhot cylinder

2. Hoist must carry 5 – year manufacturer’s warranty

3. Hoist to have electrical stop function to limit lift with mercury switch with relay in the force console

4. Hoist shall be a maximum 6” nominal diameter three stage with a minimum 140” total stroke

5. Cylinders piston rod must be nitrated to prevent weathering and increase life of cylinders packing

6. Hoist must supply a minimum 50-degree dump angle

7. Hoist to have a minimum NTEA Class 120 rating with a lifting capacity of no less than 38.1 ton

8. Hoist shall be sub-frameless for weight savings

J. REAR HINGE

1. Rear hinge shall be a platform design with hardware (pin, block and hinge bearings) made of dissimilar metals to reduce wear

2. Rear hinge bearings shall be no less than 1 ¼” in width to reduce wear

3. To provide maximum welding surface area and strength. The Rear hinge top plate is to be 4” wide by 8 ½” long and 3/8” thick

4. Rear hinge pins shall be a minimum 2 ½” diameter and designed

- N. **CHIPPER HITCH**
Chipper hitch constructed per Oconto County truck 156. Verify with Kurt / Shop Supt. for construction and placement. _____

HYDRAULIC PUMP:

The hydraulic pump shall be an axial piston pressure and flow compensated load-sensing type. The pump shall have a displacement of 5.61 cubic inches per revolution at maximum stroke which will deliver 23.7 gpm @ 1000 shaft rpm. The pump shall have a minimum 2" inch suction line and 1/2" control drain line plumbed directly back to the reservoir. The pump shall be rated for 5800 PSI maximum and 4800 PSI continuous. The pump shall have a Din 5462 4-bolt mounting flange and heavy duty DIN 14 8 x 32 x 35 Spline. Lighter shaft not acceptable. The pump shall be Force America TXV92. A constant mesh PTO that is mounted to the HD series transmission shall drive the pump. PTO must have proper output to allow for direct mounting of pump, and pump must be supported at the rear. Muncie PTO to be p/n CS24-A100____-H3VK and Muncie adapter p/n 49TA5412A or equivalent gear ratio to be set per engine / transmission, RPM's to meet gallons per minute to operate all snow removal equipment. Installed on new world HD4500RDSP series transmission.

RESERVOIR:

Hydraulic reservoir shall be "Slim Line" 30 gallon capacity 10 gauge stainless steel and equipped with the following:

Basket type filler breather cap

Magnetic drain plug

Two inch NPT suction with 100 mesh screen type filter

Separate return port for control drain line

Sight temperature gauge externally mounted

Low oil / high pressure sensor / temp sensor

Low oil sensor to shut off PTO / Hydraulic pump with relay enforce console

Access hole for return filter clean out

To be mounted in sloped area behind cab, in front of box, above frame rail, passenger side.

FILTER:

The hydraulic oil filter shall be in-tank. The hydraulic filter shall be 10 micron in-tank type and rated for no less than 100 GPM. The filter shall be Zinga model TFS-1200-25-1-0 w/ 10 micron element and filter condition indicator gage.

CONTROL CENTER: (MPJC Ultra 6100)

Controls for all valve functions and electronic spreader control will be integrated into a single, self-contained control center. The control center shall be a padded armrest style that is

ergonomically designed. Control center shall be modular in design for ease of installation and service, and wiring and connectors shall be keyed and color-coded throughout. All components must be durable for long life and trouble free operation.

The electronic controller shall be a fully proportional multi-stick controller to operate all cylinder functions. Multi-stick PWM driver electronics shall include as standard the capability to control at least 9 proportional outputs simultaneously. Controls for spreader must be located on armrest at the operator's fingertips. There shall also be four auxiliary rocker switches available with an additional fifth switch being the main power switch for the spreader control. The switches shall be located between the joysticks and spreader control interface and each shall be rated for 15 amps continuous current minimum. Console options shall be capable of supplying full rated power to switch outputs when all four auxiliary switches are at full 15 amp load.

For ease of operation the multi-stick control shall include the following features: LED-backlit nomenclature for all joystick functions and a momentary push-button at the top of the hoist stick to provide hoist-interlock. The "Hoist" decal shall be illuminated amber while disabled, and change to green backlighting when the driver engages the hoist interlock button. The green "Hoist" LEDs shall remain illuminated while the hoist is under operation and shall time-out after a period of hoist inactivity that is selectable from 0 to 15 seconds.

The plow, wing, scraper, or other joysticks shall have the option to include a momentary pushbutton for activation of remote spreader standby, remote spreader blast, or electric joystick interlock. The multi-stick communication hardware/software shall include 4 integral float options. The use of add-on float modules is unacceptable. For flexibility of use the integral float programming shall have the following standard features:

To ensure longevity of performance all lighting to be solid-state LED technology. The use of incandescent lamps or EL backlighting is unacceptable.

All function joysticks shall be of contact-less Hall-effect design and offer up to a 5-Million cycle life. The use of potentiometers is unacceptable. To increase safety of operation, joystick communication hardware/software shall include the following standard features:

- Input power monitor circuitry with power quality diagnostics,
- Redundant dual-reference joystick signals for each joystick axis
- Joystick input off-center checking on all axes and output shutdown on system power-up
- Joystick out-of-range fault condition checking and output shutdown
- True outputs off with joystick centered
- LED-backlit nomenclature shall illuminate and flash RED when any error condition exists and an audible alarm shall sound.
- LED-backlit nomenclature shall blink ON/OFF with increasing frequency as the corresponding function is increased in speed to give the operator visual feedback of each joystick output.

Multi-stick control shall communicate all joystick data over the spreader control CAN bus. For ease of service and diagnostics the multi-stick control shall have the following easily accessible through the spreader control calibration menus:

- Unique MIN/MAX adjustments for each joystick function (forward, back, left and right)
- On-screen output status indicators for each PWM output
- Audible and visible output error status indicators with flashing error codes for each joystick function

The multi-stick control joystick outputs shall be communicated over the spreader control CAN bus to the Valve Module. Spreader control outputs and joystick control outputs shall be operated on the same Valve Module, or multiple modules as necessary.

The electronic spreader control shall be designed for precise, closed-loop control of granular and prewet liquid applications and operate on a CAN Bus protocol. The Central Processing Unit (CPU) shall have keyed and color coded connections to prevent incorrect installation. The CPU shall be mounted in the cab with visual access to diagnostic LED's. Mounting of the CPU unit outside of the cab is unacceptable. The unit shall have USB connectivity for file and data transfer, Ethernet connection, a J1939 communication port for connection to the vehicle bus, a second CAN bus communication port for spreader-only data use, a J1708 connection for a road and air temperature sensor, and a RS-232 connection for AVL communication. The CPU shall have on-board diagnostics, which provide real-time status of CAN bus communication, processor activity, and power status. The CPU shall have a built-in audible alarm for diagnostic purposes. The CPU operating system shall NOT be Windows-based.

The spreader control interface shall have two, color-coded, continuous rotation encoders for granular and spinner control. These encoders shall have integrated push buttons for blast mode and stand-by. The controller shall have a third multifunction 4-way joystick that has an integrated rotary encoder and push button, that can be used for menu navigation, prewet liquid control, or an additional conveyor function. There shall be four, two-way soft keys included in the interface that are generically-labeled and user-configurable for different functions depending on the equipment needs. The controller shall also utilize USB technology that is capable of using a Supervisor key to provide access to the calibration parameters without the access code. The entire operator interface shall be backlit and encased in flexible silicone material with wear-limiting coating applied to the base silicone material. The operator interface shall communicate on the spreader control system CAN bus. The use of an LCD touch screen to change spreader function settings while driving is unacceptable.

The spreader control display shall be a remotely-mounted, 10" diagonal color TFT LCD with capacitive touch and a low-profile 16:9 widescreen format and minimum of 1024X600 pixel resolution. LCD shall have variable LED backlighting. CCFL backlighting is unacceptable. The display shall include a scratch-resistant polycarbonate lens with anti-glare coating. Display unit shall have a built-in audible alarm. To avoid driver distraction, the display shall have no integrated dials or pushbuttons. Display shall communicate on the spreader control system CAN bus.

The operator menus shall be color-coded to match the encoder knobs on the operator interface. The display shall be capable of displaying the following on-screen simultaneously: Granular material name, granular material set point and actual application rate including units of measure, prewet liquid name, prewet liquid set point and actual application rate including units of measure, spread width, road temperature, air temperature, material usage total, liquid usage total, vehicle speed, and current date and time. The operator shall have the option of selecting five data items to be displayed onscreen during operation. The display will also provide four warning light indicators for low oil level, body up, oil temp, and filter bypass. These warning lights are to be functional regardless of spreader operation or status.

The display shall have integrated antennas for GPS and cellular communication. Cab mounted antennas are unacceptable. The display shall be capable of communicating wirelessly with road and air temperature sensors.

A proportional PWM driver and input module (Valve Module) shall be remotely-mounted inside the hydraulic valve enclosure for control of both spreader control and joystick control outputs. The entire Valve Module shall be of rugged design for the mobile environment, and must meet IP68 requirements for dust and water ingress. The Valve Module shall include a minimum of ten proportional PWM outputs with potted valve output connections. All outputs shall be protected against short-circuits. Outputs shall be current-compensated and have adjustable PWM frequency. There shall be a minimum of five switch-to-ground type inputs for monitoring hydraulic system inputs such as oil level, body up, High and Low filter bypass, and oil temperature warnings. A minimum of two switch-to-ground type pulse train inputs shall be included in the Valve Module for connection of feedback sensors such as auger feedback and prewet liquid flowmeter feedback. A keyed and color-coded connection shall be provided for CAN bus connection to the CPU module inside the cab. A second CAN bus connection must be provided for daisy-chaining of multiple Valve Modules within the valve enclosure. Diagnostic LED's shall be included for every input and output on the Valve Module, as well as a power status LED and CAN bus activity LED's. The Valve Module shall be potted.

The integrated spreader control and joystick control system shall be equipped with a qualified ESTOP device that immediately disconnects battery power from all outputs. All spreader control and joystick-operated outputs shall immediately cease to function and the system display shall inform the operator that the ESTOP device has been activated. The ESTOP device must remove power from all output devices, while maintaining power to the display and CPU for diagnostic purposes. Resetting of the ESTOP device shall not result in spreader control and joystick-operated outputs returning to an ON state without operator acknowledgement.

The Control Center shall be a FORCE America Patrol Commander MPJC Ultra series with a 6100 model spreader control.

ISOBUS CONNECTION:

A rugged, easy-to-use connector system shall be provided for connection of various slide-in spreader bodies and trailers (hereby implements) to the vehicle. The system shall conform to

ISO 11783-2 standards, and consist of a chassis-mounted bulkhead connector, an implement connector plug and cable assembly. The mated connection shall be rated to a minimum environmental rating of IP67 and shall be largely constructed of high grade plastic material that will not break if dropped or impacted. All power supply wiring (rated for up to 60A) and CAN bus wiring between the vehicle and the implement shall pass through this connection.

The chassis-mounted bulkhead connector shall provide a break-away feature to prevent damage to the connector or cable in the event the operator dismounts/parks the implement and does not disconnect the cable before driving away from the implement. The bulkhead shall be designed to withstand multiple breakaway cycles. To ensure CAN bus signal integrity, the bulkhead shall employ a self-terminating circuit to automatically terminate the CAN bus when the implement is disconnected.

The implement connector shall be a modular design to allow for cleaning and maintenance, and shall incorporate a circumferential cable seal and strain relief. A single jacketed cable shall be provided from the implement connector to the electronic devices on the implement. Sufficient length of jacketed cable shall be provided to allow for strain relief of the cable, over the cable jacket, on the implement. The use of multiple cables or individual wires in split loom or woven mesh coverings shall not be accepted. A tethered dust cap shall be provided to protect the implement connector when the implement is disconnected.

DIRECT LIQUID MODULE:

The 6100 spreader control shall include an ISOBUS connection mounted at the rear of the chassis. A CAN BUS and input/output module shall be mounted on the direct liquid system and connect to the chassis through the ISOBUS connection. The input/output module shall have 2-inputs for flowmeter feedback and low liquid. There shall be 4-outputs rated at 5 amp each for multi lane ball valves and anti-drip valve.

HYDRAULIC VALVES:

The hydraulic valves shall be of modular manifold design. Each hydraulic function requires an individual manifold stacked together to form the manifold base. The hydraulic control valves shall be pulse-width modulated, proportionally controlled. Each hydraulic valve segment shall be individually mounted to the manifold base assembly and be serviceable without removing any hydraulic hoses or any other hydraulic valve segments. All segments shall have heavy duty continuous duty coils and connections shall be with Hirshman connectors. All coils shall operate at 12 VDC and require a maximum of 1400 milli-amps. Each segment shall be equipped with a rack and pinion manual override except for the auger and spinner sections. Valve sections must have adjustable stroke limiter flow controls for each function. Valve segments shall be FORCE America “Add-A-Fold” and be arranged as follows:

Front Valve:

- Plow Lift, double acting / 1 truck
- Plow Angle, double acting / 1 truck
- Right Wing Toe, double acting zero - leak / 1 truck
- Left Wing Toe, double acting zero – leak / 1 truck
- Right Wing Heel, double acting cylinder / 1 truck
- Left Wing Heel, double acting cylinder / 1 truck
- All Valve Segments to be 20 GPM / 1 truck

Rear Valve:

- Hoist, single acting, w/ electric box stope – 40 gpm & #10 hoses / 1 truck
- Auger, reversible pressure compensated 20 gpm / 1 truck
- One Spinner, pressure compensated 5 gpm / 1 truck
- Anti Ice pressure compensated 7 gpm / 1 truck

HYDRAULIC VALVE ENCLOSURES:

The valve assemblies shall be mounted in a weather-tight enclosure. The valve enclosures shall be fabricated of 12 gauge stainless steel. The cover shall be held to the enclosure by four heavy rubber latches (one on each side). All plumbing shall be external, directly into the bottom of the valve manifold base (no hydraulic plumbing in the enclosures). When cover is removed, the valve must be exposed on 4 sides for easy service. Front enclosures must fit between frame rails and must not interfere with hood opening. Rear enclosure to be mounted, in sloped area behind cab, in front of box, above frame rails on drivers side.

**OCONTO COUNTY HIGHWAY DEPARTMENT
1 – QUAD AXLE DUMP BODY & HYDRAULICS**

Bid Opening: 10:15 a.m. on November 1, 2018 at the Oconto Highway Office,
located on 202 VanDyke Street – Oconto, WI

*Total price must reflect the cost to connect and make functional all plow equipment
as mounted.*

Price for ONE (1) dump body and hydraulics.

\$ _____

Completion Date for Delivery to Oconto County Highway Department:

Company Name: _____

Address: _____

Company
Representative: _____
(Please Print)

Signature: _____

Date: _____