



REQUEST FOR BID
 Date: 9/21/09
 Bid 09-0524

Page 1
 RETURN BY OPENING TIME TO:
 Purchasing Division
 RM 100 City Hall
 411 West 1st Street
 Duluth, MN 55802

Outfit Single Axel Trunk

Buyer: Dennis Sears
 Phone: 218-730-5003
 Fax: 218-730-5922

BID OPENING, RM 100 AT 2:00 PM ON, 2009

Note: All bids must be written, signed, and transmitted in a sealed envelope, plainly marked with the bid number, subject matter, and opening date. The City of Duluth reserves the right to split award where there is substantial savings to the city, waive informalities and to reject any and all bids. Bidder should state in proposal if bid is based on acceptance of total order. Sales tax is not to be included in the unit price. Bidder to state freight charges if, proposal is F.O.B. shipping point, freight not allowed. Low bid will not be the only consideration for award of bid. All pages must be signed or initialed by authorized bidder's representative as indicated at the bottom of the page(s) of the request for bid forms.

RETURN BID IN DUPLICATE WITH DUPLICATE DESCRIPTIVE LITERATURE
 FOR BID RESULTS, ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE WITH BID

City bid information on website: www.duluthmn.gov/purchasing/bid_information.cfm

Designated F.O.B. Point

Tax: Federal Excise Tax Exemption
 Account No. 41-74-0056 K

Item No.	Qty	U/OM	Description	Unit Price	Total Price
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Outfit two single axel trucks per the attached specifications #1 & #2.
 Note: The City of Duluth has Monroe sanders and Force American Hydraulics standard on trucks. For inventory carrying reasons, please bid same.

Vendor E-mail Address _____ Freight Charges N/A

Name _____
 Addr _____

Total Bid Price _____
 (To include any additional pages)

Payment Terms _____

By: _____

F.O.B. Point N/A

(print title)

Delivery Date N/A

(signature) (tele#)

Spec #1

PRICE _____

City of Duluth, MN

Single Axle Permanent Mount Sander Outfitting Specifications

Plow Hitch, Stainless Hydraulic Sand Spreader, Truck Mounted Liquid Dispensing System, Lights, Camera System, Hydraulic Control Center.

INSTALL:

FALLS PLOW HITCH - SUPPLIED BY CITY

SUPPLY AND INSTALL:

FORMED CHANNEL BUMPER - MTE MANUFACTURED

REAR END PROTECTION TO MEET MINNESOTA DOT STANDARDS

PLOW LIGHTS WITH SIGNALS; MOUNTED ON HOOD OR GRILL WITH MOUNTING BRACKETS.

REAR VIEW CAMERA SYSTEM WITH MONITOR; HITCH-CAM NUMBER HCH2-1 OR APPROVED EQUAL.

MSV HYDRAULIC SPREADER
MSV-120-84-50/201SS/DULUTH
MONROE PART NO. 00016339-C

MSV HYDRAULIC SPREADER with 10 gauge 201 stainless steel hopper, 45 degree sloped sides with 2" double crimped top edge, 7 gauge 201SS longitudinals tied together with 3" 201SS formed channel cross sills, self-locking screw type gate 12" x 18" 7 gauge 201SS feed gate with ruler, 24" conveyor width, 10 gauge 201SS bolt on replaceable chain shields 3/16" SS replaceable conveyor floor, 2-1/4" pitch pintle-type conveyor chain with 7/16" pins and 21,000# tensile strength per strand, 3/8" x 1-1/2" cross bars 4-1/2" on center, 8 tooth cast steel sprockets, 50:1 worm drive gearbox with 2" driveshaft, 2" spring loaded idler shaft with 4-bolt relubable bearings, 20" spinner disc with six 7 gauge replaceable steel fins driven by top mounted motor, height adjustable spinner assembly with 4 external and 2 internal adjustable baffles, diverter chute, tip-up spinner assembly, mild steel reinforced heavy duty top screens forming a 2-1/2" square mesh, main support 6" H-beam. Standard paint is bare 201 stainless steel.

Hopper length is 120 inches.

Hopper width is 84 inches.

Hopper height is 50 inches.

INCLUDED WITH THE SPREADER ARE THE FOLLOWING ITEMS:

- Hopper and spinner assembly built in austenitic (201SS) stainless steel in lieu of standard
- Pintle chain crossbars installed on every link in lieu of standard
- 6:1 gearbox drive in lieu of standard 50:1
- Duluth style swing out spinner #00073512-C in lieu of standard
- Pair of smooth, austenitic stainless catwalks installed
- Amber spreader light
- Stainless Steel Frame Mounted Cab Shield.
- Rubber flaps installed on cab shield and sides of sander to keep product from falling between the Brine Tanks and Sander.

MONROE ELECTRIC TRUCK MOUNTED LIQUID DISPENSING SYSTEM
LDS-333 PRE-WET KIT/DULUTH

Monroe open loop pre-wet will consist of:

- Open loop LDS-333 pre-wet system, #00016818. Includes the standard 3-nozzle kit balanced to the system with 1GPM nozzles
- (1) 100 - gallon poly tank kit; and (1) 75 gallon poly tank kit with stainless steel brackets for V-box mount
- Cross-over kit #05050311
- Stainless enclosure mounting plate, loose, #00017725-B
- Bulk fill kit # 05050320

HYDRAULICS AND CONTROL CENTER

INSTALL AND SUPPLY FORCE AMERICA PATROL COMMANDER MPJC ULTRA SERIES WITH A 5100 MODEL SPREADER CONTROL, INCLUDING A ROADWATCH SYSTEM. (See attached 'Single Axle Central Hydraulic Specifications - 2008' for complete description of what must be supplied and installed)

ALL HYDRAULIC HOSES MUST BE RUN CLEAR OF ANY OBSTRUCTIONS INCLUDING ENGINE OIL FILTERS

STAINLESS STEEL HYDRAULIC RESERVOIR IS TO BE MOUNTED UNDER THE CAB SHIELD BETWEEN THE CAB AND SANDER.

Spec #2

PRICE _____

City of Duluth, MN
Single Axle Outfitting Specifications

Stainless Steel Dump Body, Hoist, Plow Hitch, Hydraulic Spreader, Truck Mounted Liquid Dispensing System, Lights, Camera System, Hydraulic Control Center.

CRYTEEL STAINLESS STEEL GLADIATOR DUMP BODY

- 5 - 7 YD DUMP BODY
- 26" SIDES
- 36" TAILGATE
- 7 GA. 304 STAINLESS STEEL SIDE AND ENDS
- $\frac{1}{2}$ X 7 GA. 304 STAINLESS STEEL STATIONARY CAB SHIELD
- WALK RAIL BOTH SIDES
- GRAB HANDLE
- SHOVEL HOLDER
- TAILGATE WITH FULL RIBBED DOUBLE WALLED BRACING
- $\frac{1}{4}$ " AR400 (180000 PSI TENSILE; 145000 PSI YIELD) FLOOR WITH WESTERN UNDRSTRUCTURE (CROSSMEMBERLESS)
- ADD HYDRAULIC MANIFOLD CONNECTOR TO REAR OF DUMP BODY - MOUNTED BELOW TAILGATE ON THE PASSENGER SIDE FOR INSERT SANDER OPERATION
- DUMP BODY VIBRATOR
- WHELEN BOXES RECESSED IN REAR PILLARS S/T/T/ AND BACKUP LIGHTS WITH SEAKED WIRING HARNESS AND JUNCTION BOX
- BODY PROP
- POLY LIFETIME REAR FENDERS
- INSTALLED

3 YEAR 100% PARTS AND LABOR WARRANTY ON BODY AND HOIST
YEARS 4 - 5 50% PARTS AND LABOR

CRYSTEEL RC750 HOIST LH

10' RC750 ROLLER COMBO SUBFRAME HOIST, 17.2 TON CAPACITY,
LESS HYDRAULICS

- ROLLER-COMBO UNDERBODY SUBFRAME HOIST
- 17.2 TON CAPACITY
- GREASELESS TEFLON COMPOSITE BEARINGS AT CRITICAL PIVOT POINTS
- BODY-UP LIGHT
- CYLINDERS MADE FROM HIGH STRENGTH STEEL TUBING AND FEATURES CHROMED SHAFTS
- CLOSE TOLERANCE PISTONS AND HIGH PRESSURE SEALS
- INTERNAL CYLINDER BY-PASS (SYSTEM PROTECTION)

INSTALL:

FALLS PLOW HITCH - SUPPLIED BY CITY

SUPPLY AND INSTALL:

FORMED CHANNEL BUMPER - MTE MANUFACTURED

REAR END PROTECTION TO MEET MINNESOTA DOT STANDARDS

PLOW LIGHTS WITH SIGNALS; MOUNTED ON HOOD OR GRILL WITH MOUNTING BRACKETS.

REAR VIEW CAMERA SYSTEM WITH MONITOR; HITCH-CAM NUMBER HCH2-1 OR APPROVED EQUAL.

MSV HYDRAULIC SPREADER
MSV-120-84-50/201SS/DULUTH
MONROE PART NO. 00016339-C

MSV HYDRAULIC SPREADER with 10 gauge 201 stainless steel hopper, 45 degree sloped sides with 2" double crimped top edge, 7 gauge 201SS longitudinals tied together with 3" 201SS formed channel cross sills, self-locking screw type gate 12" x 18" 7 gauge 201SS feed gate with ruler, 24" conveyor width, 10 gauge 201SS bolt on replaceable chain shields 3/16" SS replaceable conveyor floor, 2-1/4" pitch pintle-type conveyor chain with 7/16" pins and 21,000# tensile strength per strand, 3/8" x 1-1/2" cross bars 4-1/2" on center, 8 tooth cast steel sprockets, 50:1 worm drive gearbox with 2" driveshaft, 2" spring loaded idler shaft with 4-bolt relubable bearings, 20" spinner disc with six 7 gauge replaceable steel fins driven by top mounted motor, height adjustable spinner assembly with 4 external and 2 internal adjustable baffles, diverter chute, tip-up spinner assembly, mild steel reinforced heavy duty top screens forming a 2-1/2" square mesh, main support 6" H-beam. Standard paint is bare 201 stainless steel.

Hopper length is 120 inches.

Hopper width is 84 inches.

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INCLUDED WITH THE SPREADER ARE THE FOLLOWING ITEMS:

- Hopper and spinner assembly built in austenitic (201SS) stainless steel in lieu of standard
- Pintle chain crossbars installed on every link in lieu of standard
- 6:1 gearbox drive in lieu of standard 50:1
- Duluth style swing out spinner #00073512-C in lieu of standard
- Sloped front for dump body doghouse built per previous part number history
- Pair of smooth, austenitic stainless catwalks installed
- Slip in mounting kit
- Tailgate latch; 50#

- Amber spreader light
- Rubber flaps installed on front and sides of sander to keep product from falling between the sander and truck box sides.

MONROE ELECTRIC TRUCK MOUNTED LIQUID DISPENSING SYSTEM
LDS-333 PRE-WET KIT/DULUTH

Monroe open loop pre-wet will consist of:

- Open loop LDS-333 pre-wet system, #00016818. Includes the standard 3-nozzle kit balanced to the system with 1GPM nozzles
- (1) 100 - gallon poly tank kit; and (1) 75 gallon poly tank kit with stainless steel brackets for V-box mount
- Cross-over kit #05050311
- Stainless enclosure mounting plate, loose, #00017725-B
- Bulk fill kit # 05050320

HYDRAULICS AND CONTROL CENTER

INSTALL AND SUPPLY FORCE AMERICA PATROL COMMANDER MPJC ULTRA SERIES WITH A 5100 MODEL SPREADER CONTROL, INCLUDING A ROADWATCH SYSTEM. (See attached 'Single Axle Central Hydraulic Specifications - 2008' for complete description of what must be supplied and installed)

ALL HYDRAULIC HOSES MUST BE RUN CLEAR OF ANY OBSTRUCTIONS INCLUDING ENGINE OIL FILTERS

STAINLESS STEEL HYDRAULIC RESERVOIR IS TO BE MOUNTED UNDER THE CAB SHIELD; BETWEEN THE CAB AND DUMP BODY

City of Duluth, MN
Single Axle Central Hydraulic Specifications
2008

HYDRAULIC PUMP AND PTO:

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 engine rpm. The pump shall have a minimum 2" inch suction line and ½" 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 type-mounting flange and a Din 5462 8-tooth shaft. The pump shall be FORCE America TXV92 or prior approved equal. A Chelsea 278 series hot shift PTO that is mounted to the transmission shall drive the pump.

SHUT DOWN SYSTEM:

There shall be a float type level sensor for low oil mounted through the top of the reservoir. It will be a normally open circuit rated for 3 amps. When the oil reaches a critical level this circuit will close sending a signal to a relay, disengaging the PTO and pump, shutting off the flow of oil to the system. At the same time, a signal will be sent to an indicator light on the control panel that alerts the operator of system shut down. The control center will also incorporate a momentary override switch wired to de-energize the shut down system to facilitate diagnostics and equipment storage.

RESERVOIR:

The hydraulic reservoir shall be of 30 gallon nominal capacity, constructed of 10 gauge pickled steel, powder coated black, and have 1/4" thick angle iron mounting brackets. It shall be equipped with a basket type filler breather, ¾" magnetic drain plug, 5" sight/temperature gauge, 2" NPT suction port, 100-mesh screen type strainer with 3 PSI bypass, 2" full flow brass ball valve, and separate return port for the pump case drain. The reservoir shall also be equipped with a low oil sensor that mounts through the top. The hydraulic reservoir shall be an upright design. The tank mounting shall not use up more than 9" of frame space.

FILTER:

The hydraulic oil filter shall be mounted in the reservoir. Hydraulic filter shall be a 16-micron absolute and rated for no less than 60 GPM. Filter shall be an Internormen TEF31016VG16SP-UG60E115. The filter will come with both a visual and an electrical bypass indicator.

HYDRAULIC VALVE ENCLOSURE:

The valve assembly shall be mounted in weather-tight enclosure and mounted vertically behind the cab. The valve enclosure shall be fabricated of 10 and 12 gauge steel and powder coated black. Enclosure shall use gasket-less passive technology. Rubber seals, gaskets, or weather stripping of any kind is not acceptable. Valve shall be mounted with all ports coming out towards the inside of the truck frame rail allowing for hose and adapter fitting connection. The use of bulkhead adapter fittings is not acceptable. Valve shall be "Boxed In" with the enclosure cover and not its base. The cover shall be held to the enclosure by two heavy rubber latches. The lid must pivot down with the hinge point at the bottom center of the enclosure. The need for tools for enclosure cover removal is not acceptable.

CONTROL VALVE:

The hydraulic valve shall be of modular manifold design. Each hydraulic function requires an individual manifold stacked together to form the manifold base. The manifold base shall consist of an inlet section with SAE #16 inlet porting, SAE #20 outlet porting, and SAE #4 load sense porting. There shall be a main system relief in the inlet section to protect the system from high pressure in case the pump compensators fail. The dump body manifold shall be stacked next to the inlet section, and capable of 40 GPM with SAE #12 porting. 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. Each hydraulic valve segment shall have individual pressure compensation to achieve independent simultaneous operations. All segments shall have heavy-duty continuous duty coils and connections shall be with Din connectors. All coils shall operate at 12 VDC and require a maximum of 1400 milliamps. Each segment shall be equipped with a manual overrides. The dump body segment shall be rated to 40 GPM, with all other segments rated to 20 GPM. If a double acting hoist is utilized, the dump body segment shall be equipped with a down side relief to protect the body down function. This relief shall be set to the hoist manufacturer's specifications. Valve segments shall be Add-A-Fold® model or prior approved equal. The valve is to be arranged as follows:

- Hoist, 4-way with down side work port relief valve
- Plow Lift, 4-way Hold-A-Load
- Plow Angle, 4-way There shall be a pressure release manifold with manual knob in this circuit. Valve shall be a FORCE America model # C10190.
- Auger, 2-way
- Spinner, 2-way

CONTROL CENTER:

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 color coded throughout. A sealed, pre-wired harness for all valve controls must be provided. 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. Controller shall be of a modular design. Multi-stick communication electronics shall include as standard the capability to control the proportional outputs simultaneously. The control is available in a 2-stick or 3-stick configuration. Controls for spreader must be located on armrest at the operator's fingertips. There shall also be four auxiliary switches available with one other being the main power switch for the spreader control. The switches shall be located between the joysticks and spreader control.

For ease of operation the multi-stick control shall include the following features: a momentary push-button at the top of the hoist stick to provide hoist-interlock. A solid-state red LED labeled "Hoist" shall illuminate when the driver engages the hoist interlock button. The "Hoist" LED shall remain illuminated while the hoist is under operation. The "Hoist" LED shall be integrated into the communication control circuit and will time-out after a period of hoist inactivity. The plow joystick shall include a momentary pushbutton for activation of remote standby, remote blast or the truck body vibrator. 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: (4) axis functional float on any or all of the outputs with selectable forward/back, right/left functionality, 3-way or 4-way functionality, selectable (3) second float delay timer and optional float enable switch inputs. To insure longevity of performance all lighting to be solid-state LED technology. The use of incandescent lamps or EL backlighting is unacceptable. Function joysticks shall be of contact less design and offer up to a 5-Million cycle life. The use of potentiometers is unacceptable. To insure safe operation, joystick communication hardware/software shall include the following standard features: input power monitor circuitry and output shut down during low-voltage conditions, power-on joystick input off center checking and output shutdown, joystick out of range checking and output shutdown and true outputs off with joystick centered, Multi-stick control shall employ solid-state LED backlit nomenclatures on positions 1,2, and 3. For ease of service the multi-stick control shall have the following easily accessible at the valve drive module, located under the armrest padding: Sets of MIN/MAX adjustments, output status indicator LED's for each output and output error status indicators with flashing error codes. The pivot point for the armrest pad shall be located at the rear of the unit. The multi-stick control shall have self-diagnostic valve output drivers that detect over current and over temperature conditions. To insure longevity, multi-stick control shall have

solid-state overload protection. A heavy-duty prewire valve harness shall be included for cylinder functions as well as for the spreader functions.

The electronic spreader control shall be designed for precise, closed-loop control of granular and pre-wet liquid application as a standard and shall have the ability to control direct liquid application separately or simultaneously when optional equipment is selected. *The hardware necessary to run an electric open loop prewet system shall be provided with the system.* The electronic spreader control shall have a **field replaceable** battery back up that protects memory functions. Data memory shall be 512K RAM. For data logging, unit shall retain a minimum of four thousand (4000) events. The electronic spreader firmware shall be upgradeable by downloading files from the supplier's web site at no charge to the municipality for the life of the unit. The unit must be protected from reverse polarity, as well as be over-voltage protected by using a five-amp reset circuit breaker. All circuit boards to be conformal coated. The spreader control is to be capable of self-diagnostics for system errors and correction procedures. Error log shall be in plain text, coded messages that require an additional document to interpret are not acceptable. The log shall include the last 125 errors associated with the spreader control including the date and time of each error. *The spreader control shall have the ability to integrate a RoadWatch sensor. This hardware shall be provided with the system.*

As standard, the control unit shall have password protection to prevent unauthorized access to the calibration parameters. The password shall be programmable. The unit shall also utilize iButton technology that is capable of using a Supervisor key to provide access to the parameters without the access code. As a standard, iButton technology shall be available for saving and loading of calibration parameters through the use of a Calibration key. *Electronic control supplier shall provide (1) Supervisor key and (1) Calibration key with each system.* The control unit shall be capable of self-calibration of auger/conveyor feed rates and require no additional timepieces to calibrate. Programming shall allow for blast function to be set one of three ways: momentary, timed or by distance traveled. The unit must also be capable of spreading up to four different granular materials and ten programmable spread rates. Controller shall have programmable nomenclatures for granular and pre-wet materials. Programming shall provide for automatic default to open loop in the event of a feedback failure. The unit must provide three operational modes: manual, open loop (ground speed only) and closed loop (ground speed with auger/conveyor feedback). Programming shall also provide for two-speed axle input as required.

Spreader display unit shall be a modular "heads up" display, mounted to truck dash in easy view of the operator. The heads up display will also provide four warning light options illuminated in red for low oil, body up, oil temp, and filter bypass. Text display shall consist of a two line alphanumeric fluorescent display that shall inform the operator of spread rate information (US or metric) and calibration parameters.

The unit must be capable of downloading data to a serial printer or PC computer through the use of a bi-directional RS232 port when complete data is required. The unit must have ability to control four compensated valve outputs. Unit shall have a standby (pass)

and blast feature as standard. Unit shall provide stationary unload functions on granular, pre-wet and direct functions. The unit shall also be upgradeable for event logging and temperature compensation. The control shall have a programmable jump-start speed feature to provide immediate material flow at one MPH. The unit must be programmable to interface with road temperature sensors, direct liquid application systems, and AVL/data management equipment. For other seasonal use, the control must have the ability of measuring distance driven in feet or meters, using a start, stop, and reset method. It shall also be upgradeable for dust control application. The Control Center shall be a Force America Patrol Commander MPJC Ultra series with a 5100 model spreader control.