

COSHOCTON COUNTY ENGINEER

(740) 622-2135 Fax: (740) 623-6512

Frederick T Wachtel, P.E., P.S.

INVITATION TO BID

Sealed proposals for **Outfitting one 2012 Freightliner cab and chassis provided by the County with a Stainless Steel Dump Body and Central Hydraulics System** will be received by the Coshocton County Commissioners, Coshocton, Ohio at 401½ Main St., **9:00 a.m., local time, April 25, 2011**, and then and there publicly opened and read.

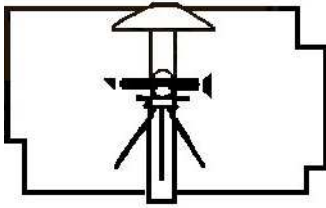
Complete specifications, proposal forms and full information for bidders may be obtained via the web at www.coshoctoncounty.net or from the office of the County Engineer. Prospective bidders are required to register with Coshocton County in order to receive any addenda information.

Each proposal must be accompanied by a bond with an approved surety company as surety, in the sum of 10% of the amount of the bid as surety for the execution of the contract, or certified check for the amount of 10% of the bid on some solvent bank within the City of Coshocton, and made payable to the Coshocton County Treasurer, Coshocton, Ohio. **Please mark all envelopes Stainless Steel Dump Body and Central Hydraulics System, 9:00 a.m., local time, April 25, 2011.**

The Owner reserves the right to waive any formalities or to reject any and all bids.

Board of County Commissioners
Coshocton County, Ohio.

ADVERTISED: April 8, 2011



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COSHOCTON COUNTY ENGINEER - 2011

**Bid Sheet for Outfitting one 2012 Freightliner M2-106V Cab
and Chassis provided by the County with a Stainless Steel Dump
Body and Central Hydraulics System**

BID PRICE: \$ _____

EXPECTED TIME TO COMPLETE WORK: _____

BIDDER'S NAME: _____

ADDRESS: _____

TELEPHONE: _____ FAX: _____

EMAIL: _____

**COSHOCTON COUNTY COMMISSIONERS RESERVE THE RIGHT TO
REJECT ANY NON-CONFORMING BIDS.**

BE SURE YOU INCLUDED YOUR BID BOND

Specifications for Outfitting One 2012 Freightliner M2-106V Cab and Chassis provided by the County with a Stainless Steel Dump Body and Central Hydraulics System

It is the purpose of these specifications to describe the equipment and installation to be provided to outfit the above-mentioned cab and chassis for use by the Coshocton County Engineer. All equipment and incidentals shall be furnished by the successful bidder and shall conform in strength, quality of material, and workmanship to that which is provided by the industry in general.

This unit will be outfitted for use as a snow plow truck. The truck will have installed a 10' dump bed and rigging for an 11' snow plow. It will be equipped with a central hydraulics system to control the bed, plow and spinner. If any of these specifications need to be changed to make your equipment compatible for this type of use, please so note in your bid.

The signing of this bid shall be considered a certification that the equipment as bid is the latest, current model and will include the manufacturer's latest engineering changes.

The successful bidder will work the County Engineer in insure that the equipment is installed to the Engineer's satisfaction. Any decisions on the placement of equipment and controls will be by mutual consent between the bidder and the Engineer.

Bidder must make notations at each item indicating compliance or exception. All exceptions must be explained in detail on a separate sheet along with the justification as to why equipment with exception will be as good as that specified. Following these instructions is essential for proper bid evaluation...failure to do so may cause your bid to be rejected for lack of information.

COSHOCTON COUNTY COMMISSIONERS
DUMP BODY SPECIFICATIONS

	Comply	Exception
10' Inside length 7' inside width, 26" sides, 36" tailgate and headboard		
5-6 Cubic yard capacity		
½ Roll cab protector		
Federal standard #108 clearance lights and rear mudflaps		
Steel splash shields installed in front of rear tires		
Body to be constructed of 7 gauge 304 stainless steel (50,000 psi yield strength) sides, ends, floor, and cab shield with stainless steel upper and lower tailgate hardware		
4" structural channel cross members on 12" centers and interlocking through body longsills		
Body to have radius sides to floor		
Body to have dirt shedding boxed top rails with 10" sideboard gussets		
One horizontal formed-in side brace, full length of body (no vertical side braces)		
Body to have full depth rear corner posts and full rear apron		
Tailgate to have five panel design with vertical and horizontal bracing		
A sliding coal door to be in center of tailgate with offset type handle and chain to hold door open at various height		
Stainless steel step, shovel holders, and tarp rails installed on both sides of body to County's specifications		
Oval stop, turn, back up, and tail lights recessed in rear corner posts of body, seal beam type mount in rubber grommets		
One oval LED strobe light, rear facing on each side of cab protector in stainless steel box, one oval LED strobe light forward facing on underside of cab protector in stainless steel box		
Lights to be seal beam mounted in rubber		
A Wallace Model 56-25 pintle hook (25 ton spring loaded) installed on ½" closure plate and reinforced to truck frame. Mounting height is to be 24" from ground level to centerline of pintle.		
Electric back-up alarm installed at rear		
All wiring run in protective loom and all electrical connections to have water proof crimp type connectors		

with adhesive coated shrink tubing		
A toolbox through compartment built into front of dump body made of 3/16" material, 12"X12"X84" with hinge doors on both sides with T-handle latches. Top of toolbox shall be angled at 60 degrees to prevent material from building up on top of toolbox		
Air operated tailgate with air valve in cab, location to be determined by County Engineers Personnel		

HOIST SPECIFICATIONS

	Comply	Exception
Hoist to be "Roller Combo" type with single cylinder		
Hoist to be double-acting, power up and power down		
Hoist has full length subframe		
Body prop		
Hoist to be a Class 50 NTEA with a capacity of 17 tons		
Hoist cylinder to be 7" in diameter		
Hoist has a 2-1/4" hard chrome plated piston rod		

SNOW PLOW & HITCH SPECIFICATIONS

	Comply	Exception
11' Moldboard length		
48" Moldboard height		
10 Gauge steel moldboard		
Heavy duty angle iron push frame		
Adjustable cannon type compression trip spring		
5/8"x8"x11' Cutting edge		
9' Cutting width at 35 degree angle		
Reversing angle cylinders		
Swivel bar to allow plow to follow road contour		
Quick hitch – double latch style		
Cushion valve to protect reversing cylinders		
Bumper-to-axle hitch		
3"x10" Double acting lift cylinder		
Plow lights installed to County specifications		
Operated by central hydraulic system		
Installed		

CENTRAL HYDRAULIC SYSTEM SPECIFICATIONS

GENERAL

The central hydraulic system described herein is to be a direct crankshaft driven hydraulic power supply to efficiently perform the following functions:

1. Operate a single cylinder underbody double acting hoist
2. Operate a dual hydraulically driven spinner/auger spreader
3. Operate a snow plow double-acting lift cylinder
4. Operate a hydraulic reversible angle plow
5. Operate a front mounted rotary broom

Comply _____ Exception _____

BASIC OPERATIONS

The hydraulic system shall be designed so that when the truck engine is running and the hydraulic power is not required, the full pump output is diverted directly back to the reservoir. "Live" hydraulic power for all functions shall become available when the operator activates a console mounted rocker switch. This power shall remain available until this "Master" switch is turned off or until one or more of the following conditions occur:

1. There is a low oil level in the hydraulic reservoir
2. A high pressure hose ruptures

In the event that one of these conditions does occur, two things must happen simultaneously. First, all hydraulic functions shall cease to operate and all hydraulic oil shall be diverted back to the tank. Second, operator notifications must be given by indicator lights and a warning alarm. A momentary, manual override shall be provided to suspend the "shutdown" mode for both conditions until the "Master" switch is turned off at which point the oil shall again be returned directly to the tank. The oil then shall continue to be filtered and circulated between the pump and tank until the truck engine is shut off.

Comply _____ Exception _____

DETAILED SPECIFICATIONS

PUMP AND MOUNTING

A gear type pump shall be driven by a direct crankshaft mounted slip and U-joint shaft assembly. The pump and driveshaft shall be capable of withstanding continuous use at 3000 RPM with a hydraulic output pressure of 1500 PSI. Pump shall be replaceable, pressure-balanced steel-backed with bronze wear plates, and a 1" diameter keyed input shaft. Pump suction port shall be of sufficient size to allow proper flow at 3000 RPM. Pump shall be mounted on a specially constructed bracket supported by the chassis frame.

Comply _____ **Exception** _____

DRIVESHAFT

Driveshaft to be a splined shaft and slip yoke assembly equal to Spicer Series 1260-1310 to absorb relative movement between truck engine and pump.

Comply _____ **Exception** _____

OPERATIONS

All pump output shall be directed to a solenoid piloted relief and dump valve assembly bolted directly to the 1" SAE split flange pump outlet port. Valve shall be nominally rated at 40 GPM and 1500 PSI with a maximum pressure drop of 45 PSI when full pump output of 30 GPM is diverted directly to oil reservoir. Valve is to be manifold design with pilot spools, a cartridge type adjustable relief valve, and gauge port. This valve will normally send all pump output directly to the reservoir. Dump valve assembly return line shall be 1" minimum I.D. SAE 100R2 hose and be isolated from all other return lines by use of an inline, low restriction, 1" diameter check valve at the return filter. All dump valve assembly ports to be SAE O-ring seal.

An in-cab console-mounted electric switch relay with pilot light will be used to shift cartridge type, solenoid valve to divert full pump output to main stack type, directional control valve and spreader circuit.

Comply _____ **Exception** _____

CONTROL CONSOLE

The main control console shall consist of four side panels, bottom mounting flange, and top plate. This unit shall be mounted next to driver's seat, directly to the cab floor, and be all steel, bolted construction. All exterior cab wiring will utilize multi-strand "SO" jacketed cable. Electric/hydraulic component cables to have DIN 43650 weather seal connectors. Both the front and back panels shall be removable to provide service access. No hydraulic hoses shall be exposed in the cab.

The console shall contain the following:

1. All driver actuated functions and levers necessary to operate the central hydraulic system components.
2. All operator controlled electrical switches which operate, override, or test the hydraulic system, related accessory switches such as plow lights, strobe light, spreader light, and all notification lights and alarms. Console shall be kept as compact as possible.

Comply _____ **Exception** _____

All levers and control knobs shall be clearly marked as to their function. Electrical switches and indicator lights will have either snap-in type legend plates with background lighting, or fully illuminated faces with the function permanently stamped in the face. A combination press-to-test switch/light shall be installed to check low oil warning system components.

Comply _____ **Exception** _____

DIRECTIONAL CONTROL VALVE

The main bank valve shall be mounted behind truck cab outside the chassis frame rails. Valve shall be stack section type and parallel circuit design. Valve assembly shall be rated at 40 GPM and 1500 PSI with a maximum pressure drop of 25 PSI @ 25 GPM from inlet to outlet ports (all spools in neutral). All valve porting to be minimum 1-5/16-12NUF2B. Sizing valve bank shall consist of:

1. Inlet section with integral pilot operates, screw adjustable, cartridge relief valve set at 1500 PSI
2. One 4-way 3-position work section to raise, hold, and lower dump body
3. One 4-way 3-position work section to raise, hold, and lower snow plow
4. One 4-way 3-position work section to power reverse snow plow
5. Outlet section with power beyond to supply spreader valve
6. A proportional flow divider valve incorporated in hydraulic system to insure sufficient oil supply to both hoist and spreader when both are being used

Comply _____ **Exception** _____

ROTARY BROOM OPERATION

Rotary broom operation shall be controlled by diverting oil to the broom by using a solenoid piloted control block, with in-cab switch, to divert the full flow of hydraulic oil to operate the broom.

Comply _____ **Exception** _____

SPREADER CIRCUIT

Dual flow ground speed oriented spreader control system shall be of the closed loop micro-processor based type with non-volatile control memory. Automatic calibration and flexibility of programming are required. System must be capable of operation in ground speed oriented closed loop, manual set, blast and unload modes. Automatic switchover with display indication from closed loop to open loop operation in the event of loss of feed rate sensor signal shall be provided. Control console digital read outs shall be capable of displaying actual application rate, vehicle ground speed, distance of spread route driven and total quantity of material spread. A full size keyboard will be provided to plug into control head for programming and calibration. The "F" functions on the keyboard will be pre-programmed to display calibration and programming screens. All data, including storm totals and season totals, can be downloaded to a laptop computer. Program for a computer with windows XP, or

newer, shall be provided so that downloaded information can be put in spread sheet form. Control unit shall be capable of accumulating miles and tons of discharge material. Console programming shall be capable of selection, calibration, and display of four separate granular materials and liquid, with independent application rates of each material capable of being set to fixed rates or rate increments of a pre-set maximum application rate. Back lighted switches and LCD shall be utilized for display readout and application rate selection. Material spread width to be selectable. Display must enunciate error message and sound audio alarm when the system detects any loss of control or accuracy.

Spreader control valve to be of the cartridge/manifold design and to be mounted to the interior of the truck cab. Valve assembly to consist of two linear proportional solenoid flow control valves of the direct acting piston type specifically designed for pulse width modulated driving circuits. Two pressure compensator elements and automatic shutoff/bypass circuit valving. Solenoid valves to utilize 2 PIN PACKARD type wire connectors. All valve circuit elements to be of the screw-in cartridge type to permit easy repair and replacement. All manifold porting for hose connection to be the SAE straight thread O-ring seal type. Valve assembly to be designed to provide flow rates, with minimum pressure drop required for proper spreader operation at programmed material application rates selected by Coshocton County Engineer.

Truck and conveyor speed sensors shall be furnished. The conveyor sensor shall be of the photoelectric type and shall produce 360 digital counts (pulses) per revolution of shaft to provide for accurate feedback at extremely low shaft speeds. Truck speed sensor shall be compatible with type of speedometer drive system supplied on chassis. A built-in ground speed simulator shall be provided in the microprocessor control unit. All components required for proper installation and operation of control system onto truck and spreader units shall be supplied. Spinner must have full range adjustment for speed and smooth operation loaded or unloaded.

Comply _____ **Exception** _____

HYDRAULIC RESERVOIR

Hydraulic oil reservoir of 40 gallon capacity normal operating level shall be mounted to the truck frame rail. Tank shall be constructed of 8 gauge steel (min) and be equipped with a combination oil filler/breather cap. A sight glass with thermometer shall be installed on the tank. Tank shall have two internal baffles. All return line oil shall be discharged into tank through filter assembly, 6 inches below normal operating oil level. Tank shall be labeled with 1-1/2" letters "Hydraulic Oil".

Comply _____ **Exception** _____

FILTRATION

The hydraulic system is to include a 10 micron paper, replaceable spin-on cartridge type return line filter of 45 GPM capacity with integral 15 PSI by-pass spring/valve return line filter. The supply line filter shall be a 40 micro paper, replaceable, spin-on, cartridge type suction line filter of 45 GPM capacity with integral 3 PSI by-pass spring/valve. Return and suction line filters to be isolated from reservoir by appropriately sized brass gate valves. The filter assemblies are to be positioned as close to reservoir tank as possible and in an easily accessible service location. One extra replacement element for each filter shall be provided.

Comply _____ **Exception** _____

HOSES AND FITTINGS

Each hose assembly, including the fittings, except for suction hose, shall be fitted with JIC37 degree swivel fittings located at each point of hose and component connection. All pressure line hose shall meet or exceed SAE 100R2 and shall be equal to Gates high pressure hose, type C2AT for sizes up to and including 1" nominal I.D. Suction line hose, and all the appurtenances shall be 2" nominal I.D. SAE 1004R braided fiber spiral wire reinforced rubber covered hose with replaceable bolt-on type fittings. All hydraulic hose shall be fully installed and ready for operation. Spreader control valve pressure lines and reservoir tank return line shall be installed under the rear corner post of the dump body. These lines shall be equipped with "VH" series Snap-Tite, or equal, complete with coupler and nipple quick disconnects and metal caps and plugs in the following sizes: spreader pressure ½", return line ¾". Hydraulic hoses to and from spreader manifold shall be as follows: spreader pressure – SAE 100R2, ½" diameter: return line – SAE 100R2, ¾" diameter. Hoses shall be run to the front of the truck for the plow circuit. These hoses to be SAE 100R2 ½" diameter and equipped with ½" Snap-Tite "VH" series quick disconnects with metal cap and plugs. All fittings to be of steel type designed for hydraulic system use. All pipe thread fittings to be coated with liquid pipe sealer before assembly.

Comply _____ **Exception** _____

SPINNER AND STAINLESS STEEL AUGER SPREADER

A 6 inch (nominal) heavy duty auger consisting of 3/8" hard surface fluting and welded to a Schedule 40 (ASTM) pipe with sealed, self-aligning precision single row radial bearings with grease fittings shall be provided. The auger to have normal and reverse fluting to the discharge port for more uniform dump body emptying and to be supported by 1-1/4" steel shaft ends. It shall have a left hand discharge port with a single spinner. Hydraulic "orbital" type motors, delivering high-torque at low speed to power both the spinner and the auger. The auger shall be powered by a direct drive hydraulic motor. The independent spinner motor shall mount directly to the spinner disc. This under-tailgate spreader is to be of the bottom opening design. The entire unit will be rigidly mounted to the sides of the dump body and below the floor level of the dump box with single pin quick detachable hardware to allow the dumping of materials without interference from the spreader. The overall spreader width shall be 96". The unit is to spread free flowing granular materials, abrasives and chemicals.

Comply _____ **Exception** _____

HOPPER

Rigid 1/4" one piece stainless end plates continuously welded to a 7 gauge stainless steel auger trough. The unit to have a 10 gauge stainless steel, three point hinged bottom for easy cleaning. The hinged bottom is to be held in place by two heavy duty captive locks with a lift handle for convenient one man operation. The anti-flow cover over the discharge opening is to be 10 gauge stainless steel construction and removable without the use of tools. The cover plate will be stainless steel and locked in the spreading position and lowered when dumping. The cover plate is to be locked in the raised position by two simple captivated latches.

Comply _____ **Exception** _____

SPINNER

The spinner to have six formed polyurethane vanes which results in a flat trajectory and a uniform spreading pattern from four to forty feet. The spinner assembly will be stainless steel and be adjustable allowing for variable spreading patterns left, center or right by sliding the hinge sideways on the shaft so that the point at which the material hits the spinner disc is varied. The entire spinner assembly is to be easily removed by pulling two pins and uncoupling two hydraulic “quick disconnect” hoses. The 18” poly spinner disk shall be attached to the hydraulic motor shaft by means of a cast iron spinner hub. The spinner assembly is linked to the frame with a universally mounted parallel arm to keep the spinner horizontal to the road at all dump body angles. A spinner shield will be provided to prevent material from striking the truck. The spinner shall have an implement light mounted in rubber to illuminate the spinner. Its location is to be determined by the County Engineer.

Comply _____Exception_____

PAINTING

All metal parts, except for the stainless steel dump and spreader will have the mill scale and oil removed by means of a high pressure chemical cleaner prior to painting and primed with a zinc rich rust preventative primer. The paint is to be high quality high solid, lead free enamel.

Comply _____Exception_____