

Kalkaska County Road Commission

1049 Island Lake Road
Kalkaska, MI 49646
Telephone: 231.258.2242
Facsimile: 231.258.8205

The Kalkaska County Road Commission is an Equal Opportunity Provider and Employer

NOTICE TO BIDDERS

Sealed bids will be received for cab and chassis truck equipment until 9:00a.m. Wednesday, March 3, 2021, at which time they will be publicly opened and read. Bids will be received at the office of the Kalkaska County Road Commission, 1049 Island Lake Road, Kalkaska, MI 49646. The bid shall be clearly marked "Equipment Bids" and bear the name of the bidder. Bids will be tabulated, and a recommendation will be made to the Board of Road Commissioners at their next regular meeting.

To supply and install the following equipment on one (1) cab and chassis truck:

- **201 S.S. heavy duty frame mounted material spreader with pre-wet tanks**
- **Underbody scraper**
- **Front mounted plow hitch**
- **Rear mounted pull hitch**
- **One – Way Plow**
- **Nine (9') foot snow patrol wing/plow**
- **Hydraulic pump**
- **Fuel and hydraulic tanks**
- **Cross-auger with spinner unit**
- **Lighting**
- **Associated controls meeting Road Commission specifications**
- **Pre-Wet and anti-ice systems**

Bid prices shall include all set up and delivery charges to points designated by the Commission.

Bidders must complete the KCRC checklist.

Further information and specifications may be obtained at the office of the Kalkaska County Road Commission or by contacting Tony Moses at 231.258.2242 (desk), 231-384-3451 (cell) or via e-mail at tmoses@kalkaskaroad.org

David Gill, Chairman
Board of Kalkaska County Road Commission

Kalkaska County Road Commission

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SPECIFICATIONS FOR CAB AND CHASSIS TRUCK EQUIPMENT

The following specifications describe and are intended for use in securing equipment for one (1) tandem axle cab and chassis truck.

Options – Supply and install equipment meeting or exceeding Kalkaska County Road Commission Specifications.

Delivery – Time of delivery may be an important factor in determining successful bidder. Please state estimated completion date. Units are intended for use in the 2021 - 2022 plowing season.

Payment Terms – Payment for equipment shall be on the day of delivery, after acceptance by the Kalkaska County Road Commission.

Note – The Kalkaska County Road Commission reserves the right to accept or reject any or all bids, to waive any irregularity or defect in a bid, or to reject that bid which offers equipment not compatible with body builder's components, or to accept that bid which is in the opinion of the Kalkaska County Road Commission in the best interest of the county.

1. HEAVY DUTY MATERIAL SPREADER: Duz-Mor DM-168-86-48

Manufacturer _____ **Model** _____

- A.** 14' long X 48" high, 9.2 cubic yard sides, 11.1 cubic yard ends. Complete unit manufactured of 201 non-rusting stainless steel.
- B.** Front/sides/gate to be built of 3/16" 201 stainless steel with 3" double crimped top edge, 45-degree sloped sides, 201 stainless steel lifting loops, one (1) at each corner of the body.
- C.** Side supports 2-1/2" X 4" 201 stainless steel formed channel on 36" centers, 100% welded with stainless steel welding wire.
- D.** Tailgate, outer perimeter to be 4" formed 201 stainless steel channel with two (2) inner 3" formed 201 stainless steel channel supports, tailgate to be offset hinged with HD hardware; all tailgate linkage shall be grease-able including top hinge pin, jack type metering gate, approx. 34" X 14", 1/4" thick, 201SS door, 201SS jack crank. Tailgate shall be air operated – over center cam style, shaft retracted in closed position – in cab control switch.
- E.** Longsills & crossmembers, minimum 1/4" thick, 201SS to extend beyond the body for additional support of cross auger with 3" formed 201SS crossmembers.
- F.** Catwalks, min. 3/16" thick, 30" wide, smooth 201SS with anti-skid top surface, full length both sides. Shall be reinforced to hold additional weight of future pre-wet tank, approx. 1500 lbs. per side.
- G.** Floor & chain shields, min 3/16" thick 201SS removable chain shields, min. 1/4" thick 201SS bolt-in removable floor with stainless steel bolts.
- H.** Conveyor chain, min. 28,000 lb. tensile strength per strand, 34" width, conveyor 1/2" X 1-1/2" wide cross bars every other link on 4 1/2" centers, 2.25 pitch.
- I.** Conveyor drive; two (2) 6:1 Rawson gear boxes with hardened high strength steel alloy gears, supported by ball bearings mounting on a 2" shaft driven by two (2) low speed hi-torque motors. Include torque link brackets to reduce gear box stress. One (1) motor to include 100 pulse speed sensor.
- J.** Front idler shaft 2" diameter, four (4) bolt HD relubable, self-aligning bearings with dirt shields, eight (8) tooth hardened sprockets (front and rear), longsills to have full length open slots to allow removing front idler assembly and rear drive assembly without disassemble, to include HD slide rail chain adjustment. Minimum 1 1/4" diameter adjuster.
- K.** Hi-Low speed conveyor; Hi and Low speed shall be accomplished by an air shift series parallel valve, installed front of body, to include cab control
- L.** Stainless steel hydraulic tubing to accommodate main chain Hi-Low speed, cross auger, spinner and patrol wing; shall be mounted to the hopper body minimum 16" off the catwalks and clamps and stainless steel hardware, five (5) tubes drivers side, one (1) 1-1/4" tube and four (4) 3/4" tubes and four (4) tubes passenger side two (2) 3/4" and two (2) 1/2".

M. Cab-Shield; has 20" coverage, constructed of 3/16" 201SS, 100% continuous welded inside and out to the front of the body.

Yes ___ No ___ Deviations explained _____

2. MS969 FOR DUZ MOR, STAINLESS STEEL SPREADER, UT, MS969-DD-DD-SL, AUS DM MTG, OFFSET 3.0, 4PITCH, 28CI

A. Full bottom clean out quick latch system

B. Rear cross auger with 3" offset mount

C. 9" auger – 3/8 fluting

D. 28 cubic in. motor

E. 4" pitch

F. Self-leveling, left hand discharge, tailgate spreader spinner assembly w/18" poly spinner disc, spinner, spinner shield, and seal saver kit.

Yes ___ No ___ Deviations explained _____

3. PRE-WET SYSTEM

Monroe Snow & Ice Duz-Mor On-Board Pre-Wet And Anti-Ice Systems

A. Two (2) 120-gallon polypropylene 3/8" thick UV stabilized tanks, 1-1/4" ports, molded gauge calibration in US gallons. **Tanks will be used for both pre-wet and anti-ice systems.**

B. Two (2) 304 stainless steel tank mounting saddles with heavy duty polyester retaining strap

C. Nema weather tight enclosure to house gpm flow meter, Seven (7) GPM product pump with stainless steel shaft, direct drive hydraulic motor

D. Nema weather tight enclosure with 24 GPM pump, hydraulic drive motor, flow meter.

E. One (1) Cross over hose kit

F. One (1) Bulk fill and flush kit

G. One (1) Nozzle kit (Three (3) nozzles, Two (2) GPM brass tips and caps, SS nozzle bracket, EPDM 150 PSI hoses), five (5) PSI in-line check valve, Two (2) nozzles to be mounted on the bottom of cross auger body to spray on spinner. Exact location to be determined at installation.

H. One (1) Single lane spray bar, and nozzle kit

I. Two (2) Stainless steel enclosure mounting kit

J. Suction strainers

- K. Tanks are designed to mount on top of reinforced cat walks-and not run interference with tarp system

Both pre-wet and anti-ice systems to include all necessary components and installation, tested, to be ground speed controlled by Bosch 660 system

Yes ___ No ___ Deviations explained _____

4. LIGHTS

- A. 304 stainless steel Oval style enclosure, one each side, rear of the body to house from top to bottom. Two (2) oval 60 series lights; LED Strobe # ENFSRV3G12 LED and standard 60 series non- LED back-up, stop/turn/tail lights. Two (2) Oval 60 series lights; LED Strobe # ENFSRV3A12 LED mounted in SS boxes on tailgate. Lights and switches arrangement will be determined at installation.
- B. Federal 108 lighting shall include Four (4) reflectors, One (1) Betts poly center, Three (3) light cluster, Betts poly corner clearance lights with weather proof wiring and 18 pin Betts junction box.
- C. Front Strobe
 - i. Star, model 9016 LED clear dome amber/green, including stainless brackets and stainless steel lens guards. Two (2) side mounted EMPS1STS3G one per side top of cab shield. Exact height and location to be determined at installation.

Note: If possible, prefer all warning lights on one in-cab switch.

- D. Work Lights
 - i. Six (6) Work lights to be provided and installed Nordic N25.
 - ii. One (1) Each side to shine on the underbody scraper. Do not attach to the muffler shield.
 - iii. Work light to shine on left rear side spinner discharge.
 - iv. Work light to shine on wing discharge.
 - v. The other two (2) work lights, on tailgate, wired to reverse circuit.
 - vi. Install ¾" LED light in the rocker panel to indicate the battery disconnect is on.

Yes ___ No ___ Deviations explained _____

5. HEAVY DUTY MATERIAL SPREADER ACCESSORIES:

- A. ½" thick, heavy duty mud flaps, front and rear of the drive axles, installed using stainless steel hardware.
- B. Ladder; bolt on 201SS hinge down two (2) section ladder six (6) rungs installed to include 304SS mounting brackets and stainless steel hardware. Not to interfere with pre-wet tanks or tarp arms. Location to be determined at installation
- C. Two (2) Shovel Holders: Made of 201SS to be mounted left front face of material spreader, drivers side. Hardwood sideboards 6" in height.
- D. Federal signal electronic backup alarm.

- E. 7-gauge SS plate – installed between the longills – 2 pc. Bolt in design to protect truck components, brake valve, driveline, and electrical.
- F. Remote Lube System; remote grease fittings and line system shall be installed to consolidate fittings in three (3) locations for ease of maintenance. This system shall connect to all grease points except tailgate.
- G. Rear mounted conveyor switch to run rear main chain remotely from the rear of truck
- H. Rear air foil wind deflector installed on tailgate, wide enough for affected lights.

Yes ___ No ___ Deviations explained _____

6. HEAVY DUTY UNDERBODY SCRAPER: Monroe Model HD 4500

Manufacturer _____ Model _____

- A. Hangerboard: Designed and engineered for optimum strength. ½” formed plate reinforced by ½” X 7-1/2” flat plate to make full 1” thickness. 3.25”X .344” mechanical tube outer hinge tubes. ¾” bar reinforced full length of the hinge. ¾” thick trunnion arms. Outer trunnion arms shall be bolted to hanger board. Welded on is unacceptable. Shall include a Manifold bracket for the grease line kit, one installed each side of the hanger board.
- B. Hinge Shaft: 2-1/2” OD X 96” long with four (4) grease points and three (3) hinge points. The two (2) outer hinges are 3-1/4” OD X 6” long with .344 wall thickness. Each outer hinge has one (1) ½” wrap – around gusset, center hinge shall be 3 ¼” OD X 10 ¾” long with .344 wall and have two (2) ½” thick wrap – around gussets, including thrust bearing wear plates to prevent side to side shifting of moldboard.
- C. Moldboard: 1” thick X 20” high X 12’ long moldboard. ½” X 6” double beveled cutting edge with standard highway punched.
- D. Shocks & Housings: Cushioned by two (2) extra heavy-duty spring housings, allow 600 PSI down pressure. Two (2) ½” thick flange retaining plates held by four (4) 5/8” bolts with prevailing lock nuts. Housings to be slotted to relieve contaminates. Grease-able trunnion mount bushings are 2-3/4” OD with a .344” wall mechanical tube trunnion mount pins are 2” solid rod, bolt in removable and replaceable design.
- E. Actuating Cylinders: Shall be 3-1/2” bore X 10” stroke with 2” socatri 1000 piston rods, with poly pac seals and cast steel heads, ½” hoses and piping (supported with poly clamps) to be externally mounted for easy access. Prince in-line relief valve shall be supplied.
- F. Circle: Shall be 1” solid one piece with infinite plowing positions (no notches), minimum cut out for power reverse cylinder travel and full front circle ears as to have clamps in full contact of circle at 45-degree angle for maximum circle bearing surface. 5” ID X 6.5” OD X 1” hardened center pin bushing.
- G. Center Pin: Heavy Duty 5” diameter, hardened center pin, zinc coated. Grease-able with three (3) port grease journal and 5/16” wide X 3/16” deep grease groove around pin. Center pin is piloted into the hanger board.
- H. Clamps: 20.5 long X 7” deep X 1” thick. Shaped to follow the contour of the circle. 3/8”

UHMW wear pads. Entire clamps must remain fully on the circle throughout the entire rotation of the scraper.

- I. Reverse Cylinders & Hardware: Two (2) 4" double – acting cylinders containing ½" #8 SAE ports, 2" socatri 1000 rods, poly pac seals, and cast steel heads. 3" OD – 2" ID anchor pivots, 2" hardened zinc coated with spiraled grease groove removable pivot pins (grease-able at each end). Prince Cross over relief valve set at 2200 PSI to protect reversing cylinders from shock impacts.
- J. Mounting Plates: ¾" thick 26 X 22 full plate steel construction. With 7" X 7" cut out for ease of cleaning. Attached to the truck using ¾" grade 8 bolts, SAE washers and prevailing lock nuts that are electronically plated for corrosion resistance.
- K. Paint: Shot-blasted, washed and powder coat paint TGIC polyester black. All parts are powder coated prior to assembly of scraper. Outer 12" of moldboard ends painted high visibility yellow.
- L. Grease Line Kit: Remote grease kit that allows grease to be applied at centralized locations outside of the chassis frame. Grease hoses shall be SAE 107 Hytron hose rated at 3000 psi. Grease line kit will incorporate all fifteen (15) grease points on the scraper.

Yes ___ No ___ Deviations explained _____

7. TARP SYSTEM

- A. ROLL-RITE MODEL 6416, fully automatic aluminum system to include double arm system tarp and tension bows, four springs per side, aluminum tarp spool with aluminum wind deflector, direct mount motor and gear box, 30 degree cast aluminum elbows to give maximum clearance for loader, in-cab switch, light and resettable circuit breaker and 20' heavy duty mesh tarp.

Yes ___ No ___ Deviations explained _____

8. FRONT PLOW HITCH

- A. Hustings style heavy duty 34" wide Quick Hitch, top of hitch gusseted with 3/8" plate. Roller pins have grease fittings and secondary locking tabs. Lift arm includes pivoting booster arm with three (3) ½ grab hooks. Plow cylinder is hydraulic double acting cylinder with the following specifications: 3" diameter bore, 10" stroke 2" socatri 1000 shaft – Boss O-ring ports. Hitch is bolted to a heavy-duty structural channel. 12" minimum 20.7 lb., front bumper with flare back and boxed ends. Hitch includes upper and lower bracing. Hitch, bumper and bracing is installed with grade 8 nuts and bolts. All to be epoxy primed, and painted urethane black.

Yes ___ No ___ Deviations explained _____

Note: If factory bumper is used there will be an applied credit to Kalkaska County Road Commission for fabricated structural channel bumper; credit: _____

9. PLOW LIGHTS

- A. Auxiliary plow lights and turn signals. Nordic Truck Light model N520, hood mounted, custom built ¼" thick X 4" wide aluminum brackets with fiberglass in hood support plates, height to be height to be 77" on driver's side and 85" on passenger side to be determined at time of installation to include in-cab 6-way switch and wire harness

Yes ___ No ___ Deviations explained _____

10. FUEL AND HYDRAULIC COMBINATION RESERVOIR:

- A. Tanks shall be designed to be installed in conjunction with a vertically mounted DPF/SCR exhaust system. The fuel hydraulic tanks shall be seven (7) gauge 201 stainless steel construction. The fuel tank shall be a minimum of 110 gal. capacity. The hydraulic tank shall be a minimum of 40 gal. capacity. The fuel and hydraulic tanks shall be integrated into a single, integrally constructed unit custom fit to KCRC chassis. The mounting of the tank shall be included four mounting pads and shall be equipped with rubber bushings and mounting bolts. Supports for the tanks shall be constructed of 4" 7.25 structural channel. The mounting brackets shall extend from the right frame rail and shall cantilever to outside the left frame rail. A stainless-steel serrated step shall be installed on the left side. The tank assembly shall include labels.
- B. The Fuel Tank shall include ball valve shut off valves on both the supply and the return fuel lines to facilitate changing of fuel filter. The proper fuel gauge sending unit shall be installed. The vent for the tank shall conform to the engine manufactures specifications. The tank shall also be equipped with a magnetic drain plug.
- C. The hydraulic tank shall include a 3" supply port with a Zinga top of the tank mounting flange. The filter shall be equipped with an internal drop tube and an anti-siphon device. A solid state, low oil sending unit shall be installed in the side of the tank. A float type sender will not be acceptable. A 5" sight/temperature gauge shall be installed on the side of tank. The tank shall be full of AW32 hydraulic oil.
- D. Hydraulic Tank also includes:
- i. Zinga suction strainer, part # 2030-3.
 - ii. Zinga return filter, RF1215-S-1 with RE-409-10-micron element.
 - iii. 2 ½" - ¼ turn full flow ball valve installed at the reservoir outlet.
- E. ACCESSORIES:
- i. 201 Stainless Steel Serrated grate steps, driver side end of mounting saddle, size, and location to be determined at installation.
 - ii. Decals as to the contents, "Diesel Fuel" or "Hydraulic Oil".
 - iii. Low oil light and alarm system installed in the cab.
 - iv. Momentary over-ride switch installed in the cab.

Yes ___ No ___ Deviations explained _____

11. HYDRAULICS

- A. Front mounted piston pump crank shaft driven, load sense hydraulic system to operate a double acting front plow hoist, scraper up & down, scraper reverse, patrol wing, HD material spreader, main chain, 9" cross auger, spinner assembly, pre-wet and anti-ice.
- B. System shall consist of a 1300 Series A Danfoss 8.9 C.I.R. pump, model ERL147CLS, positive solenoid shut-off valve.
- C. Rexroth mid-inlet eight (8) bank valve, model M4 12. Plow thirteen (13) GPM, Scraper up & down sixteen (16)-gal spool, Scraper reverse, sixteen (16)-gal spool, Wing nineteen (19)-gal spool, Spreader chain twenty-four (24)-gal spool, Cross auger fifteen (15)-gal, Spinner seven (7)-gal spool, seven (7)-gal Pre-wet and fifteen (15) gal Anti-ice. All section pulse width modulated

for proper flow to each function.

- D. Hydraulic valve shall be installed in a stainless-steel enclosure, location to be determined at installation.
- E. Rexroth CS-150 joystick arm rest console 6 joystick buttons, functions will be displayed on the CS660 screen, includes switch pack and distribution box with LED indication and 100 AMP circuit protection.
- F. Rexroth CS660 **OR LATEST MODEL** spreader control will operate manual, automatic, closed loop or open loop ground speed and 12-volt triggered. 4 different granular, pre-wet, anti-ice materials, each with 9 programmable rates. All connections are IP 68 rated. Includes all other standard features.
 - i. Temperature read back and pre-wet temperature compensation.
 - ii. Road/Air Temperature gauge: Furnish and install as directed, Road Watch RW-IRS non-contact temperature sensor with readout in CS660 Panel. Unit shall display outside air temperature and road surface temperature.
 - iii. When using liquid, has a material reduction % built into the system.
 - iv. Screen will show miles traveled and amount of material used.
 - v. Controller will provide information, event time, date, material set point, and usage amounts.
 - vi. All information can be transferred to a desk or laptop computer via Wi-Fi.
 - vii. Controller to default to off/and prior settings used.
 - viii. The controller can be, as needed, up graded via desk, or lap top computer.
 - ix. To include ground speed, and blast functions on cross auger.
 - x. Rexroth Control must provide a path to spread up to nine hundred (900) pounds per mile when transmission is in reverse.
 - xi. Rexroth tech – Keith Gaylor will do hands on training and calibrating for CS150 joystick and the CS660 controller **OR LATEST MODEL**, at the KCRC facility.

Note: Kalkaska County fleet manager Tony Moses shall be consulted prior to installation of cab-mounted controls for placement and order of operation

- G. Supply line from reservoir to pump shall be 2 ½” ID stainless steel hard pipe, with 2 ½”ID short hose assemblies at each end (If no room is available for pipe, a 2 ½” hose can be ran full length in-leu of hard pipe).
- H. Hoses, fittings, and adaptors: All hoses to have crimp type fittings and have abrasive resistant sleeve covering in high wear areas. All clamps to be lined with abrasive resistant sleeve covering. All pressure hoses shall have minimum working pressure rating of 3,000 PSI, swivels at each end. Routing of pressure hoses shall be on the left side of engine as to stay away from turbo heat, using proper extension hangers and to leave room for service of engine filters. All extension hangers to be manufactured of stainless steel.
- I. Hydraulic system to be filled with AW32 oil, pressures set, and system tested.

Yes ___ No ___ Deviations explained _____

12. MID MOUNT PATROL WING

Monroe 9D FWMB Para-Glide Design (to include Ottawa County style clamp with 2019 upgrades, include 1 ¼” bolts in rear in-leu of pins)

Manufacturer _____ **Model** _____

- A.** Wing shall be designed to mount behind the underbody blade, moldboard length shall be 113” inches at the top and 108” inches at the bottom, height shall measure 33” inboard and 33” outboard including cutting edge. Ottawa clamp to be incorporated into wing at factory.
- B.** Moldboard shall be 3/16” A36 steel; top of moldboard formed into a 2-3/4” X 1” channel for additional strength. All seams and joints shall be 100% continuous welded.
- C.** Bottom angle shall be 4” X 4” X 3/4”, reinforced between the cutting-edge holes with ten (10) 3” X 3” X 1/2” gussets. Shall include six (6) 1/2” moldboard reinforcement ribs tapered from 4” at the bottom to 2-1/2” at the top.
- D.** There shall be two (2) horizontal reinforcement angles between the discharge end last two ribs, bottom 4” X 3” X 1/2” reinforcement angle shall have seven (7) evenly spaced 5/8” holes for push arm adjustment, top 4” X 4” X 1/2” reinforcement angle shall have seven (7) evenly spaced 5/8” holes for push arm adjustment.
- E.** Pivot pin shall be constructed of 1-1/2” steel. Front attachment pivot plate will be 1/2” steel, completely boxed and supported with 1/2” and 3/16” plate. Pivot tube for the 1-1/2” pivot bolt shall have a minimum .625” wall and be welded 100% to the inside of the 1/2” plate and outside of the moldboard.
- F.** A 1/2” safety stop eyelet and a 1/2” centered lip loop shall be on the front of the moldboard.
- G.** Cutting edge shall be 9’ in length, 5/8” thick X 8” tall AASHO punched recurved style. Moldboard shall be equipped with three (3) shoes. Shoes shall be bolted on with the cutting edge. One (1) shoe shall be installed on both the toe end and the heel end and one center mounted, shall be heavy-duty cast iron construction. Cast iron shoes shall weigh approximately 75 lbs. each. Bottom of shoe shall be cut at approximately 10 degrees to match attack angle of moldboard.
- H.** Shall have 1/2” X 4” X 6” cross tube passes behind the underbody blade circle and passing thru two (2) mounting plates, 36” tall X 12” wide X 1/2” thick for mounting the wing to the frame of the truck.
- I.** Para-Glide structure shall be no more than 24” high and 14” wide. Post weldment shall be manufactured with a .75” inside mounting plate and a matching .50” outer plate. A .375” Ex-Ten 50 front base plate will set the width of the post, support the .50” inner lower hinge brackets and the .75” bottom cylinder mounts. Internal reinforcement with a .500 HSLA radius plate shall be welded to both side plates and the front base plate. The post weldment will serve as anchor for three trailing link assemblies. The upper and lower link arms shall be .750” radius bar with a 1.75” machined hole on each end. The upper arm assembly will be reinforced with a 2.5” schedule 80 pipe at the front. The lower arm assembly will be reinforced with a 2.5” schedule pipe at the front anchor and .50 HSLA x 5.0 plate to the rear. The lift/float link will be .50” bar with a radius at the anchor end, reinforced with a 2.5” schedule pipe. The rear of the lift link will be 1.0” plate reinforced with .625” bar and will include two .625” upper cylinder mounts. The rear lift weldment shall have an outer 1.0” and inner .50” bar with radius ends and machined 1.75” holes. Bars shall be spaced and supported with two 2.50” schedule pipes and two .50” x 4.0” triangular gussets. The hinge shall consist of three 1” thick radius ears that have 1.438” machined holes, spaced evenly and reinforced with two .25” x 2” x 2” angles. All 1.75” machined holes will have Rc 50 hardened bushings. Hinge pins shall be 1.5” OD, case hardened to Rc 55-60. Hinge pins shall be retained with machine

bushings and .25” roll pins. There shall be 10 grease fittings. Lift cylinder shall be a 3” ID x 5” stroke with a 1.5” industrial hard chrome rod. Hydraulic port(s) shall be .562-18 ORB. Cylinder shall be attached within the post with 1” stress proof pins, machine washers and roll pins. Prior to assembly, the post will be shot blasted, washed and prepped prior to powder coating black.

- J.** The bolt for retaining the moldboard shall be 1-1/2 – 6 X 7 G8 HHCS Zinc plated with castle nut and cotter pin. Bolt shall be drilled for the cotter pin.
 - K.** Lifting action for the heel end of the wing shall be a single 3” ID x stroke, 2” nitrated rod, 3/4 - 16 ORB ports, polypak seals, double acting hydraulic cylinder. Heel cylinder shall be attached to the upper rear push arm slide assembly.
 - L.** Wing shall be operated by hydraulic lift; no cables or chains shall be accepted.
 - M.** Rear wing mount shall be fabricated from 5” X 7” X 3/8” mild steel tubing and shall include two (2) 28” X 18” X 1/2” frame attachment plates with 5” X 7” openings. Rear channel push arm/cylinder mounting plate shall include two (2) 1/2” plates, flame cut with three (3) offset mounting holes to mount the rear push arms and the heel lift cylinder. The rear upper push arm shall be equipped with an external slide assembly to allow for mechanical float and attachment of the heel lift cylinder and the rear push arms and heel lift cylinder shall be attached with 1-1/4” hardened bolts with captured heads.
 - N.** There shall be two (2) rear wing heavy duty, 2-1/2” schedule 80, adjustable, spring cushioned lift arms including safety shear pins, 6’ long fully extended. Wing shall be capable of mounting with an overlap to the scraper discharge to prevent a window between the scraper and the wing moldboard.
 - O.** All fabricated components shall be shot blasted and washed prior to powder coating; mounting components shall be powder coated black, Moldboard shall be powder coated orange, with a minimum curing time of twenty-five (25) minutes, at temperature of no less than four hundred (400) degrees.
 - P.** Mounting hardware shall include three (3) schedule eighty (80) pipe bracing, six (6) pipe balls, a flame cut 3/4” support plate, Grade eight (8) nuts, bolts and washers necessary for a complete installation.
 - Q.** One (1) sequencing valve shall be supplied with the wing and shall be adjustable for both the up and down sequencing of the wing. Lock valves shall be built into the sequencing valve to prevent both the toe and heel cylinder from drifting when in the stored position. The sequencing valve shall allow wing to hydraulically drift up when in the plowing position and shall be equipped with an adjustable metering valve to control the speed at which the blade drops when going from the stored position to the plow position.
 - R.** Installation shall also include:
 - i. Stainless steel quick couplers, caps, and plugs
 - ii. 3/8” Hi Test safety chain and grab hook
 - iii. Remote grease bank
 - iv. Stand-alone 60 Series LED strobe light and LED ICC light – both installed in a stainless steel 60 Series light box, mounted on discharge end of moldboard, to be switched with the other strobe switch
- Yes ___ No ___ Deviations explained _____

13. REAR PULL POINT

A. Clevis design and height to be determined at installation.

Yes ___ No ___ Deviations explained _____

14. CHASSIS IN FRAME SPRAY BAR SYSTEM:

A. Consisting of one (1) ¼” schedule 80 PVC main run, with approximately fourteen (14) nozzles, adjustable style. Clamped in place using stainless steel hardware. To include cam lock and necessary fittings for complete installation. This system shall be installed under the stainless-steel cover plate.

Yes ___ No ___ Deviations explained _____

15. CAMERA SYSTEM

A. Voyager 7” LED color monitor

- i. 1 – SS back-up camera box with adjustable mount.
- ii. 1 – Camera wash system.
- iii. 1-Wireless blackvue dr 750 forward facing camera, placement to be determined at installation.

16. ONE-WAY RIDGED SNOWPLOW: Monroe 12’ MPH386412OWFA (Kalkaska Spec)

Manufacturer _____ **Model** _____

A. One-way, ridged mounted, no trip snowplow. 34” female plow side Hustings Hitch. Moldboard manufactured from 3/16” steel. Minimum of six (6) vertical ribs. Boomerang style shoe rockers manually pinned shoe adjusters, single ear standard cast plow shoes. Snow deflector to mimic the construction of the Monroe “Snowknife” in design. Cutting edge to be 5/8”X 8” standard punch. Snowplow to be finished in orange powder coat or painted urethane on the front side of the moldboard, and flat black powder coat or urethane on the push frame side of the moldboard. 1/2” G70 chain attached to the plow at two points with double clevis’s to be used in conjunction with the booster arm.

Yes ___ No ___ Deviations explained _____

NOTES:

- 1. Successful bidder shall consult with Kalkaska County Road Commission prior to installation of all components for placement and order of operation.**
- 2. Bid form must be used when submitting a bid and any specifications and/or exceptions must be fully explained. Deviation sheet provided, please make copies as needed. Please mark each item “YES” if it meets specifications or “NO” if it doesn’t and explain the deviation from the specification.**
- 3. Kalkaska County reserves the right to accept or reject any and all bids, to waive any irregularities in bids and to make the award of the bid in the best interest of the county. Special consideration will be given to a bidder based on past performance with regard to ability to stock and supply parts and components. The speed in which parts and components are received from suppliers, location of the facility of ship and deliver is very important.**
- 4. The successful body builder shall provide parts manuals for equipment and hands-on training for the service personnel and operators of the county.**
- 5. Any structural deviations will require an attached print.**

Kalkaska County Road Commission

1049 Island Lake Road
Kalkaska, MI 49646
Telephone: 231.258.2242
Facsimile: 231.258.8205

The Kalkaska County Road Commission is an Equal Opportunity Provider and Employer

Equipment and installation for one (1) cab and chassis truck:

Bid per the specification _____

Delivery Date _____

Unit Price _____

Bid prices shall include all set up and delivery charges to points designated by the Commission. Additional fuel surcharges, set up, or delivery charges will not be accepted. Payment for units shall be made on the day of delivery, after acceptance by the Kalkaska County Road Commission.

State the Warranties and Guarantee to be furnished by the supplier and/or manufacturer:

Bidder Information:

Name: _____

Title: _____

Company: _____

Address: _____

Phone: _____

Fax: _____

Signature: _____

Date: _____

Deviations: (three per page):

Item # ____

Deviation: _____

Item # ____

Deviation: _____

Item # ____

Deviation: _____

