

# ***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, September 4, 2019, 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 SS heavy duty frame mounted dump box**
- **201 SS heavy duty slip in material spreader/with pre-wet and anti-ice tanks**
- **Underbody scraper**
- **Front mounted plow hitch**
- **Rear mounted pull hitch**
- **One-Way Plow**
- **Nine (9') foot snow patrol wing/plow**
- **Hydraulic system**
- **Fuel and hydraulic tanks**
- **Cross-auger with spinner unit**
- **Lighting**
- **Associated controls meeting Road Commission specifications**
- **Pre-Wet and anti-ice system**

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](mailto:tmoses@kalkaskaroad.org)

David Gill, Chairman  
Board of 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 2020 - 2021 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.

**Item 1. Model HD Tipper 201SS, Manufactured by Crysteel**

- A. Extra Heavy-Duty body, 13.3 cubic yard capacity, 14' long x 87" wide with front 58", sides and gate being 44", all are inside dimensions.
  - i. No cutouts for taillights, cutouts for clearance lights only.
- B. Sides, front and gate shall be made of seven (7) gauge 201SS.
- C. Nine panel double acting tailgate, top brace shall be inverted V, plus all horizontal brace shall be sloped to shed dirt.
- D. Tailgate hardware shall consist of:
  - i. 1-1/2" thick 201SS top hinge.
  - ii. 1-1/4" diameter 201SS upper and lower tailgate pins.
  - iii. Four (4) 3/8" thick 201SS chain slot brackets.
  - iv. Lower tailgate latch socket 201SS.
  - v. Rear pillar cap and hinge plates 201SS.
  - vi. 3/8" Hi-Test galvanized chains sufficient length to allow tailgate to lay flat.
  - vii. 3-1/2" ID diameter air cylinder shaft retracted when gate is in closed position, to include 12- volt solenoid valve and toggle switch, both installed in the cab.
  - viii. All linkage, including upper pins shall have grease fittings.
- E. Custom 20" cab shield, manufactured of seven (7) gauge 201SS, continuously welded inside and out.
- F. Floor shall be manufactured of 1/4" thick AR450, 250,000 tensile strength with 9" side to floor radius.
- G. Western style understructure, 8" I-beam.

Yes \_\_\_\_\_ No \_\_\_ Deviation explained \_\_\_\_\_

**Item 2. Hoist; Marathon M63138-Double Acting**

- A. NTEA class 120, 44.9 ton lifting capacity.
- B. Heavy duty hinge line, grease-able.
- C. Dual body props.

**NOTES:**

- i. Everything above the floor is 201SS. Entire body continuously welded with SS wire.
- ii. Body and Hoist shall have a five (5)-year warranty; three (3)-year full warranty and remaining two (2)-year 50/50 parts and labor plan.

Yes \_\_\_\_\_ No \_\_\_ Deviation explained \_\_\_\_\_

**Item 3. Dump Body Accessories**

- A. Two (2) grease-able body safety props.

- B. ½” thick anti-sail mud flaps, 2 ahead and 2 behind the tandem driver, installed using SS hardware.
- C. 304SS shovel holder, installed.
- D. 304SS hinge down ladder with 6 anti-slip bar steps.
- E. Would consult Kalkaska County Road shop foreman for shovel and ladder locations prior to installation.

Yes \_\_\_\_\_ No \_\_\_ Deviation explained \_\_\_\_\_

**Item 4. Paint**

- A. Body components and hardware that are 201 – 304SS will be bare, unpainted, carbon steel components will be primed and painted.

Yes \_\_\_\_\_ No \_\_\_ Deviation explained \_\_\_\_\_

**Item 5. Fourteen (14) FT SS Monroe Model Brute 201 Stainless Steel Slip-in Sander**

- A. 201 Stainless Steel Sander, 9.2 cubic yards of capacity – water level. All welding is continuous. All hardware is stainless steel. Stainless Steel is unpainted. Metal is primed and painted gloss black.
- B. Sander is constructed of 201 Stainless Steel with a 2” double crimp formed top for greater strength. Approx. dimensions shall be 168” long X 84” outside width X 56” tall with a 45-degree sloped sides.
- C. Cross sills are 3” X 3/16” formed Stainless Steel channel.
- D. Chain shields are ten (10)-gauge thick stainless steel, bolted in with stainless steel bolts & nuts, removable style.
- E. Longsills are manufactured of seven (7)-gauge stainless steel and continue beyond the spreader to support the spinner assembly. Both ends are slotted to accommodate easy drive and idler shaft removal.
- F. Floor runners 201 stainless steel formed channel 3/16” thick X 1 -1/2” high X 4-5/16” wide, two (2) 1” wide return lips running full length attached to the 3” cross members.
- G. Side supports are ten (10)-gauge stainless steel and extend the full angled side height of the hopper, placed approx. 2’ on center; continuously welded.
- H. Lift hooks are stainless steel loops, one at each corner, a total of four (4).
- I. Rear end plate is ten (10)-gauge stainless steel, reinforced inside and supported for maximum strength.
- J. Conveyor Trough is 24” wide and has a 50:1 gearbox with direct drive Roller Stator Hydraulic Motor including feedback sensor mounted to the 2” steel drive shaft. The drive shaft is supported by two (2) keyed eight (8)-tooth cast- gray sprockets that drive the chain. The 2” idler shaft and keyed sprockets shall be adjustable through the self-aligning four (4)-bolt flange bearings with two heavy-duty spring-loaded adjuster rods. Design allows 4 inches of adjustment. Grease-able and

adjustable from the rear, while standing flatfooted on the floor.

- K.** Conveyor chain is heat treated with 2.25 pitched self-cleaning Pintle type, 7/16" pins with a 21,000 # per strand tensile strength. Crossbars are 3/8" X 1-1/2" on 4-1/2" centers; welded both top and bottom. The system includes front and rear wipers.
- L.** Conveyor floor is 3/16 SS removable bolt in style using SS hardware.
- M.** Intermediate floor supports consist of SS angle iron braces on 12" centers.
- N.** The feed-gate is 12" X 18", seven (7)-gauge 201SS and adjustable with self-locking screw-type jack, giving ruler accurate metering. Jack is grease-able, non-rusting poly U-joint and SS crank handle.
- O.** Main beam is 6" X 9.0 lbs. wide flange bolt-in beam, elevated 3" above the top edge of the hopper providing a longitudinal brace. Bolts are stainless steel.
- P.** Install sander in body, supply Two (2) 2"x96" ratchet strap assemblies. Supply and install four (4) 5/8" ss loops on sander and dump body, exact location to be determined at installation to clear tarp arms, junction box and ladder. Supply 4"x4"x3/8" stainless steel angle iron with 1/4" round stock each end to latch V-box into dump box tailgate.
- Q.** Supply and install 304SS Air Foil on top of rear gate adequate in width to clear all affected lighting.

Yes \_\_\_\_\_ No \_\_\_\_ Deviation explained \_\_\_\_\_

## **Item 6. Pre-Wet System**

Monroe Snow & Ice On-Board Pre-Wet and Anti-Ice Systems

- A.** Two (2) two hundred twenty-five (225)- 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 straps
- C.** One (1) Cross over hose kit
- D.** One (1) Bulk fill and flusher kit
- E.** One (1) Closed loop pre-wet enclosure with 7 GPM pump, hydraulic drive motor, and flow meter
- F.** Three (3) Two (2) gallon per minute nozzle. Location to be determined. One (1) closed loop anti-ice enclosure
- G.** Twenty-four (24) FPM pump, hydraulic drive motor, and flow meter
- H.** One (1) single lane spray bar, and nozzle kit
- I.** Flush kit

Both pre-wet and anti-ice system, to include all necessary components and installation, tested, to be ground speed controlled by Bosch 550 system.

**Item 7. Cross Auger, Model: MS 969-DD-DD**

- A. 96” width, single pin quick detaches, easy top and bottom clean out, balance point lifting slots, complete unit manufactured of 201SS.
- B. 3/16” thick auger trough, ¼” extended one-piece end plates, hinged rear panel and cover designed to dump over or hinge up to feed the auger, 3 hinge system on bottom trough door “Z” latch handle system, all of the above manufactured of 201SS.
- C. 9” auger 4” pitch, 3/8 flighting welded to 2 7/8” tube, supported by 1 ½” 4 – bolt grease-able flange bearings.
- D. Direct Drive 28 C.I.R. Roller Stator motor including a stainless-steel coupler.
- E. SAE 7/8” O ring ports.
- F. 201SS Framework self-leveling 18” poly disc, with spinner guard, 3 C.I.R. Roller Stator motor seal saver design.
- G. Complete installed, Parker jumper hoses, SS disconnects, caps and plugs.

**Item 8. Lights**

- A. Top/Front light strobe, Star mini bar #9016 amber/green LED, installed at center, forward and above the tarp system with stainless lens guard and brackets, Two (2) corner mount single oval 304SS enclosures with Two (2) sixty (60) series LED Strobes #ENFSRV3A12LED, with two (2) side mounted EMPS1STS3G one per box. Two (2) 304SS oval single enclosures with two (2) sixty (60) series LED Strobes #ENFRV3G12LED, install of rear of slip-in sander under air foil assembly. Exact height and location to be determined at installation.
- B. Three (3)- hole 304SS wedge shaped enclosures for rear of the dump body, sixty (60) series lights, LED Strobe #EOVREBZA, LED stop/tail/turn #ECV062 SST-LD, LED back-up lights #ECV062-B2-W.

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

- C. 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 eighteen (18)pin Betts junction box.
- 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
  - 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.

Yes \_\_\_\_\_ No \_\_\_ Deviation explained \_\_\_\_\_

**Item 9. Heavy Duty Underbody Scraper: Monroe Model HD 4500 with Upgrades, Extra HD Hanger Board**

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 two (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 \_\_\_ Deviation explained \_\_\_\_\_

**Item 10. 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 \_\_\_ Deviation explained \_\_\_\_\_

**Item 11. 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) 1/2 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 \_\_\_ Deviation explained \_\_\_\_\_

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

**Item 12. Plow Lights**

- A. Auxiliary plow lights and turn signals. Nordic Truck Light model N520, hood mounted, custom built 1/4" thick X 4" wide aluminum brackets with fiberglass in hood support plates, 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 \_\_\_ Deviation explained \_\_\_\_\_

**Item 13. 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 \_\_\_\_ Deviation explained \_\_\_\_\_

#### Item 14. 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 dump body, sander main chain, 9” cross auger, spinner assembly, pre-wet and anti-ice systems.
- 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 ten (10) bank valve, model M4 12. Box cylinder 34.6 GPM, Plow Thirteen (13) GPM, Scraper up & down sixteen (16)-gal spool, Scraper reverse sixteen (16)-gal spool, Wing nineteen (19)-gal spool, Spreader chain sixteen (16)-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 or proper flow to each function.
- D. Valve will be mounted in 304SS enclosure removable lid, allowing easy access of shuttle network all fittings and hoses will extend out of the bottom. All high-pressure hose assemblies will be Parker 387 series with JIC and SAE O-ring fittings, swivels, each end, and abrasive resistant hose sleeve as needed for added protection. 304SS piping ran to the rear, cross auger, spinner, and wing, including proper stainless-steel support brackets.
- E. Rexroth CS-150 joystick arm rest console six (6) joystick buttons, functions will be displayed on the CS550 screen, includes switch pack and distribution box with LED indication and 100 AMP circuit protection.
- F. Rexroth CS550 **or LATEST MODEL** spreader control will operate manual, automatic, closed loop or open loop ground speed and twelve (12)-volt triggered. Four (4) different granular, pre-wet, anti-ice materials, each with nine (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 cs550 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 tech – Jeff Strong will do hands on training and calibrating for CS150 joystick and the CS550 or **LATEST MODEL** controller, 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 not room enough, use 2 ½” hose full run with hanger supports minimum 24” apart.
- H. Hydraulic system to be filled with AW32 oil, pressures set, and system tested.

Yes \_\_\_\_\_ No \_\_\_\_ Deviation explained \_\_\_\_\_

**Item 15. Mid Mount Patrol Wing**

Monroe 9D FWMB Para-Glide Design (to include Ottawa County style clamp 2019 upgrades, 1 ¼ hard bolts in lieu of 1 ¼ pins on push arms)

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 moldboard 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 ¾”, reinforced between the cutting-edge holes with ten (10) 3” X 3” X ½” gussets. Shall include six (6) ½” 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 ½” reinforcement angle shall have seven (7) evenly spaced 5/8” holes for push arm adjustment, top 4” X 4” X ½” 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 ½” steel, completely boxed and supported with ½” 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 ½” plate and outside of the moldboard.

- F. A ½” safety stop eyelet and a ½” 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 ½” 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, ¾ - 16 ORB ports, polypak seals, double acting hydraulic cylinder. Heel cylinder shall be attached to the upper rear push arm slide assembly.
- L. Patrol 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 ½” frame attachment plates with 5” X 7” openings. Rear channel push arm/cylinder mounting plate shall include two (2) ½” 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 eighty (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 400 degrees.
- P. Mounting hardware shall include three (3) schedule eighty (80) pipe bracing, six (6) pipe balls, a flame cut ¾” 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 and to include in cab switch.

Yes \_\_\_\_\_ No \_\_\_ Deviation explained \_\_\_\_\_

**Item 16. Rear Pull Point/Pintle Hitch**

- A. Pull point to be clevis design incorporated with pintle hitch/receiver tube. Body installer to relocate seven (7)-pin trailer connector and air glad hands supplied by truck manufacturer. Height of pintle hitch, lay-out of D-rings, seven (7)-pin connector, and glad hands to be decided at installation.

Yes \_\_\_\_\_ No \_\_\_ Deviation explained \_\_\_\_\_

**Item 17. Camera System**

- A. Voyager 7” LED color monitor
  - i. One (1) SS back-up camera box with adjustable mount.
  - ii. One (1) Camera wash system.
  - iii. One (1) Wireless blackvue dr 750 forward facing camera, placement to be determined at installation.

Yes \_\_\_\_\_ No \_\_\_ Deviation explained \_\_\_\_\_

**Item 18. 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 \_\_\_\_ Deviation explained \_\_\_\_\_

**Item 19. Options:**

- A. Top grate, grizzly system.
  - i. Elevated 18" high
  - ii. One (1) piece unit, 1/2" x 2" bars on 4" centers
  - iii. Installed with stainless steel hardware
  
- B. Side spill shield kit
  - i. 24" rubber belting full length on the sides
  - ii. Installed with stainless steel hardware

**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: \_\_\_\_\_

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Item # \_\_\_\_\_

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Item # \_\_\_\_\_

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