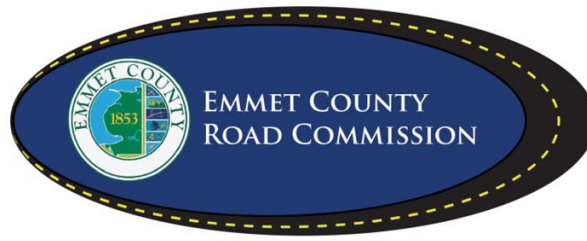


Wade Williams
Mark W. Hoffman
Frank Zulski Jr.
Brian A. Gutowski, P.E.
Engineer-Manager
Lisa Kleeman
Finance Director -
Clerk of the Board



2265 E. Hathaway Road
Harbor Springs, MI 49740
Office: 231-347-8142
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INVITATION TO BID

March 28, 2022

Sealed bids will be received by the Emmet County Road Commission, at their offices located at 2265 E. Hathaway Road, Harbor Springs, MI, until Monday, March 28, at 10:05 a.m., at which time they will be opened and read aloud furnishing annual requirements of wing scraper blades, wing shoes, and front plow shoes.

- See [attached specifications and bid sheet](#) for details

Bid Submittal

The Contractor must submit the bid on the attached "Bid Sheet" and place in a sealed envelope clearly marked as to its contents.

The Board reserves the right to accept or reject any and all bids, to waive irregularities in the bid procedure, and to award in the best interest of the Road Commission.

Bids due, 10:05 a.m., Monday, March 28, 2022
at which time they will be opened and read aloud

BID SHEET – WING SCRAPER BLADE, WING SHOE & FRONT PLOW SHOE

(Annual Requirements)

Board of Emmet County Road Commissioners
2265 E. Hathaway Road
Harbor Springs, MI 49740

We agree to furnish the Emmet County Road Commission with their annual requirements of wing scraper blades, wing shoes and front plow shoe at the prices listed below:

- 1.) 5/8" x 8 x 108" Reverse curved double bevel (Hi-carbon steel) weight/ft. _____ price/ft. _____
- 2.) Wing Shoe-HD Cast Iron Moldboard Shoe weight ea. _____ price/ea. _____
- 3.) Single Ear Hardened Plow Shoe weight ea. _____ price ea. _____

Terms and minimum load requirements are as follows: MDOT specifications must be met, and material certification provided

Specifications for the above are on the following pages. Above prices include delivery to the Road Commission Conway garage by October 31, 2022.

The Emmet County Road Commission reserves the right to accept or reject any or all bids, to waive irregularities in the bid procedure and to award in the best interest of the Road Commission.

Company Name: _____

Contact Name and title: _____

Signature: _____

Business Address: _____

Email Address: _____

Phone: _____

Date of Bid: _____

Specifications

1. Wing Blade: SPECIFICATIONS FOR HI-CARBON REVERSE CURVE CUTTING EDGES

- a. **5/8"x8"x108" Reverse Curved double bevel**; counter sunk holes on reverse side. Material to be steel AISI C-1084 quality within the chemistry specifications.
- b. The Rockwell Hardness C- Scale from 20 – 32 and have a Brinell Hardness of (HBW 10/3000) from 179 – 301.
- c. All blades shall be furnished with appropriate bolt holes counter-sunk; required per Society of Automotive Engineers specification no. J740. Hole spacing dimensional tolerances shall be +/- 1/16" Non-accumulative; hole size, 11/16" for 5/8" bolts & spacing shall be DOT-standard.
- d. Each blade Section shall be identified with manufactures mark, stamped, or stenciled. Bidder must supply certificate of sourced materials, certificate of quality with material analysis and all MSDS sheets. Must identify the manufacture and supply place of origin

2. Wing Shoe: HD Cast Iron Moldboard Shoe:

- a. HD cast iron shoe **MUST** be designed to attach to the back side of a plow or wing moldboard. There shall be a .750-inch offset in the casting so when the shoe is bolted to the bottom angle, the top of the wear portion of the shoe, will be flush with the bottom angle. This offset will also act as a shear stop for the mounting bolts. The mounting holes will be oblong in shape, .750 x 1.375 inches and designed for the possibility of hole misalignment. The mounting holes will be 12.00 inches center to center within the reinforced top mount portion of the moldboard shoe that shall be a minimum of 2.750 inches thick and minimum of 3.750 inches wide. The top portion of the moldboard shoe shall be designed to clear the bottom angle reinforcement and have the part number cast within. The lower wear portion of the moldboard shoe shall be minimum of 10.00 inches wide, 4.50 inches deep and 4.652 inches high. There shall be reinforcement gussets as part of the casting from the sides of the lower wear portion to the upper mount portion. The bottom of the moldboard shoe shall be flush with the road surface when the moldboard is at a 10-degree attack angle. Shoe **must** be cast of alloyed grey iron, minimum weight of seventy pounds. and manufactured in the U.S.A. No exceptions, Certification of origin is required upon request.

Iron Alloys:

Ductile Irons

ASTM Standard Nominal Hardness

Ductile Iron

A536 Grade 60-40-18 150–180 BHN Grade with maximum ductility and low temperature

toughness. Excellent machinability.

A536 Grade 65-45-12 180–120 BHN

A536 Grade 80-55-06 210–250 BHN High strength, good wear resistance, moderate ductility and impact resistance. Good Machinability.

A536 Grade 100-70-03 250–300 BHN

AQ536 Grade 120-90-02 300-360-BHN Very high strength and wear resistance. Fair machinability.

Ductile Ni-Resist (Austenitic)

A439-Type D-2 139-202 BHN Used when resistance to heat, corrosion, oxidation, and wear are required. Good strength and dimensional stability at elevated temperatures.

Austempered Ductile Iron (ADI)

Grade 125/80/10 269-321-BHN Great Strength, excellent dynamic properties.

Grade 150/100/7 302-363-BHN All ADI grades are stronger per unit of weight than Aluminum, as wear resistant.

Grade 175/125/4 341-444-BHN As strong as steel and easier to machine than free-machining steel.

Grade 200/155/1 388-477-BHN

Grade 230/185/0 444-555-BHN Even Higher strength, excellent wear resistance.

Gray Irons

ASTM Standard Nominal Hardness

Gray Iron

A48 Class 20 110-140-BHN Excellent machinability and damping capacity. Good resistance to thermal shock.

A48 Class 30 150-180-BHN

A48 Class 40 220-250-BHN Wear resistance increases, strength increases, finer finish after machining.

Heat Resistant Gray Iron

Element (s) Added

A319 Class 1 Type A Chromium Low Tensile strength, very good resistance to thermal shock. A319

Class II Type A Chromium Moderate tensile strengths, average resistance to thermal shock. A319

Class III Type B/C Chromium High Tensile strengths, average resistance to thermal shock.

A319 II-B Plus Mo Cr & Moly Creep rupture properties greatly improved (at elevated temperatures). A319

II B Plus Cu Cr & Copper Most effective in retarding growth. Abrasion Resistant & High Chrome Irons

3. Front Plow shoe: Single Ear Hardened Plow Shoe

a. Shall be single ear, hi-carbon, long-wear shoe. Shoes made from Modified Class 40 gray iron with 1% chrome added for long-wear purposes shall have Brinell Hardness (HBW 10/3000) of 233 or equivalent. Must identify the manufacture and supply place of origin