MIDLAND COUNTY ROAD COMMISSION

BID FORM

Sealed Proposals will be received at the office of the Board of Road Commissioners, County of Midland, at 2334 N. Meridian Road, Sanford, Michigan 48657 until:

DATE: Monday, March 7th, 2016, at 1:00 P.M.

Item No. 25 – Thin Epoxy Polymer Deck Overlay

Estimated Quantity **495 Syd**

Epoxy Overlay, Sasse Rd over Fleming Drain	$_____/Syd
Epoxy Overlay, Laporte Rd over Fleming Drain	$_____/Syd
Epoxy Overlay, Barden Rd over Howard Drain	$_____/Syd

DESCRIPTION

This work consists of providing all labor, materials, and equipment necessary for cleaning/preparing the entire deck surface and applying a two-coat epoxy overlay in accordance to the MDOT 2012 Standard Specifications for Construction and the special provision attached. All traffic control necessary to complete the project will not be paid for separately and shall be included in the price bid per Syd for Epoxy Overlay.

LOCATION

Three locations identified include Sasse Road over Fleming Drain in Ingersoll Twp. (est. 155 syd), Laporte Road over Fleming Drain in Ingersoll Twp. (est. 155 syd), and Barden Road over Howard Drain in Geneva Twp. (est. 190 syd). These existing bridge decks have asphalt overlays which will be removed with a milling operation performed by others.

COMPANY BIDDING_____

CONTACT PERSON _____

ADDRESS_____

PHONE/FAX _____

_____

AUTHORIZED SIGNATURE TITLE

INDICATE ON ENVELOPE: Company Name, Item Number, Bid Item, Time and Date

MIDLAND COUNTY ROAD COMMISSION

SPECIAL PROVISION
FOR
THIN EPOXY POLYMER BRIDGE DECK OVERLAY

a. Description. This work consists of providing all labor, materials, and equipment for cleaning/preparing entire deck surface and applying a two-coat epoxy overlay.

b. Materials. Use a two component, high solids epoxy system to overlay the structure. Ensure containers are marked clearly "Part A" or "Part B". The epoxies that are approved for thin overlays are in Table 1.

Table 1: Approved Two Component High Solids Epoxy Systems

Supplier	Product	Contact Information
Axson	Akabond 811	Axson North America Inc. (Mike Munsell) 1611 Hults Drive Eaton Rapids, MI 48827 (517) 663-8191
BASF	MasterSeal 350	BASF (David McCarron) 20611 Windemere Macomb, MI 48044 (586) 557-0235
E-Bond	526 Lo-Mod	Ridgemoor Supply Inc. (Stan Bosscher) 4484 Roger B. Chaffee Dr. Kentwood, MI 49548 (616) 532-0782
Euclid Chemical	Flexolith Flexolith Summer Grade Flexolith HD	The Euclid Chemical Co. (Tim Brewer) 20416 Harper Avenue Harper Woods, MI 48225 (313) 886-9700
Poly-Carb	Flexogrid Mark – 163 Flexogrid Mark - 154	Poly-Carb, Inc. (Dan Patacca) 1881 West Oak Parkway Marletta, GA 30062 (330) 405-3311
Sika	Sikadur 22-Lo Mod	Sika – US (Wesley Pringle) 673 Cherry Orchard Road Canton, MI 48188 (248) 866-8956
Transpo	T-48 Chip Seal	Transpo Industries, Inc. (Tom Donnelly) 20 Jones St. New Rochelle, NY 10801 (573) 808-1040
Unitex	Propoxy Type III DOT	Dayton Superior Corporation (Blair Oldfield) 1125 Byers Road Miamisburg, OH 45342 (224) 217-0447

Use an angular aggregate, having less than 0.2 percent moisture and free of dirt, clay, asphalt,

and other foreign or organic materials. Ensure the aggregate has a minimum Mohs' hardness of 7 and meets the gradation in Table 2.

Table 2: Angular Aggregates Gradation Requirements

Sieve Size	Minimum % Passing	Maximum % Passing
3/8	100	100
4	98	100
8	30	75
16	0	5
30	0	1
Pan	0	0
	Minimum	Maximum
Fineness Modulus	2.28	2.81

Unless otherwise approved, ensure the aggregate is chosen from an approved supplier from Table 3.

Table 3: Approved Aggregate Suppliers

Fairmount Santrol - Chris Calhoun P.O. Box 87 Chardon, OH 44024 (800) 237-4986
Flint Rock Products - Tammy Epps 800 S. College Road P.O. Box 217 Picher, Oklahoma 74360 (918) 673-1737 Fax: (918) 673-1749
Manufacturers Minerals Co. - Jim Adderson 1215 Monster Road Renton, Washington 98057 (877) 490-8524
Red Flint Sand and Gravel - Jim Danzinger 1 American Blvd PO Box 688 Eau Clair, WI 54702 (800) 238-9139
US Silica - Ken Booz P.O. Box 254 Mauricetown, NJ 08329 (800) 257-7034
Washington Rock Quarries, Inc. - Greg Lanphere 21711 103rd Ave. Ct. E Suite C302 Graham, WA 98338 (253) 377-3438

c. Equipment. For the epoxy overlay, provide a distribution system or distributor capable of accurately blending the epoxy resin and hardening agent, and uniformly and accurately applying the epoxy materials at the specified rate to the bridge deck in such a manner as to cover 100

percent of the work area including 1 inch of the vertical face of curb/barrier. Provide a fine aggregate spreader capable of uniformly and accurately applying dry aggregate to cover 100 percent of the epoxy material. Provide a self-propelled vacuum truck.

For hand applications, provide calibrated containers, a Jiffy® type mixer, and notched squeegees which are suitable for mixing and applying the epoxy and aggregate.

For mechanical applications, provide mixing equipment that will automatically and accurately proportion the components in accordance with the manufacturer's recommendations, mix and continuously place the epoxy overlay. Ensure the operation proceeds in such a manner that will not allow the mixed material to segregate, dry, be exposed or otherwise harden in such a way as to impair the retention and bonding of broadcasted aggregate.

d. Construction.

1. Surface Preparation. Immediately prior to application of the epoxy overlay, clean the entire deck surface by scarifying the surface to remove any material left by the milling operation (work preformed by others) and then shot blasting to remove all materials that may interfere with the bonding or curing of the epoxy overlay. Ensure traffic paint lines and deck tining are removed and the prepared deck meets the *International Concrete Repair Institute Guideline No. 03732, concrete surface profile 7* (CSP 7). Ensure mortar is sound and sufficiently bonded to the coarse aggregate, and presents uniform CSP necessary for adequate bond. Use a vacuum cleaner or oil-free moisture-free air blast to remove all dust and other loose material. Brooms are prohibited. Remove any oil or other contamination after initial cleaning.

Ensure there is no visible moisture present on the surface of the concrete at the time of application of the epoxy overlay. Oil-free moisture-free compressed air may be used to dry the deck surface.

The Engineer will inspect patching and cleaning operations. The Engineer's approval is required prior to placement of the overlay.

Ensure there is no moisture present in the deck concrete at the time of application in accordance with *ASTM D 4263* except as modified herein. Tape a 4 foot by 4 foot transparent polyethylene sheet (4 mil) to the deck. Ensure all edges are sealed with tape that will stick to the concrete substrate. Leave the plastic sheet in place for a minimum of 3 hours or the manufacturer's recommended cure time for the conditions, whichever is longer. Ensure there is no moisture visible on the polyethylene sheet. Alternate methods to detect moisture must be approved by the Engineer.

Remove all debris from the neoprene glands of strip-seal style expansion joints. Protect the expansion joints, and any other areas not to be overlaid, from damage during preparation of the surface. Ensure the protection is removed once the epoxy and aggregate has been applied and prior to initial set. Ensure removing the protection is done soon enough to in no way harm the adjacent overlay. Ensure protection is applied again prior to the second coat and removed again prior to initial set as to not damage adjacent surfaces. Ensure the protection meets the approval of the Engineer.

2. Application. Do not place the epoxy overlay on concrete deck patches that are less than 28 days of age. Ensure handling and mixing of the epoxy resin and hardening agent is performed in a safe manner to achieve the desired results in accordance with the manufacturer's recommendations for a two-coat system or as directed by the Engineer. Do

not place epoxy overlay materials when surface is less than 50 degrees Fahrenheit (F) or ambient air temperature is forecast to fall below 50 degrees F within 8 hours after application. Do not place epoxy overlay materials if weather or surface conditions are such that the material cannot be properly handled, placed, and cured within the manufacturer's requirements and specified requirements of traffic control.

Apply the epoxy overlay in two separate courses in accordance with the manufacturer's recommendation for a two-coat system with the following rate of application. Ensure the first course is no less than 40 square feet per gallon. Ensure the second course is no less than 20 square feet per gallon.

Ensure application of aggregate to both the first and second courses is of sufficient quantity so the entire surface is covered in excess. Ensure no bleed through, or wet spots are visible in the overlay. Remove and replace any areas within course applications with wet spots or where epoxy has bled through.

After the epoxy mixture has been prepared for the overlay, immediately and uniformly apply it to the surface of the bridge deck with a notched squeegee. Apply the dry aggregate in such a manner as to cover the epoxy mixture completely within 5 minutes. Minimize all foot traffic on the uncured epoxy and ensure any foot traffic will only be done with steel spiked shoes approved by the Engineer. Cure each course of epoxy overlay until vacuuming or brooming can be performed without tearing or damaging the surface. Do not allow traffic or equipment on the overlay surface during the curing period. Remove by vacuuming or brooming all loose aggregate after the first course curing period. Immediately apply the next overlay course to complete the overlay. Ensure the minimum curing periods are according to the manufacturer's recommendations, as shown in Table 4, or as directed by the Engineer. Remove by vacuuming or brooming all loose aggregate after the second course curing period. Ensure all strip-seal style expansion joints are free of loose aggregate, epoxy and other debris resulting from overlay operations.

Table 4: Anticipated Cure Time (Hours)

Average Temperature of Deck, Epoxy and Aggregate Components, Degrees F	1st Course	2nd Course
<60		(a)
60-64	4	6.5
65-70	3	5
71-75	2.5	4
76-80	2	3
81-85	1.5	3
>85	1	3
a. Second course must be cured for minimum of 8 hours if the air temperature drops below 60 degrees F during the curing period, or per the manufacturer's recommendations.		

Plan and prosecute the work to provide the minimum curing periods as specified in Table 4, or other longer minimum curing periods as recommended by the manufacturer prior to opening to public or construction traffic, unless otherwise permitted. Ensure first course applications are not opened to traffic. Remove any contamination, detrimental to adhesion of the second course, from the first course at Contractor's expense prior to the application of the second course.

Remove and replace any areas damaged or marred by the Contractor's operations in accordance with this special provision at no additional cost to the Department.

Ensure both courses are applied within 24 hours following the final cleaning and prior to opening area to traffic.

Provide the Engineer with all records including, but not limited to, the following for each batch provided:

- batch numbers and sizes,
- location of batches as placed on deck, referenced by stations,
- batch time,
- temperature of air, deck surface, epoxy components, including aggregates,
- loose aggregate removal time, and
- time open to traffic.

e. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

Pay Item	**Pay Unit**
Epoxy Overlay	Square Yard

Epoxy Overlay includes all material, labor, and equipment required for cleaning, preparing and applying a two-coat overlay system including miscellaneous clean-up. Also includes all labor and equipment necessary for cleaning strip-seal style expansion joints.