MIDLAND COUNTY ROAD COMMISSION

BID FORM

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

DATE: Friday, March 16, 2018, at 10:00 a.m.

Item No. 5 – PAVEMENT MARKING

Pavement Markings – Estimated miles 400 +/-

Pavement Marking, Waterborne, 4 inch yellow	$_____/FOOT
Pavement Marking, Waterborne, 4 inch white	$_____/FOOT
Special Markings/Arrows	$_____/EACH
24" Stop Bars	$_____/FOOT

Alternate 1 – Pavt Markings w/ DLS

Pavement Marking, Waterborne, 4 inch yellow	$_____/FOOT
Pavement Marking, Waterborne, 4 inch white	$_____/FOOT

Raised Thermoplastic Rumble Strips

Pavt Mrkg, Thermopl, Rumble Strip	$_____/FOOT
Pavt Mrkg, Rumble Strip, Remove	$_____/FOOT

Pavement Markings

This work shall consist of furnishing and applying reflectorized pavement markings with materials and equipment in accordance with Section 811 of the MDOT 2012 Standard Specifications for Construction.

The Contractor shall provide to MCRC a plate sample of each spray applied marking prior to start of work for field comparison purposes.

The Contractor is responsible for all layout work necessary for the location and placement of pavement markings, including No Passing Zones, as directed by the Engineer. Also loading and unloading of all materials. Work maps will be provided upon award.

Two sprayings will be required. They shall be placed during the following periods:

1) All primary roads in Midland County, and all local roads in the Southwest Quad: including Greendale Twp., Lee Twp., Jasper Twp., and Porter Twp. by July 31, 2018.

2) All construction projects and special markings August 30 to November 1, 2018.

Alternate 1 – Pavt Markings w/ DLS

In addition to all requirements detailed above, Contractor shall comply with the attached Special Provision for Data Logging System For Permanent Waterborne Pavement Markings.

Raised Thermoplastic Rumble Strips

Furnish and install thermoplastic rumble strips in advance of a stop sign or other locations on bituminous roadways as directed by the Managing/Director and/or the Superintendent for the Midland County Road Commission. Perform all work in accordance with Section 811 of the Michigan Department of Transportation Standard Specifications for Construction as well as items contained within this document. Include all traffic control necessary to complete the installations. All work shall be completed by Sept. 15th, 2018.

Materials/Construction:

Shall conform to attached Special Provision for Raised Thermoplastic Rumble Strips.

Measurement and Payment. The length of each 6 inch by 3/8-inch strip will be summed to determine the total length for payment. (The bid price submitted shall include all materials, labor, equipment, traffic control, and mobilization necessary to complete this item of work.)

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
RAISED THERMOPLASTIC RUMBLE STRIPS

MCRC:ALB

02-11-16

a. Description. This work consists of furnishing and installing raised thermoplastic rumble strips on hot mix asphalt (HMA) pavement in advance of a stop sign, or at other locations as directed by the Engineer.

b. Materials. Select the thermoplastic from the Mdot Qualified Products List or submit material data sheets for the product along with references on previous installations for approval by Engineer. Use glass beads as recommended by the thermoplastic manufacturer.

c. Construction. Prepare the pavement surface and apply the rumble strips in accordance with section 811 of the Standard Specifications for Construction and the following:

1. Clean the HMA surface, making sure the pavement is dry and above 50 degrees F.

2. Apply the thermoplastic as shown on the Raised Thermoplastic Rumble Strips for Use on State Trunklines detail included in this special provision.

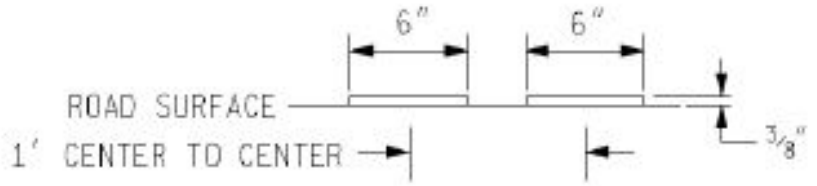
3. Apply glass beads as recommended by the manufacturer of the thermoplastic.

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

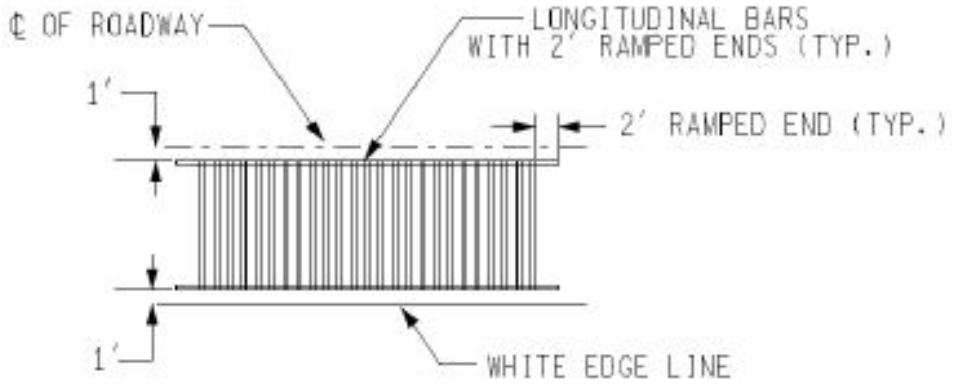
Pay Item	**Pay Unit**
Pavt Mrkg, Thermopl, Rumble Strip	Foot
Pavt Mrkg, Rumble Strip, Remove	Foot

The Engineer will measure each length of 6 inch by 3/8 inch thermoplastic material to determine the total length of **Pavt Mrkg, Thermopl, Rumble Strip** for payment.

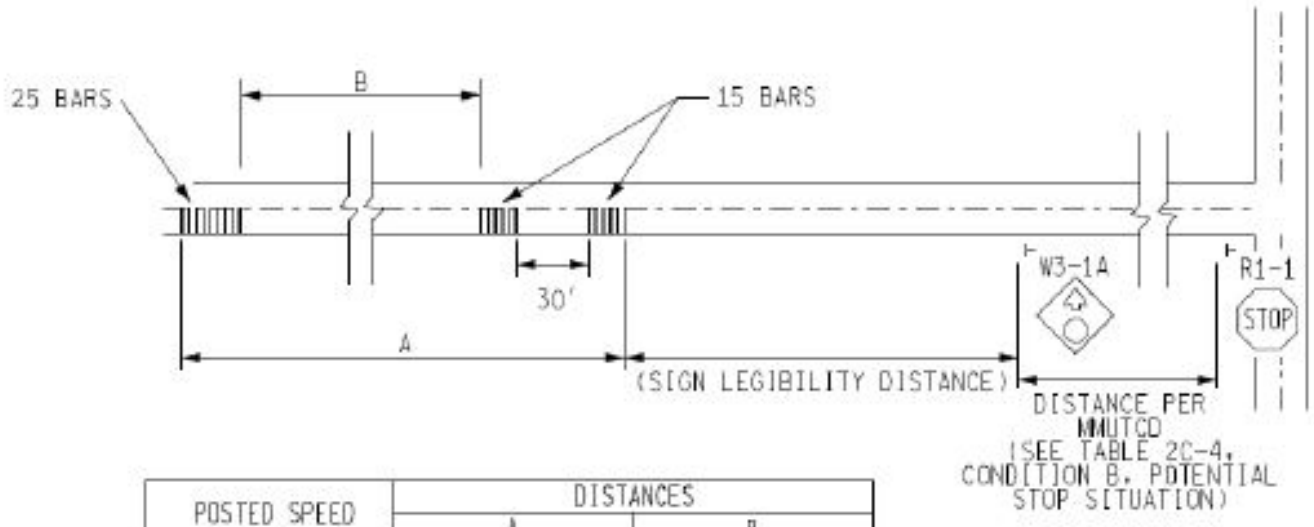
The Engineer will measure each length of existing thermoplastic rumble strip required to be removed to determine the total length for payment of **Pavt Mrkg, Rumble Strip, Remove.**



PROFILE VIEW



PLAN VIEW



POSTED SPEED	DISTANCES	
	A	B
45 MPH	200 FT	115 FT
50 MPH	230 FT	145 FT
55 MPH	245 FT	160 FT

LOCATION

NOTE: DISTANCES GIVEN ARE MINIMUM VALUES

RAISED THERMOPLASTIC RUMBLE STRIPS FOR USE ON STATE TRUNKLINE

MIDLAND COUNTY ROAD COMMISSION

SPECIAL PROVISION
FOR
DATA LOGGING SYSTEM FOR PERMANENT WATERBORNE PAVEMENT MARKINGS

a. Description. This work consists of providing equipment containing a Data Logging System (DLS) for long line waterborne striping trucks. This special provision provides the requirements for the DLS which must record environmental conditions and material application parameters during striping operations, and be able to generate reports.

b. Equipment Requirements. Equip long line striping trucks for this project with a DLS that meets the following requirements:

1. Operational Requirements.

A. Measures and records application vehicle speed to nearest 0.1 mile per hour (MPH).

B. Measures and records weight in pounds (LBS) and/or volume in gallons (Gals) of binder as measured through a positive displacement pump mechanism, a flow meter or load cells under the material tanks.

C. Measures and records weight in LBS of reflective glass beads/elements used as measured with load cells under the bead/element tanks.

D. Measures and records pavement surface temperature (Degrees F).

E. Measures and records air temperature (Degrees F).

F. Measures and records dew point (Degrees F).

G. Measures and records humidity (Percent).

H. Calculates and records average material application rates and film thicknesses over each segment painted.

I. Provides the highway number with the beginning and ending reference points rounded to the nearest thousandths of a mile, the beginning and ending coordinates determined by a Global Positioning System receiver with 16 foot accuracy, and the direction of travel in terms of increasing or decreasing reference points.

J. Provides cellular capabilities for field data transport to website.

2. Documentation Requirements.

A. Date, and beginning and ending time of application.

B. Vendor and product (binder and reflective material).

C. Lot number(s) of product used.

D. Specific weight of binder lot(s) used in pounds per gallon (LBS/Gals).

E. Striping contractor (MDOT Certification Number).

F. Designation of the marking being applied (LEL – Left Edge Line, REL – Right Edge Line, CL – Centerline, LL – Lane Line).

G. Width of marking being applied.

H. Application vehicle speed to the nearest 0.1 MPH.

I. Weight in LBS and/or volume in Gals of binder used by color as measured per the requirements in subsection b.1.B of this special provision.

J. Weight in LBS of reflective glass beads/elements used as measured per the requirements in subsection b.1.C of this special provision.

K. Pavement surface temperature (Degrees F).

L. Air temperature (Degrees F).

M. Dew point (Degrees F).

N. Humidity (Percent).

O. The system must calculate and report average material application rates and film thicknesses over each segment painted.

P. The system must report the total footages painted for each segment broken down by line color and width (e.g. – total 4 inch yellow in segment, total 6 inch white in segment, etc.).

Q. Provide the highway number with the beginning and ending reference points rounded to the nearest thousandths of a mile, the beginning and ending coordinates determined by a Global Positioning System receiver with 16 foot accuracy, and the direction of travel in terms of increasing or decreasing reference points.

R. Provide GPS mapping system that is capable of real time (within 20 minutes) tracking of material application rates, film thickness, beads pounds per gallon, vehicle speed, time, date, project numbers, operator manual data, and color coded alarms for film thickness. Film thickness alarms must have a tolerance of ±0.5 mils.

S. Provide access to stored data on a secure password protected website.

The system must record and report the average material application rates for paint and beads on a road by road basis. Each road (segment) will be evaluated over an entire MDOT control section (CS) in increments of 5 miles. When the control section is less than 5 miles long, it will be evaluated over its entire length and considered a segment. Control sections greater than 5

miles long, will be broken into 5 mile segments, (eg. A control section 20 miles long would have 4 segments each 5 miles long, a control section that is 17 miles long would have 3 – 5 mile long segments and 1 – 2 mile long segment). At the beginning/end of each control section ensure the material is settled in the tanks prior to logging the system information; it may be necessary to bring the truck to a full stop for 5-10 seconds to achieve settling if the roadway contains hills, curves, or bumps.

Ensure the DLS is operational, calibrated and in use during pavement marking operations. Collect data for any non-handwork longitudinal pavement marking application of 300 feet (drive length) or greater. Completion of work for the individual day will be permitted if the DLS equipment fails. Document the application and material usage quantities from the time of the DLS failure, and make calculations to determine the gallons of binder per mile and pounds of beads per mile. Repair the DLS before resuming work, or as approved by the Engineer.

Provide the Engineer the DLS manufacturer's recommendations for equipment calibration frequency and provide certification that the equipment meets manufacturer's recommended calibration. Ensure a signed DLS calibration sticker is present in the driver's door and carries a date of the current calendar year prior to the DLS system being placed into use for the season. Calibrate every DLS a minimum of once each year.

c. Materials. None specified.

d. Construction. Field personnel may randomly perform field verifications of the DLS operation and calibration at any time to ensure the accuracy of the DLS data and output. If field personnel believe that the DLS data and output is not accurate, then additional checks may be performed. Provide DLS equipment certified by the manufacturer.

e. Reporting. The DLS must store data and export to a secure server on a daily basis. Ensure the data is in Microsoft Excel format, or a comma or spaces delimited text file adequate for insertion into a computerized spreadsheet. Ensure the data is available to the Engineer within 24 hours of the pavement marking work, and may be retrieved by the Engineer or designated field personnel for inclusion with documentation reporting. Ensure the electronic records are completed in their final form prior to the records being removed from the pavement marking equipment.

Provide the GPS mapping information as detailed in subsection b.2.R of this special provision to the Engineer on a weekly basis. Provide the data in a CSV file formatted for importation into and use with ArcGIS version 10.1.

f. Measurement and Payment. No separate or additional payment will be made for the use of DLS. The costs to furnish and operate the DLS, all manufacturer representation, labor, equipment, reports, documentation, and materials necessary for striping operations are to be included in the price bid for other items.

No price adjustment or corrective action will be applied based solely upon information from the DLS.