

**MIDLAND COUNTY ROAD COMMISSION**

**BID FORM**

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

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

**Item No. 6 – ALUMINUM BLANK SIGN FACES AND COMPLETE SIGNS**

**\*\*Special Note:** Please read the entirety of these bid documents prior to completing. If you have any questions, please contact Sam SanMiguel, Superintendent at the Midland County Road Commission at (989) 687-9060.

**ALUMINUM BLANK SIGN FACE ONLY**

Faces below to be 3M brand, Series 3930 High Intensity Prismatic sheeting material (HIP) or equal, with 1 color legend (black, red, white) per MUTCD design.

<u>FACE SIZE</u>	<u>PRICE PER FACE</u>	<u>FACE SIZE</u>	<u>PRICE PER FACE</u>
12"x36"	_____	24"x30"	_____
24"x42"	_____	24"x24"	_____
30"x30"	_____	24"x18"	_____
12"x18"	_____	12"x12"	_____
30"x36"	_____	12"x6"	_____
30"x18"	_____	48"x30"	_____
48"x24"	_____	36"x36"	_____

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Faces below to be 3M brand, Series 3930 Super High Intensity Prismatic sheeting or equal.

<u>FACE SIZE</u>	<u>PRICE PER FACE</u>	<u>FACE SIZE</u>	<u>PRICE PER FACE</u>
30"x30"	_____	48"x24"	_____
36"x36"	_____	12"x36"	_____
24"x24"	_____	24"x18"	_____
24"x30"	_____	24"x42"	_____
12"x18"	_____	12"x12"	_____
30"x36"	_____	12"x6"	_____
30"x18"	_____	48"x30"	_____
36" STOP AHEAD	_____	36" YIELD AHEAD	_____
36" SIGNAL AHEAD	_____	36" ROUND	_____
36"x48"x48"	_____		_____
NO PASSING ZONE _____		30"x12"	_____

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Faces below to be 3M brand, Series 4804, Super High Efficiency Full Cube Prismatic sheeting, or equal, orange durable fluorescent.

<u>FACE SIZE</u>	<u>PRICE PER FACE</u>	<u>FACE SIZE</u>	<u>PRICE PER FACE</u>
30" DIAMOND	_____	36" DIAMOND	_____
48" DIAMOND	_____	30"x24"	_____
48"x18"	_____		

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Faces below to be 3M brand, Series 4083, Super High Efficiency Full Cube Prismatic sheeting, or equal, fluorescent yellow green.

<u>FACE SIZE</u>	<u>PRICE PER FACE</u>	<u>FACE SIZE</u>	<u>PRICE PER FACE</u>
36" DIAMOND	_____	24"x8"	_____
30"x 12"	_____	24"x12"	_____
30" x 18"	_____		

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**COMPLETED SIGNS**

Completed signs below to be 3M brand Series 4000, Super High Efficiency Full Cube Prismatic sheeting with 3M brand Series 1160 protective overlay film applied, or equal.

<u>LEGEND</u>	<u>PRICE PER COMPLETED SIGN</u>
30" STOP	_____
36" STOP	_____

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Completed signs below to be 3M brand Series 4000, Super High Efficiency Full Cube Prismatic sheeting, or equal.

<u>LEGEND</u>	<u>PRICE PER COMPLETED SIGN</u>
36" STOP	_____
30" STOP	_____
36" YIELD	_____
12"x6" All WAY	_____

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Completed signs below to be 3M brand Series 3930 yellow (HIP), or equal.

LEGEND

PRICE PER COMPLETED SIGN

36"x48"x48"

NO PASSING ZONE

\_\_\_\_\_

36" ROUND ADVANCE

RAILROAD

\_\_\_\_\_

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Completed signs below to be 3M brand Series 4083, Super High Efficiency Full Cube Prismatic sheeting, fluorescent yellow-green, or equal.

LEGEND

PRICE PER COMPLETED SIGN

36" SCHOOL

36" DIAMOND

36" PENTAGON

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

.....

Street name signs (HIP) 3930 High Intensity Prismatic or equal (sheeted on both sides).

SIZE

PRICE

SIZE

PRICE

24" x 6"

\_\_\_\_\_

24" x 9"

\_\_\_\_\_

30" x 6"

\_\_\_\_\_

30" x 9"

\_\_\_\_\_

36" x 6"

\_\_\_\_\_

36" x 9"

\_\_\_\_\_

Bidders are to furnish current list of all reflective sign faces and quantity discounts and material safety data sheet(s) with bid.

COMPANY BIDDING: \_\_\_\_\_

CONTACT PERSON \_\_\_\_\_

ADDRESS: \_\_\_\_\_

PHONE/FAX: \_\_\_\_\_

\_\_\_\_\_  
AUTHORIZED SIGNATURE

\_\_\_\_\_  
TITLE

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

**Specifications:**

Traffic sign material used in the fabrication of traffic signs to be furnished under this bid proposal shall meet the Michigan Department of State Highways and Transportation specifications per the 2012 manual, as amended. All signs shall conform to current Michigan Manual of Uniform Traffic Control Devices for the shape, color, symbols and letters.

All materials used for the construction of reflective sign faces associated with this bid are to be 3M Brand or equal to as defined by specification section. Alternate materials other than 3M must have documentation certifying specifications and approved by the Midland County Road Commission.

Aluminum sheet sign panel material is to meet the Michigan Department of Transportation 2012 Standard Specifications for Construction, Section 919 PERMANENT TRAFFIC SIGN AND SUPPORT MATERIAL, section 919.02 TRAFFIC SIGNS, and sub-section 3, ALUMINUM SHEET. The aluminum sheet sign panels will be Type III and must conform to the requirements for aluminum alloy 6061-T6, 5052-H38, or 5154-H38 of ASTM B 209. The Type III aluminum sheet sign panels must be fabricated from nominal 0.080 inch thick aluminum sheet with mill tolerance as specified in ASTM B 209. Corners must be rounded with 1.50 inch radius.

Delivery: Within 30 days. All deliveries made outside 30 calendar days from the date of order will be assessed a 1% per day deduction of the total order value.

**HIGH INTENSITY PRISMATIC (HIP) SHEETING – Series 3930 OR EQUAL, (White, Yellow, Red, Green, Blue, and Brown)**

A. General:

The reflective sheeting shall consist of cube corner prismatic optics encapsulated by a flexible transparent plastic film that has a smooth outer surface. The sheeting shall have a pre-coated adhesive protected by an easily removable liner. The sheeting shall be available in sheets and in roll widths of up to 48 inches. The reflective sheeting shall meet ASTM Type X specification.

B. Coefficient of Retro-reflection:

The reflective sheeting shall have a minimum Coefficient of retro-reflection as shown in Table II, expressed as “candelas per Lux per square meter” (Cd/Lux/m<sup>2</sup>). Conformance to coefficient of Retro-reflection requirements shall be determined by instrumental method in accordance with ASTM E-810 “Test Method for Coefficient of Retro-reflection of Retro-reflective Sheeting”, and per E-810 the values of 0° and 90° rotation are averaged.

Table III - Minimum Coefficient of Retro-reflection Candelas per Lux per square meter

Observation Angle	White	Yellow	Red	Orange	Green	Blue	Brown
0.2	560	420	84	210	56	28	17
0.5	200	150	30	75	20	10	6
0.2	280	210	42	105	28	14	8.4
0.5	100	75	15	37	10	5	3

C. Field Performance:

A ten-year field performance warranty must be provided. The sign sheeting shall retain at least 80% of the initial values shown in Table II during the first 7 years of the warranty, and at least 70% in the remaining 3 years of the warranty.

**SUPER HIGH EFFICIENCY FULL CUBE PRISMATIC (FCP) RETROREFLECTIVE SHEETING Series-4000 OR EQUAL**

(White, Fluorescent Yellow, Red, Fluorescent Orange, Green, Fluorescent Yellow Green, Blue, Brown )

**A. General:**

The sheeting shall consist of full cube prismatic lens elements with a distinctive interlocking diamond seal pattern visible from the face of a smooth surface. The sheeting shall have a pre-coated adhesive protected by an easily removable liner. The sheeting shall be available in sheets and in roll widths of up to 48 inches.

**B. Coefficient to Retro Reflection:**

The reflective sheeting shall have a minimum Coefficient of retro-reflection as shown in Table IV, expressed as “candelas per Lux per square meter” (Cd/Lux/m<sup>2</sup>). Conformance to coefficient of Retro-reflection requirements shall be determined by instrumental method in accordance with ASTM E-810 “Test Method for Coefficient of Retro-reflection of Retro-reflective Sheeting”, and per E-810 the values of 0° and 90° rotation are averaged.

Table III - Minimum Coefficient of Retro-reflection Candelas per Lux per square meter

Entrance Angle	Observation Angle	White	Fl. Yellow	Red	Fl. Orange	Green	Fl. Yellow Green	Blue	Brown
-4	0.2	570	340	115	200	57	460	26	17
-4	0.5	400	240	80	140	40	320	18	12
-4	1.0	120	72	24	42	12	96	5.4	3.6
30	0.2	215	130	43	75	22	170	11	6.5
30	0.5	150	90	30	52	15	120	6.8	4.5
30	1.0	45	27	9	16	4.5	36	2	1.4

**C. Field Performance/Warranty:**

A twelve (12) -year field performance warranty will remain effective for the reflective sign sheeting for its intended use and meet the stated minimum values of coefficient of Retroreflection for standard colors used in permanent sign applications.

Colors: white, red, green and blue.

Percentage of Table III Initial coefficient of Retroreflection Minimums Guaranteed over 12 Year Warranty Period

Warranty Period	Minimum Percentage R <sub>a</sub> Retained
1-7 Years	80%
8-12 Years	70%

A ten (10)-year field performance warranty will remain effective for the reflective sign sheeting for its intended use and meet the stated minimum values of coefficient of Retroreflection for Fluorescent Yellow and Fluorescent Yellow-Green used in permanent sign applications. The warranty is subject to the following provision:

## Warranty Period for Fluorescent Colors

Color	Warranty Period
Fluorescent Yellow	10 Years <sup>5</sup>
Fluorescent Yellow Green	10 Years <sup>5</sup>
Fluorescent Orange	3 Years

### ADHESIVE AND FILM PROPERTIES

Test Methods shall comply with the following standards:

#### A. Standard Conditioning:

All mounted and un-mounted test specimens shall be conditioned for 24 hours at 73° F ± 2° F and 50% ± 4% R.H. before testing.

#### B. Standard Test Panel and Application:

Unless otherwise specified, the reflective sheeting shall be applied according to the manufacturer's recommendations to smooth 0.063 inches minimum thickness 6061-T6, 5052-H38 or equivalent aluminum panels that have been degreased and lightly acid etched. Lack of contamination on test panels must be confirmed by passing water break and tape snap test.

#### C. Adhesion:

Apply 4 inches of a 1" x 6" strip of sheeting to a test panel and condition, face panel down and suspend a test weight of 13/4 lbs. from the free end. There shall not be more than 2 inches of peel in 5 minutes.

#### D. Impact Resistance:

Apply sheeting to a standard 0.040" x 3" x 5" test panel of alloy 6061-T6 and condition 24 hours. Subject sheeting to 100 inch pound, using a weight with a 5/8 inch diameter rounded tip dropped from a height necessary to generate an impact of 100 inch-pounds, at test temperatures of both 32° F and 72° F. No separation from the test panel or cracking outside the impact area shall be observed.

#### E. Shrinkage:

Following the conditioning of a 9" x 9" sample, remove liner, place specimen on flat surface with adhesive side up. Shrinkage not greater than 1/32" in 10 minutes or more than 1/8" in 24 hours in any dimension shall be observed.

#### F. Flexibility:

Following the conditioning of a 1" x 6" sample, remove liner and dust adhesive with talc. At standard conditions, bend in one second around 1/8" mandrel with adhesive side facing mandrel.

There shall be no signs of cracking.

#### G. Gloss:

Test in accordance with ASTM D523 using an 85° glossmeter. There shall be a minimum reading of 50.

**H. Application:**

Care shall be exercised in the fabrication process so orientation of the sheeting for maximum entrance angle benefits is achieved. The sheeting shall be applied at room temperatures (65° F) or higher by methods recommended by the manufacturer.

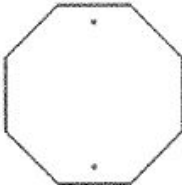
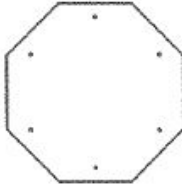
**I. Screen Processing:**

Only screen processing inks recommended by the manufacturer for use on their product shall be used in the fabrication process.

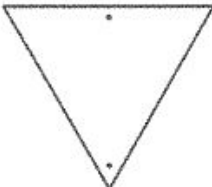
**Hole Punching Specifications:**

Hole punching of the sign panels is to conform to the Midland County Road Commission attached specification, any panel not conforming will be rejected. Thoroughly degrease the aluminum sheet panels according to the sheeting manufacturer's recommendations. After degreasing, surface treating, and proper rinsing, keep sign panels free of grease, oil, and other contaminants.

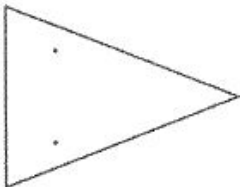
**OCTAGON**

R1-1 30"		MDOT Support Hole Placement 2-Hole
R1-1 36"		MDOT Support Hole Placement 2-Hole and 4-Hole Dimensions

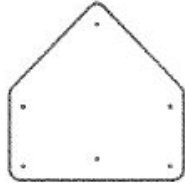
**EQUILATERAL TRIANGLE**

R1-2 36"		MDOT Support Hole Placement 2-Hole
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**ISOSCELES TRIANGLE**

W14-3 48" X 36"		FEDERAL Drilling and Spacing 2-Hole
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**PENTAGON**

S1-1 36"		MDOT Support Hole Placement 2-Hole and 4-Hole Dimensions
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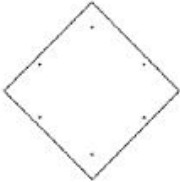
**SQUARE**

48" X 48"		MDOT Support Hole Placement 4-Hole
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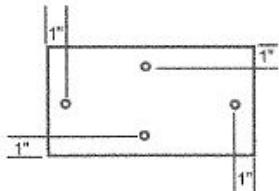
**DIAMOND or SQUARE**

18" X 18" 24" X 24" 30" X 30" 36" X 36"		MDOT Support Hole Placement 2-Hole for both square and diamond installation
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**DIAMOND**

36" X 36"		MDOT Support Hole Placement 2-Hole and 4-Hole Dimensions
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**RECTANGLE ROAD NAME**

24" X 9"    24" X 12" 30" X 9"    30" X 12" 36" X 9"    36" X 12" 42" X 9"    42" X 12" 48" X 9"    48" X 12" 54" X 9"    54" X 12"		WCRC Road Names Blanks Regular 3/8 Drilling With Holes Placed as Indicated 4-Hole
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