

**Manistee County Road Commission  
Plans and Specifications**

January 11, 2018

**2018 Local HMA Wedging & Chip Seal**

**Project Locations**

- 1). Dilling Road, from Coates Hwy to End of Road at Tippy Dam  
(3.06 Miles)  
Dickson Township
- 2). Gilbert/Frederick/Ingersol/Lumley/Iverson/Norconk Roads,  
from Glovers Lake Road to Myers Road (4.20 Miles)  
Arcadia & Pleasanton Townships
- 3). Kettner Road, from River Road to Coates Hwy (1.01 Miles)  
Brown Township
- 4). Schoedel Road, from M-22 to US-31 (2.56 Miles)  
Manistee Township
- 5). South Skocelas Road, from South County Line Road to M-55  
(5.70 Miles)  
Stronach Township
- 6). 11 Mile Road, from US-31 to Big Four Road (4.31 Miles)  
Bear Lake Township
- 7). 13 Mile Road, from Lakeview Road to West of Milarch Road  
(3.21 Miles)  
Onekama & Arcadia Townships

- 8). Udell Hills Road, from South Skocelas Road to M-55  
(5.93 Miles)  
Stronach And Norman Township**
- 9). Burtker & Potter Roads, from 13 Mile Road to M-22  
(1.33 Miles)  
Onekama Township**
- 10). Ellen Road, from M-22 to North End of Paved Portion of  
Road (0.18 Miles)  
Onekama Township**
- 11). Leonard Avenue, from Crescent Beach Road to Lakeshore  
Road (0.37 Miles)  
Onekama Township**
- 12). Olson Road, from M-55 to Pine Creek Road (1.05 Miles)  
Manistee Township**
- 13). South Skocelas Road, from M-55 to Pine Creek Road (0.97  
Miles)  
Stronach Township**

# MANISTEE COUNTY ROAD COMMISSION

PLANS OF PROPOSED IMPROVEMENTS TO

DILLING RD, GILBERT/NORCONK RD, KETTNER RD,  
 SCHOEDEL RD, SO SKOCELAS RD, 11 MILE RD, 13  
 MILE RD, UDELL HILLS RD, BURTKER/POTTER RD,  
 ELLEN RD, LEONARD RD, OLSON RD

**INDEX TO SHEETS**

- 1 TITLE SHEET
- 2-19 DESCRIPTION OF WORK
- 20-21 TYPICAL SECTION SHEETS
- 22 DETAIL SHEET
- 23-44 STRIP PLAN SHEETS

DICKSON, ARCADIA, PLEASANTON, BROWN, MANISTEE, STRONACH, BEAR  
 LAKE, ONEKAMA, AND NORMAN TWPS

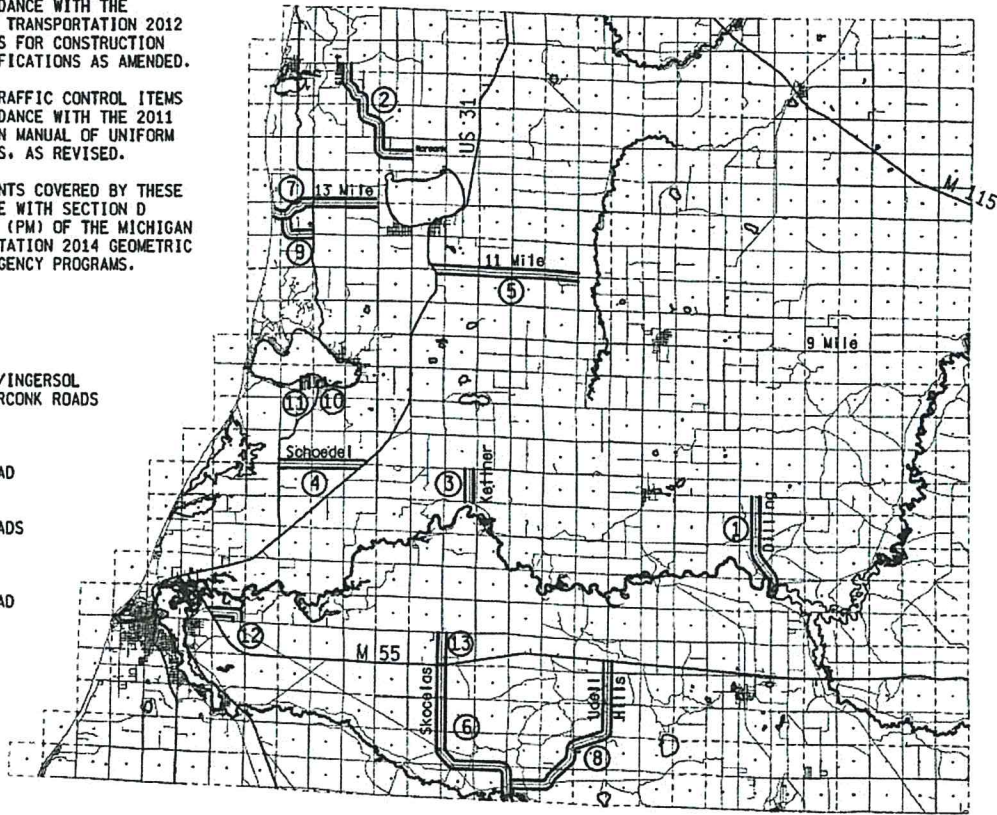
MANISTEE COUNTY

THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2012 STANDARD SPECIFICATIONS FOR CONSTRUCTION AND SUPPLEMENTAL SPECIFICATIONS AS AMENDED.

PLACING OF TEMPORARY TRAFFIC CONTROL ITEMS SHALL BE DONE IN ACCORDANCE WITH THE 2011 EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, AS REVISED.

THE PROPOSED IMPROVEMENTS COVERED BY THESE PLANS ARE IN ACCORDANCE WITH SECTION D PREVENTIVE MAINTENANCE (PM) OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2014 GEOMETRIC GUIDELINES FOR LOCAL AGENCY PROGRAMS.

- 1 DILLING ROAD
- 2 GILBERT/FREDERICK/INGERSOL LUMLEY/IVERSON/NORCONK ROADS
- 3 KETTNER ROAD
- 4 SCHOEDEL ROAD
- 5 11 MILE ROAD
- 6 SOUTH SKOCELAS ROAD
- 7 13 MILE ROAD
- 8 UDELL HILLS ROAD
- 9 BURTKER/POTTER ROADS
- 10 ELLEN ROAD
- 11 LEONARD AVENUE
- 12 OLSON ROAD
- 13 SOUTH SKOCELAS ROAD



PROJECT LENGTH: 33.88 MILES  
 CONTRACT FOR: CHIP SEAL, FOG SEAL, INTERMITTENT HMA PAVING & PAVEMENT MARKINGS.



PREPARED UNDER SUPERVISION OF

GARY L. KARTTUNEN, P.E. 30565  
 REGISTERED PROFESSIONAL ENGINEER REGISTRATION #

**GARY L. KARTTUNEN**  
 ENGINEER  
 No. 30565

**KPM Engineering**  
 CIVIL ENGINEERING CONSULTANTS

*4/11/18*

COUNTY ROAD COMMISSION APPROVAL

*Mark P. SohlDen* 1/15/18  
 MARK P. SOHLDEN, MCRS MANAGER DATE

SHEET NO.  
 1

1/17/2018 9:41:35 AM

## PROJECT LOGS

### 2018 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING MANISTEE COUNTY

#### **Specifications (Applicable to all Project Locations)**

All work shall be performed in accordance with the Michigan Department of Transportation (MDOT) Standard Specifications for Construction, the project Special Provisions, plans, project log, and as directed by the Manistee County Road Commission (MCRC).

The maintenance of traffic and placement of temporary traffic control devices within the project limits on the main roadway and on intersecting roads shall be done in accordance with the 2011 edition of the Michigan Manual of Uniform Traffic Control Devices (MMUTCD), as revised, and the Special Provision for Maintaining Traffic.

#### **LOCATION # 1**

#### **DILLING ROAD, FROM COATES HWY TO THE END OF ROAD AT TIPPY DAM DICKSON TWP**

#### **Project Location:**

The project is on Dilling Road, from 60' south of the centerline of Coates Hwy (POB = Station 10+60) southerly to the end of the roadway at Tippy Dam (POE = Station 172+35). This segment length is 3.06 miles.

Refer to the Project Title Sheet.

#### **Description of Work:**

The work at this location involves 3.06 miles of Chip Seal and Fog Seal, intermittent Hot Mix Asphalt (HMA) skip paving and quarter crown wedging, aggregate shoulders, maintaining traffic, and pavement markings.

#### **Items of Work:**

##### Mainline Surfacing

In accordance with the typical cross sections, place intermittent full width HMA skip paving and quarter crown wedging at the locations indicated. Exact locations will be as directed by the Engineer. Adjust monument box at Flarity Road (Sta 36+40). Bring up shoulders with Shoulder, C1 II as needed.

Place Chip Seal - Modified and Fog Seal – Modified on the pavement from POB to POE in accordance with the applicable special provisions.

Place pavement markings from POB to POE.

## PROJECT LOGS

### 2018 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING MANISTEE COUNTY

<b>HMA, 4E1 (Skip Paving)</b>	<b>593 Ton</b>
<b>HMA, 4E1 (Quarter Crown Wedging)</b>	<b>22 Ton</b>
<b>Chip Seal – Modified</b>	<b>37,742 Syd</b>
<b>Fog Seal – Modified</b>	<b>37,742 Syd</b>
<b>Shoulder, CI II</b>	<b>251 Ton</b>
<b>Monument Preservation</b>	<b>1 Ea</b>
<b>Pavt Mrkg, Waterborne, 4 inch, White</b>	<b>32,350 Ft</b>
<b>Pavt Mrkg, Waterborne, 4 inch, Yellow</b>	<b>16,077 Ft</b>
<b>Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional</b>	<b>324 Ea</b>
<b>Traffic Control</b>	<b>0.09 LSUM</b>

#### LOCATION # 2

### GILBERT/ FREDERICK/INGERSOL/LUMLEY/IVERSON/NORCONK ROAD, FROM GLOVERS LAKE ROAD TO MYERS ROAD ARCADIA & PLEASANTON TWPS

#### **Project Location:**

The project is on Gilbert/Frederick/Ingersol/Lumley/Iverson/Norconk Road, from 66' south of the centerline of Glovers Lake Road (POB = Station 10+66) southerly to 39' west of the centerline of Myers Road (POE = Station 232+22). This segment length is 4.20 miles.

Refer to the Project Title Sheet.

#### **Description of Work:**

The work at this location involves 4.20 miles of Chip Seal and Fog Seal, intermittent Hot Mix Asphalt (HMA) skip paving, quarter crown wedging and centerline wedging, aggregate shoulders, maintaining traffic, and pavement markings.

#### **Items of Work:**

In accordance with the typical cross sections, place intermittent full width HMA skip paving, quarter crown wedging, and centerline wedging at the locations indicated. Exact locations will be as directed by the Engineer. Place monument box at Sta 22+25. Bring up shoulders with Shoulder, CI II as needed.

Place Chip Seal - Modified and Fog Seal – Modified on the pavement from POB to POE in accordance with the applicable special provisions.

Place pavement markings from POB to POE.

## PROJECT LOGS

### 2018 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING MANISTEE COUNTY

HMA, 4E1 (Skip Paving)	299 Ton
HMA, 4E1 (Quarter Crown Wedging)	775 Ton
HMA, 4E1 (Centerline Wedging)	26 Ton
Chip Seal – Modified	50,228 Syd
Fog Seal – Modified	50,228 Syd
Shoulder, CI II	1,306 Ton
Monument Box	1 Ea
Monument Preservation	1 Ea
Pavt Mrkg, Waterborne, 4 inch, White	44,312 Ft
Pavt Mrkg, Waterborne, 4 inch, Yellow	29,871 Ft
Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional	443 Ea
Traffic Control	0.12 LSUM

#### LOCATION # 3

#### KETTNER ROAD, FROM RIVER ROAD TO COATES HWY BROWN TWP

##### Project Location:

The project is on Kettner Road, from 11' north of the centerline of River Road (POB = Station 10+11) northerly to 12' south of the centerline of Coates Hwy (POE = Station 63+37). This segment length is 1.01 miles.

Refer to the Project Title Sheet.

##### Description of Work:

The work at this location involves 1.01 miles of Chip Seal and Fog Seal, intermittent Hot Mix Asphalt (HMA) quarter crown wedging, aggregate shoulders, maintaining traffic, and pavement markings.

##### Items of Work:

In accordance with the typical cross sections, place intermittent HMA quarter crown wedging at the locations indicated. Exact locations will be as directed by the Engineer. Bring up shoulders with Shoulder, CI II as needed.

Place Chip Seal - Modified and Fog Seal – Modified on the pavement from POB to POE in accordance with the applicable special provisions.

## PROJECT LOGS

### 2018 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING MANISTEE COUNTY

Place pavement markings from POB to POE.

<b>HMA, 4E1 (Quarter Crown Wedging)</b>	<b>275 Ton</b>
<b>Chip Seal – Modified</b>	<b>14,262 Syd</b>
<b>Fog Seal – Modified</b>	<b>14,262 Syd</b>
<b>Shoulder, CI II</b>	<b>423 Ton</b>
<b>Pavt Mrkg, Waterborne, 4 inch, White</b>	<b>10,652 Ft</b>
<b>Pavt Mrkg, Waterborne, 4 inch, Yellow</b>	<b>8,137 Ft</b>
<b>Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional</b>	<b>107 Ea</b>
<b>Traffic Control</b>	<b>0.03 LSUM</b>

#### LOCATION # 4 SCHOEDEL ROAD, FROM M-22 TO US-31 MANISTEE TWP

#### **Project Location:**

The project is on Schoedel Road, from 76' east of the centerline of M-22 (POB = Station 10+76) easterly to 115' west of the centerline of US-31 (POE = Station 145+81). This segment length is 2.56 miles.

Refer to the Project Title Sheet.

#### **Description of Work:**

The work at this location involves 2.56 miles of Chip Seal and Fog Seal, intermittent Hot Mix Asphalt (HMA) skip paving, aggregate shoulders, maintaining traffic, and pavement markings.

#### **Items of Work:**

In accordance with the typical cross sections, place intermittent full width HMA skip paving at the locations indicated. Exact locations will be as directed by the Engineer. Bring up shoulders with Shoulder, CI II as needed.

Place Chip Seal - Modified and Fog Seal – Modified on the pavement from POB to POE in accordance with the applicable special provisions.

Place pavement markings from POB to POE.

<b>HMA, 4E1 (Skip Paving)</b>	<b>200 Ton</b>
<b>Chip Seal – Modified</b>	<b>36,223 Syd</b>

## PROJECT LOGS

### 2018 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING MANISTEE COUNTY

<b>Fog Seal – Modified</b>	<b>36,233</b>	<b>Syd</b>
<b>Shoulder, CI II</b>	<b>64</b>	<b>Ton</b>
<b>Pavt Mrkg, Waterborne, 4 inch, White</b>	<b>27,010</b>	<b>Ft</b>
<b>Pavt Mrkg, Waterborne, 4 inch, Yellow</b>	<b>19,990</b>	<b>Ft</b>
<b>Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional</b>	<b>270</b>	<b>Ea</b>
<b>Traffic Control</b>	<b>0.08</b>	<b>LSUM</b>

#### LOCATION # 5

#### SOUTH SKOCELAS ROAD, FROM SO.COUNTY LINE RD TO M-55 STRONACH TWP

#### **Project Location:**

The project is on South Skocelas Road, from 60' north of the centerline of South County Line Road (POB = Station 10+60) northerly to 84' south of the centerline of M-55 (POE = Station 311+32). This segment length is 5.70 miles.

Refer to the Project Title Sheet.

#### **Description of Work:**

The work at this location involves 5.70 miles of Chip Seal and Fog Seal, intermittent Hot Mix Asphalt (HMA) skip paving, quarter crown wedging and centerline wedging, HMA Curb, aggregate shoulders, maintaining traffic, and pavement markings.

#### **Items of Work:**

In accordance with the typical cross sections, place intermittent full width HMA skip paving, quarter crown wedging, and centerline wedging at the locations indicated. Exact locations will be as directed by the Engineer. Adjust monument boxes at Sta 205+45 and Sta 284+77. Bring up shoulders with Shoulder, CI II as needed.

There is an existing HMA curb from Station 11+44 to 16+73 Rt. During HMA paving along this section, construct a new HMA curb to the same limits. Replace the failed HMA spillway located at Station 15+20 Rt. Removal of the old HMA spillway shall be included in payment for the new spillway.

Place Chip Seal - Modified and Fog Seal – Modified on the pavement from POB to POE in accordance with the applicable special provisions.



## PROJECT LOGS

### 2018 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING MANISTEE COUNTY

Place pavement markings from POB to POE. Place new snowmobile crossing markings on the pavement at Station 205+45 and Station 261+26.

<b>HMA, 4E1 (Skip Paving)</b>	<b>753 Ton</b>
<b>HMA, 4E1 (Quarter Crown Wedging)</b>	<b>158 Ton</b>
<b>HMA, 4E1 (Centerline Wedging)</b>	<b>22 Ton</b>
<b>Chip Seal – Modified</b>	<b>73,871 Syd</b>
<b>Fog Seal – Modified</b>	<b>73,871 Syd</b>
<b>Shoulder, CI II</b>	<b>499 Ton</b>
<b>Curb Sloped, HMA</b>	<b>529 Ft</b>
<b>Paved Ditch, HMA</b>	<b>6 Syd</b>
<b>Riprap, Plain</b>	<b>6 Syd</b>
<b>Monument Preservation</b>	<b>2 Ea</b>
<b>Pavt Mrkg, Waterborne, 4 inch, White</b>	<b>60,144 Ft</b>
<b>Pavt Mrkg, Waterborne, 4 inch, Yellow</b>	<b>22,906 Ft</b>
<b>Protective Overlay, Snowmobile Trail Crossing</b>	<b>68 Syd</b>
<b>Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional</b>	<b>601 Ea</b>
<b>Traffic Control</b>	<b>0.17 LSUM</b>

#### LOCATION # 6 11 MILE ROAD, FROM US-31 TO BIG FOUR ROAD BEAR LAKE TWP

##### **Project Location:**

The project is on 11 Mile Road, from 111' east of the centerline of US-31 (POB = Station 11+11) easterly to 46' west of the centerline of Big Four Road (POE = Station 238+85). This segment length is 4.31 miles.

Refer to the Project Title Sheet.

##### **Description of Work:**

The work at this location involves 4.31 miles of Chip Seal and Fog Seal, intermittent Hot Mix Asphalt (HMA) skip paving, quarter crown wedging and centerline wedging, aggregate shoulders, maintaining traffic, and pavement markings.

##### **Items of Work:**

In accordance with the typical cross sections, place intermittent full width HMA skip paving, quarter crown wedging, and centerline wedging at the locations indicated. Exact locations will

## PROJECT LOGS

### 2018 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING MANISTEE COUNTY

be as directed by the Engineer. Adjust monument box at Sta 212+00. Bring up shoulders with Shoulder, CI II as needed.

Place Chip Seal - Modified and Fog Seal – Modified on the pavement from POB to POE in accordance with the applicable special provisions.

Place pavement markings from POB to POE.

<b>HMA, 4E1 (Skip Paving)</b>	<b>85 Ton</b>
<b>HMA, 4E1 (Quarter Crown Wedging)</b>	<b>529 Ton</b>
<b>HMA, 4E1 (Centerline Wedging)</b>	<b>244 Ton</b>
<b>Chip Seal – Modified</b>	<b>55,670 Syd</b>
<b>Fog Seal – Modified</b>	<b>55,670 Syd</b>
<b>Shoulder, CI II</b>	<b>844 Ton</b>
<b>Monument Preservation</b>	<b>1 Ea</b>
<b>Pavt Mrkg, Waterborne, 4 inch, White</b>	<b>45,548 Ft</b>
<b>Pavt Mrkg, Waterborne, 4 inch, Yellow</b>	<b>19,366 Ft</b>
<b>Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional</b>	<b>455 Ea</b>
<b>Traffic Control</b>	<b>0.13 LSUM</b>

#### LOCATION # 7

#### 13 MILE ROAD, FROM LAKEVIEW ROAD TO WEST OF MILARCH ROAD ONEKAMA & ARCADIA TWPS

##### **Project Location:**

The project is on 13 Mile Road, from 50' east of the centerline of Lakeview Road (POB = Station 10+50) easterly to the pavement change west of Milarch Road (POE = Station 179+77). This segment length is 3.21 miles.

Refer to the Project Title Sheet.

##### **Description of Work:**

The work at this location involves 3.21 miles of Chip Seal and Fog Seal, intermittent Hot Mix Asphalt (HMA) skip paving and quarter crown wedging, aggregate shoulders, maintaining traffic, and pavement markings.

## PROJECT LOGS

### 2018 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING MANISTEE COUNTY

#### Items of Work:

In accordance with the typical cross sections, place intermittent full width HMA skip paving and quarter crown wedging at the locations indicated. Exact locations will be as directed by the Engineer. Bring up shoulders with Shoulder, CI II as needed.

Place Chip Seal - Modified and Fog Seal – Modified on the pavement from POB to POE in accordance with the applicable special provisions. Gap out the M-22 intersection as indicated.

Place pavement markings from POB to POE.

<b>HMA, 4E1 (Skip Paving)</b>	<b>425 Ton</b>
<b>HMA, 4E1 (Quarter Crown Wedging)</b>	<b>741 Ton</b>
<b>Chip Seal – Modified</b>	<b>39,618 Syd</b>
<b>Fog Seal – Modified</b>	<b>39,618 Syd</b>
<b>Shoulder, CI II</b>	<b>1,288 Ton</b>
<b>Pavt Mrkg, Waterborne, 4 inch, White</b>	<b>33,618 Ft</b>
<b>Pavt Mrkg, Waterborne, 4 inch, Yellow</b>	<b>17,706 Ft</b>
<b>Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional</b>	<b>336 Ea</b>
<b>Traffic Control</b>	<b>0.09 LSUM</b>

#### LOCATION # 8

#### UDELL HILLS ROAD, FROM S.SKOCELAS ROAD TO M-55 STRONACH & NORMAN TWPS

#### Project Location:

The project is on Udell Hills Road, from 11' east of the centerline of South Skocelas Road (POB = Station 10+11) northeasterly to 90' south of the centerline of M-55 (POE = Station 323+36). This segment length is 5.93 miles.

Refer to the Project Title Sheet.

#### Description of Work:

The work at this location involves 5.93 miles of Chip Seal and Fog Seal, intermittent Hot Mix Asphalt (HMA) skip paving and quarter crown wedging, aggregate shoulders, maintaining traffic, and pavement markings.

## PROJECT LOGS

### 2018 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING MANISTEE COUNTY

#### Items of Work:

In accordance with the typical cross sections, place intermittent full width HMA skip paving and quarter crown wedging at the locations indicated. Exact locations will be as directed by the Engineer. Bring up shoulders with Shoulder, CI II as needed.

Place Chip Seal - Modified and Fog Seal – Modified on the pavement from POB to POE in accordance with the applicable special provisions.

Place pavement markings from POB to POE. Place new snowmobile crossing marking on the pavement at Station 282+76.

<b>HMA, 4E1 (Skip Paving)</b>	<b>176 Ton</b>
<b>HMA, 4E1 (Quarter Crown Wedging)</b>	<b>217 Ton</b>
<b>Chip Seal – Modified</b>	<b>73,121 Syd</b>
<b>Fog Seal – Modified</b>	<b>73,121 Syd</b>
<b>Shoulder, CI II</b>	<b>396 Ton</b>
<b>Pavt Mrkg, Waterborne, 4 inch, White</b>	<b>62,650 Ft</b>
<b>Pavt Mrkg, Waterborne, 4 inch, Yellow</b>	<b>26,353 Ft</b>
<b>Protective Overlay, Snowmobile Trail Crossing</b>	<b>33 Syd</b>
<b>Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional</b>	<b>627 Ea</b>
<b>Traffic Control</b>	<b>0.17 LSUM</b>

#### LOCATION # 9

#### BURTKER & POTTER ROAD, FROM 13 MILE ROAD TO M-22 ONEKAMA TWP

#### Project Location:

The project is on Burtker and Potter Roads, from 10' south of the centerline of 13 Mile Road (POB = Station 0+10) southeasterly to 89' west of the centerline of M-22 (POE = Station 70+30). This segment length is 1.33 miles.

Refer to the Project Title Sheet.

#### Description of Work:

The work at this location involves 1.33 miles of Chip Seal and Fog Seal, maintaining traffic, and pavement markings.

## PROJECT LOGS

### 2018 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING MANISTEE COUNTY

#### Items of Work:

Place Chip Seal - Modified and Fog Seal – Modified on the pavement from POB to POE in accordance with the applicable special provisions.

Place pavement markings from POB to POE.

<b>Chip Seal – Modified</b>	<b>16,600</b>	<b>Syd</b>
<b>Fog Seal – Modified</b>	<b>16,600</b>	<b>Syd</b>
<b>Pavt Mrkg, Waterborne, 4 inch, Yellow</b>	<b>10,220</b>	<b>Ft</b>
<b>Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional</b>	<b>260</b>	<b>Ea</b>
<b>Traffic Control</b>	<b>0.04</b>	<b>LSUM</b>

#### LOCATION # 10

#### ELLEN ROAD, FROM M-22 TO NORTH END OF PAVED PORTION OF ROAD ONEKAMA TWP

#### Project Location:

The project is on Ellen Road, from 16' north of the centerline of M-22 (POB = Station 0+16) northerly to the north end of paved portion of road. (POE = Station 9+73). This segment length is 0.18 miles.

Refer to the Project Title Sheet.

#### Description of Work:

The work at this location involves 0.18 miles of Chip Seal and Fog Seal and maintaining traffic.

#### Items of Work:

Place Chip Seal - Modified and Fog Seal – Modified on the pavement from POB to POE in accordance with the applicable special provisions.

<b>Chip Seal – Modified</b>	<b>2,205</b>	<b>Syd</b>
<b>Fog Seal – Modified</b>	<b>2,205</b>	<b>Syd</b>
<b>Traffic Control</b>	<b>0.01</b>	<b>LSUM</b>

## PROJECT LOGS

### 2018 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING MANISTEE COUNTY

#### LOCATION # 11

#### LEONARD AVENUE, FROM CRESCENT BEACH ROAD TO LAKESHORE ROAD ONEKAMA TWP

**Project Location:**

The project is on Leonard Avenue, from 52' north of the centerline of Crescent Beach Road (POB = Station 0+52) northerly to 10' south of the centerline of Lakeshore Road (POE = Station 20+10). This segment length is 0.37 miles.

Refer to the Project Title Sheet.

**Description of Work:**

The work at this location involves 0.37 miles of Chip Seal and Fog Seal and maintaining traffic.

**Items of Work:**

Place Chip Seal - Modified and Fog Seal – Modified on the pavement from POB to POE in accordance with the applicable special provisions.

<b>Chip Seal – Modified</b>	<b>4,500</b>	<b>Syd</b>
<b>Fog Seal – Modified</b>	<b>4,500</b>	<b>Syd</b>
<b>Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional</b>	<b>80</b>	<b>Ea</b>
<b>Traffic Control</b>	<b>0.01</b>	<b>LSUM</b>

#### LOCATION # 12

#### OLSON ROAD, FROM M-55 TO PINE CREEK ROAD MANISTEE TWP

**Project Location:**

The project is on Olson Road, from 60' east of the centerline of M-55 (POB = Station 0+60) southeasterly to 10' north of the centerline of Pine Creek Road (POE = Station 56+06). This segment length is 1.05 miles.

Refer to the Project Title Sheet.

**Description of Work:**

The work at this location involves 1.05 miles of Chip Seal and Fog Seal, maintaining traffic, and pavement markings.

## PROJECT LOGS

### 2018 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING MANISTEE COUNTY

#### Items of Work:

Place Chip Seal - Modified and Fog Seal – Modified on the pavement from POB to POE in accordance with the applicable special provisions.

Place pavement markings from POB to POE.

<b>Chip Seal – Modified</b>	<b>12,700</b>	<b>Syd</b>
<b>Fog Seal – Modified</b>	<b>12,700</b>	<b>Syd</b>
<b>Pavt Mrkg, Waterborne, 4 inch, Yellow</b>	<b>3,387</b>	<b>Ft</b>
<b>Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional</b>	<b>230</b>	<b>Ea</b>
<b>Traffic Control</b>	<b>0.03</b>	<b>LSUM</b>

#### LOCATION # 13

### SOUTH SKOCELAS ROAD, FROM M-55 TO PINE CREEK ROAD STRONACH TWP

#### Project Location:

The project is on South Skocelas Road, from 75' north of the centerline of M-55 (POB = Station 0+75) northerly to 41' south of the centerline of Pine Creek Road (POE = Station 51+85). This segment length is 0.97 miles.

Refer to the Project Title Sheet.

#### Description of Work:

The work at this location involves 0.97 miles of Chip Seal and Fog Seal, maintaining traffic, and pavement markings.

#### Items of Work:

Place Chip Seal - Modified and Fog Seal – Modified on the pavement from POB to POE in accordance with the applicable special provisions.

Place pavement markings from POB to POE.

<b>Chip Seal – Modified</b>	<b>12,000</b>	<b>Syd</b>
<b>Fog Seal – Modified</b>	<b>12,000</b>	<b>Syd</b>
<b>Pavt Mrkg, Waterborne, 4 inch, White</b>	<b>10.220</b>	<b>Ft</b>
<b>Pavt Mrkg, Waterborne, 4 inch, Yellow</b>	<b>1,278</b>	<b>Ft</b>
<b>Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional</b>	<b>110</b>	<b>Ea</b>

## PROJECT LOGS

### 2018 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING MANISTEE COUNTY

**Traffic Control**

**0.03 LSUM**

#### ENTIRE PROJECT QUANTITIES

An entire project quantity of Hand Patching is provided to fill potholes and voids in the existing pavement prior to chip sealing. The Engineer shall determine the location of the work.

Miscellaneous quantities of HMA, 4E1 and Shoulder, CI II are provided for HMA paving and wedging at miscellaneous locations prior to chip sealing. The Engineer shall determine the location of the work.

Miscellaneous quantities of Monument Boxes and Monument Preservation are provided for locations where directed by the Engineer.

<b>Hand Patching</b>	<b>25 Ton</b>
<b>HMA, 4E1</b>	<b>250 Ton</b>
<b>Shoulder, CI II</b>	<b>100 Ton</b>
<b>Monument Box</b>	<b>5 Ea</b>
<b>Monument Preservation</b>	<b>5 Ea</b>

#### General Log Notes:

1. Coordination  
The contractor shall coordinate his operations with Contractors/Agencies, including the Manistee County Road Commission (MCRC), performing work on this or other projects within or adjacent to the Construction Influence Area (CIA) as defined in the Maintaining Traffic special provision.
2. Underground Utilities  
For the protection of underground utilities and in conformance with Public Acts 174 of 2013, the contractor shall call (800) 482-7171 or 811 a minimum of three full working days, excluding Saturdays, Sundays, and Holidays prior to beginning each excavation. This does not relieve the contractor of the responsibility of notifying utility owners who may not be a part of the "MISS DIG" System.
3. Adjusting Monument Boxes  
All government corners on this project shall be preserved, whether shown or not. It may be necessary to place or adjust monument boxes, as required.



## PROJECT LOGS

### 2018 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING MANISTEE COUNTY

#### 4. Mobilization

Mobilization is included with the pay items and will not be paid for separately.

#### LOG OF EXISTING PAVEMENT MARKINGS

It is the intent that existing permanent pavement markings on this project be replaced in kind. The Contractor shall verify the locations prior to beginning the work.

##### Location # 1 – Dilling Road

Sta 10+60 to Sta 31+90	Single Skip
Sta 31+90 to Sta 38+00	NB Skip, SB Solid
Sta 38+00 to Sta 42+00	Single Skip
Sta 42+00 to Sta 48+00	NB Solid, SB Skip
Sta 48+00 to Sta 81+00	Single Skip
Sta 81+00 to Sta 90+75	NB Skip, SB Solid
Sta 90+75 to Sta 109+50	Double Yellow
Sta 109+50 to Sta 119+50	NB Solid, SB Skip
Sta 119+50 to Sta 136+30	Single Skip
Sta 136+30 to Sta 146+20	NB Skip, SB Solid
Sta 146+20 to Sta 172+35	Double Yellow

##### Location # 2 – Gilbert/Frederick/Ingersol/Lumley/Iverson/Norconk Roads

Sta 10+66 to Sta 20+00	Single Skip
Sta 20+00 to Sta 30+90	NB Skip, SB Solid
Sta 30+90 to Sta 79+50	Double Yellow
Sta 79+50 to Sta 90+00	NB Solid, SB Skip
Sta 90+00 to Sta 100+40	NB Skip, SB Solid
Sta 100+40 to Sta 111+40	Double Yellow
Sta 111+40 to Sta 119+00	NB Solid, SB Skip
Sta 119+00 to Sta 121+25	Double Yellow
Sta 121+25 to Sta 129+00	NB Skip, SB Solid
Sta 129+00 to Sta 146+90	Double Yellow
Sta 146+90 to Sta 157+00	NB Solid, SB Skip
Sta 157+00 to Sta 160+50	Single Skip
Sta 160+50 to Sta 170+80	NB Skip, SB Solid
Sta 170+80 to Sta 186+00	Double Yellow
Sta 186+00 to Sta 195+60	NB Solid, SB Skip

## PROJECT LOGS

### 2018 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING MANISTEE COUNTY

Sta 195+60 to Sta 232+22

Single Skip

#### Location # 3 – Kettner Road

Sta 10+11 to Sta 20+25

Double Yellow

Sta 20+25 to Sta 30+75

NB Skip, SB Solid

Sta 30+75 to Sta 36+40

Single Skip

Sta 36+40 to Sta 46+25

NB Solid, SB Skip

Sta 46+25 to Sta 63+37

Double Yellow

#### Location # 4 – Schoedel Road

Sta 10+76 to Sta 17+20

Double Yellow

Sta 17+20 to Sta 22+70

EB Skip, WB Solid

Sta 22+70 to Sta 31+70

Double Yellow

Sta 31+70 to Sta 37+00

EB Solid, WB Skip

Sta 37+00 to Sta 50+90

Double Yellow

Sta 50+90 to Sta 61+40

EB Skip, WB Solid

Sta 61+40 to Sta 65+80

Double Yellow

Sta 65+80 to Sta 72+60

EB Solid, WB Skip

Sta 72+60 to Sta 76+40

Single Skip

Sta 76+40 to Sta 81+50

EB Skip, WB Solid

Sta 81+50 to Sta 87+10

Double Yellow

Sta 87+10 to Sta 96+60

EB Solid, WB Skip

Sta 96+60 to Sta 106+30

Double Yellow

Sta 106+30 to Sta 121+40

EB Skip, WB Solid

Sta 121+40 to Sta 123+30

Single Skip

Sta 123+30 to Sta 138+00

EB Solid, WB Skip

Sta 138+00 to Sta 145+81

EB Skip, WB Solid

#### Location # 5 – S.Skocelas Road

Sta 10+60 to Sta 22+30

Double Yellow

Sta 22+30 to Sta 32+10

NB Skip, SB Solid

Sta 32+10 to Sta 46+40

Single Skip

Sta 46+40 to Sta 56+50

NB Solid, SB Skip

Sta 56+50 to Sta 69+60

Double Yellow

Sta 69+60 to Sta 79+50

NB Skip, SB Solid

Sta 79+50 to Sta 80+70

Single Skip

Sta 80+70 to Sta 85+40

NB Solid, SB Skip

Sta 85+40 to Sta 90+50

Single Skip

## PROJECT LOGS

### 2018 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING MANISTEE COUNTY

Sta 90+50 to Sta 94+80	NB Skip, SB Solid
Sta 94+80 to Sta 98+75	Single Skip
Sta 98+75 to Sta 107+75	NB Solid, SB Skip
Sta 107+75 to Sta 108+70	Single Skip
Sta 108+70 to Sta 117+75	NB Skip, SB Solid
Sta 117+75 to Sta 134+00	Single Skip
Sta 134+00 to Sta 144+00	NB Solid, SB Skip
Sta 144+00 to Sta 148+80	Double Yellow
Sta 148+80 to Sta 158+25	NB Skip, SB Solid
Sta 158+25 to Sta 163+00	Single Skip
Sta 163+00 to Sta 172+30	NB Solid, SB Skip
Sta 172+30 to Sta 176+00	Double Yellow
Sta 176+00 to Sta 186+00	NB Skip, SB Solid
Sta 186+00 to Sta 311+32	Single Skip

#### Location # 6 – 11 Mile Road

Sta 11+11 to Sta 14+00	Single Skip
Sta 14+00 to Sta 20+50	EB Solid, WB Skip
Sta 20+50 to Sta 27+40	Single Skip
Sta 27+40 to Sta 30+70	EB Skip, WB Solid
Sta 30+70 to Sta 79+60	Single Skip
Sta 79+60 to Sta 84+10	EB Solid, WB Skip
Sta 84+10 to Sta 89+50	Single Skip
Sta 89+50 to Sta 94+00	EB Skip, WB Solid
Sta 94+00 to Sta 108+70	Single Skip
Sta 108+70 to Sta 118+90	EB Solid, WB Skip
Sta 118+90 to Sta 125+40	Double Yellow
Sta 125+40 to Sta 135+20	EB Skip, WB Solid
Sta 135+20 to Sta 144+60	EB Solid, WB Skip
Sta 144+60 to Sta 147+60	Double Yellow
Sta 147+60 to Sta 157+40	EB Skip, WB Solid
Sta 157+40 to Sta 167+50	EB Solid, WB Skip
Sta 167+50 to Sta 169+90	Double Yellow
Sta 169+90 to Sta 179+80	EB Skip, WB Solid
Sta 179+80 to Sta 197+60	Single Skip
Sta 197+60 to Sta 207+40	EB Solid, WB Skip
Sta 207+40 to Sta 217+80	Double Yellow
Sta 217+80 to Sta 222+70	EB Skip, WB Solid

## PROJECT LOGS

### 2018 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING MANISTEE COUNTY

Sta 222+70 to Sta 238+85

Single Skip

#### Location # 7 – 13 Mile Road

Sta 10+50 to Sta 72+00

Double Yellow

Sta 72+00 to Sta 80+14

EB Skip, WB Solid

Sta 80+14 to Sta 81+32

Gap Out M-22 Intersection

Sta 81+32 to Sta 87+70

Single Skip

Sta 87+70 to Sta 93+80

EB Solid, WB Skip

Sta 93+80 to Sta 97+80

Single Skip

Sta 97+80 to Sta 103+90

EB Skip, WB Solid

Sta 103+90 to Sta 172+70

Single Skip

Sta 172+70 to Sta 179+77

EB Solid, WB Skip

#### Location # 8 – Udell Hills Road

Sta 10+11 to Sta 12+30

Single Skip

Sta 12+30 to Sta 22+40

NB Solid, SB Skip

Sta 22+40 to Sta 23+00

Double Yellow

Sta 23+00 to Sta 33+00

NB Skip, SB Solid

Sta 33+00 to Sta 60+50

Single Skip

Sta 60+50 to Sta 70+50

NB Solid, SB Skip

Sta 70+50 to Sta 89+00

Double Yellow

Sta 89+00 to Sta 98+00

NB Skip, SB Solid

Sta 98+00 to Sta 98+90

Double Yellow

Sta 98+90 to Sta 105+20

NB Solid, SB Skip

Sta 105+20 to Sta 108+60

Single Skip

Sta 108+60 to Sta 116+00

NB Skip, SB Solid

Sta 116+00 to Sta 126+40

C

Sta 126+40 to Sta 129+90

Double Yellow

Sta 129+90 to Sta 138+25

NB Skip, SB Solid

Sta 138+25 to Sta 139+60

Double Yellow

Sta 139+60 to Sta 148+25

NB Solid, SB Skip

Sta 148+25 to Sta 154+00

Double Yellow

Sta 154+00 to Sta 164+00

NB Skip, SB Solid

Sta 164+00 to Sta 193+90

Single Skip

Sta 193+90 to Sta 203+90

NB Solid, SB Skip

Sta 203+90 to Sta 211+80

Double Yellow

Sta 211+80 to Sta 221+70

NB Skip, SB Solid

Sta 221+70 to Sta 297+00

Single Skip

## PROJECT LOGS

### 2018 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING MANISTEE COUNTY

Sta 297+00 to Sta 300+65	NB Solid, SB Skip
Sta 300+65 to Sta 307+10	Single Skip
Sta 307+10 to Sta 311+20	NB Skip, SB Solid
Sta 311+20 to Sta 323+36	Single Skip

#### Location # 9 – Burtker & Potter Roads

Sta 0+10 to Sta 43+77	Double Yellow
Sta 43+77 to Sta 52+00	EB Skip, WB Solid
Sta 52+00 to Sta 70+30	Single Skip

#### Location # 10 – Ellen Road

No Permanent pavement markings

#### Location # 11 – Leonard Ave

No Permanent pavement markings

#### Location # 12 – Olson Road

As directed by the Engineer.

#### Location # 13 – South Skocelas Road

Sta 0+75 to Sta 51+85	Single Skip
-----------------------	-------------

### **NOTES APPLYING TO ROAD STANDARD PLANS**

Where the following items are called for in the log, they are to be constructed according to the Standard Plan given below opposite each item unless otherwise indicated.

MONUMENT BOXES

R-11-E

### **NOTES APPLYING TO TRAFFIC AND SAFETY STANDARD PLANS**

Where the following items are called for in the log, they are to be constructed according to the Standard Plan given below opposite each item unless otherwise indicated.

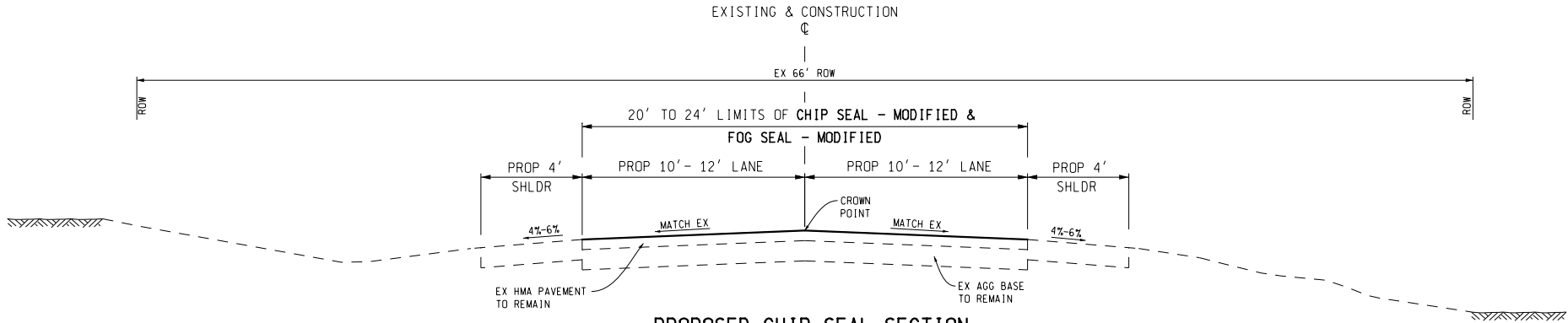
TEMPORARY TRAFFIC CONTROL DEVICES

WZD-125-E (S.D.)

LONGITUDINAL LINE TYPES AND PLACEMENT

PAVE-905-D

Note: Road Standard Plans, Road Special Details, and Traffic & Safety Standard Plans are not included in the Bid Documents. All bidders are required to obtain them from the MDOT website and utilize them if they are the selected contractor for the project.



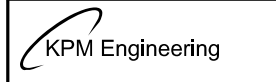
**PROPOSED CHIP SEAL SECTION**

SECTION APPLIES:

LOCATION	ROAD NAME	STATIONING	WIDTH	COMMENTS
LOCATION # 1	DILLING RD	POB STA 10+60 TO POE STA 172+35	21'	
LOCATION # 2	GILBERT/NORCONK/ETC. RDS	POB STA 10+66 TO POE STA 232+22	20' TO 21'	POB TO STA 100+00 - 21' WIDTH; STA 100+00 TO POE - 20' WIDTH
LOCATION # 3	KETTNER RD	POB STA 10+11 TO POE STA 63+37	24'	
LOCATION # 4	SCHOEDEL RD	POB STA 10+76 TO POE STA 145+81	24'	POB TO STA 12+00 - VAR 38' TO 24' WIDTH
LOCATION # 5	S.SKOCELAS RD	POB STA 10+60 TO POE STA 311+32	22'	STA 11+44 TO 16+73 - 25' WIDTH; STA 16+73 TO 18+40 - 32' WIDTH
LOCATION # 6	11 MILE RD	POB STA 11+11 TO POE STA 238+85	22'	
LOCATION # 7	13 MILE RD	POB STA 10+50 TO POE STA 179+77	21'	GAP OUT M-22 INTERSECTION (STA 80+14 TO 81+32)
LOCATION # 8	UDELL HILLS RD	POB STA 10+11 TO POE STA 323+36	21'	
LOCATION # 9	BURTKEK/POTTER RDS	POB STA 0+10 TO POE STA 70+30	21'	NO HMA PREP WORK REQUIRED
LOCATION # 10	ELLEN RD	POB STA 0+16 TO POE STA 9+73	21'	NO HMA PREP WORK REQUIRED
LOCATION # 11	LEONARD AVE	POB STA 0+52 TO POE STA 20+10	21'	NO HMA PREP WORK REQUIRED
LOCATION # 12	OLSON RD	POB STA 0+60 TO POE STA 56+06	21'	NO HMA PREP WORK REQUIRED
LOCATION # 13	S.SKOCELAS RD	POB STA 0+75 TO POE STA 51+85	21'	NO HMA PREP WORK REQUIRED

**HMA PREP WORK**  
 PLACE QUARTER CROWN WEDGING, CENTERLINE WEDGING, OR FULL WIDTH HMA SKIP PATCHES (SEE APPLICABLE TYPICAL) PRIOR TO PERFORMING CHIP SEAL WORK. THE LOCATIONS OF THE HMA PREPARATION WORK ARE SHOWN ON THE STRIP MAP PLAN SHEETS. THE EXACT LIMITS SHALL BE DETERMINED BY THE ENGINEER.

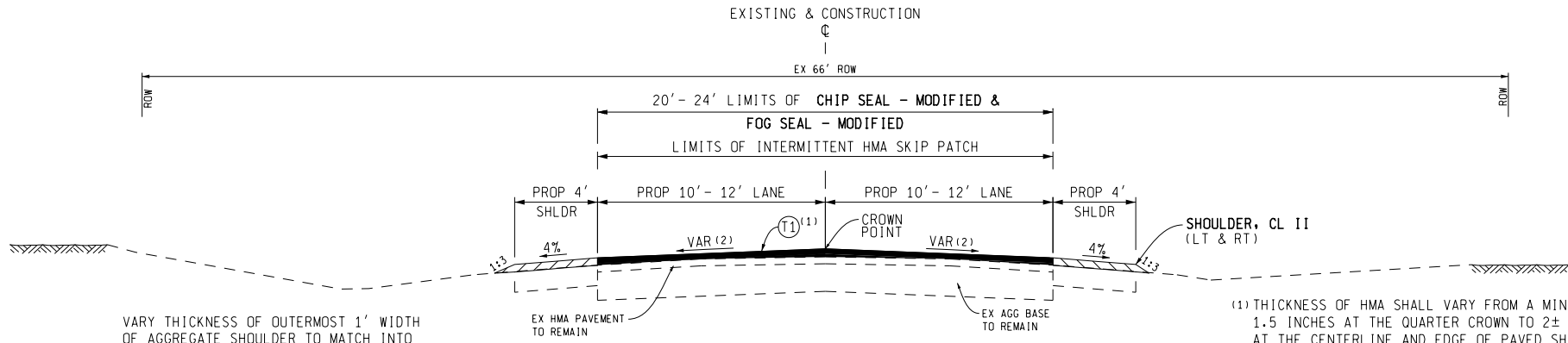
NO SCALE



2018 LOCAL COUNTY WIDE HMA WEDGING AND CHIP SEALING TYPICAL SHEET 1  
 DATE: 1/11/2018

MANISTEE COUNTY ROAD COMMISSION  
 8946 CHIPPEWA HWY  
 BEAR LAKE, MI 49614  
 DRAWN BY: GLK  
 SHEET NO.: 20

1/11/2018 9:43:45 AM



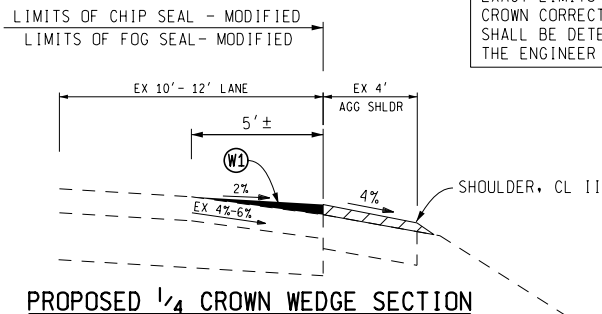
VARY THICKNESS OF OUTERMOST 1' WIDTH OF AGGREGATE SHOULDER TO MATCH INTO EXISTING SHOULDER HINGE POINT (TYP)

**PROPOSED CHIP SEAL W/HMA SKIP PATCH SECTION**

SECTION APPLIES:  
 WHERE CALLED FOR IN THE PLAN SHEETS

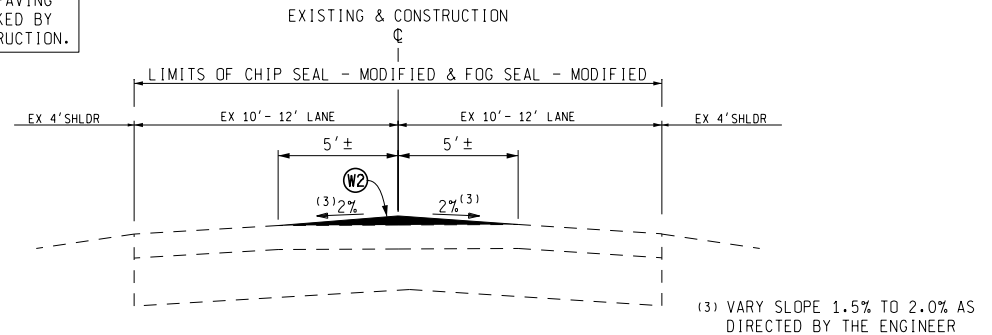
- (1) THICKNESS OF HMA SHALL VARY FROM A MINIMUM OF 1.5 INCHES AT THE QUARTER CROWN TO 2± INCHES AT THE CENTERLINE AND EDGE OF PAVED SHOULDER TO OBTAIN UNIFORM LANE SLOPES (LT & RT).
- (2) VARY SLOPE 1.5% TO 3.0% (2% DESIRABLE) AS DIRECTED BY THE ENGINEER. MATCH EX SUPERELEVATION IN SUPERELEVATED SECTIONS.

**NOTES:**  
 EXACT LIMITS OF WEDGING, QUARTER CROWN CORRECTION, AND SKIP PAVING SHALL BE DETERMINED AND MARKED BY THE ENGINEER PRIOR TO CONSTRUCTION.



**PROPOSED 1/4 CROWN WEDGE SECTION**

SECTION APPLIES:  
 WHERE CALLED FOR IN THE PLAN SHEETS



**PROPOSED CENTER CROWN WEDGE SECTION**

SECTION APPLIES:  
 WHERE CALLED FOR IN THE PLAN SHEETS

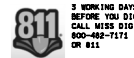
- (3) VARY SLOPE 1.5% TO 2.0% AS DIRECTED BY THE ENGINEER

**HMA APPLICATION ESTIMATE**

IDENT NO.	ITEM	RATE PER SYD	PERFORMANCE GRADE	REMARKS
T1	HMA, 4E1	220# (AVG) (1)	PG 58-28	HMA OVERLAY, 1 COURSE, AWI= 220
W1	HMA, 4E1	VAR 0 TO 220#	PG 58-28	PROP QUARTER CROWN WEDGE
W2	HMA, 4E1	VAR 0 TO 220#	PG 58-28	PROP CENTERLINE WEDGE
* BOND COAT		0.05-0.15 GAL/SYD		

\* FOR INFORMATION ONLY

NO SCALE

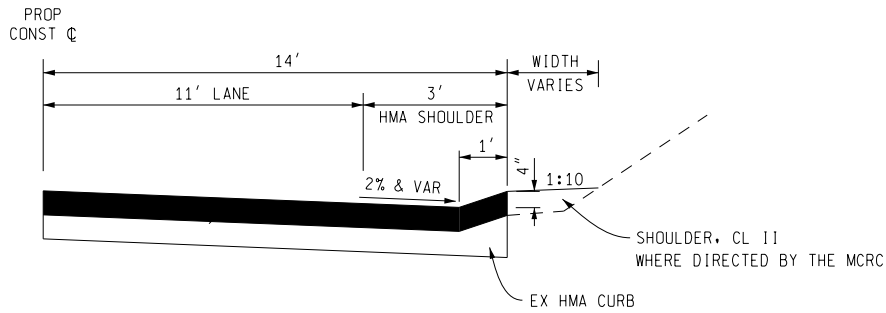


2018 COUNTY WIDE HMA WEDGING  
 AND CHIP SEALING  
 TYPICAL SHEET 2

DATE: 1/11/2018

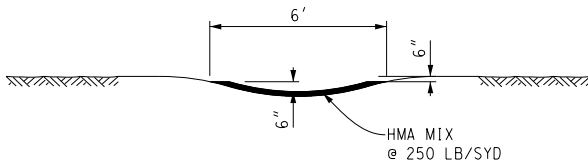
MANISTEE COUNTY  
 ROAD COMMISSION  
 8946 CHIPPEWA HWY  
 BEAR LAKE, MI 49614

DRAWN BY: GLK  
 SHEET NO.: 21



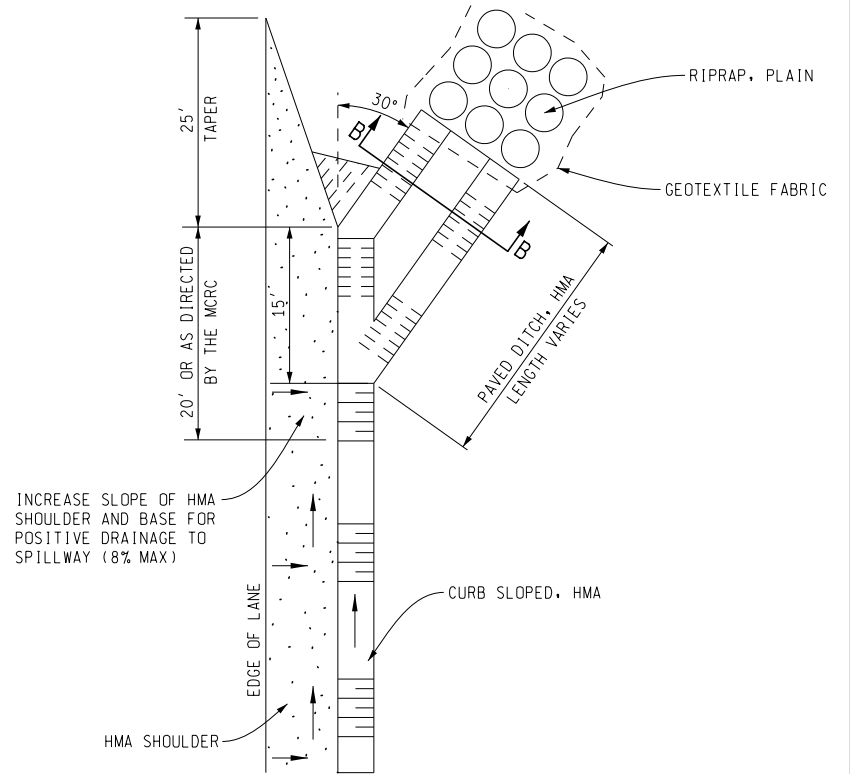
### SLOPED HMA CURB DETAIL

SECTION APPLIES:  
LOCATION # 1 (S.SKOCELAS RD) STA 11+44 TO 16+73 RT



### SECTION B-B

NOT TO SCALE



### PAVED DITCH, HMA DETAIL

TO APPLY:  
LOCATION # 1 (S.SKOCELAS RD) STA 15+20 RT

#### NOTES:

HMA SPILLWAY WILL BE PAID FOR AS PAVED DITCH, HMA.

EXACT LOCATION OF HMA SPILLWAY TO BE DETERMINED BY THE MCRC AT THE TIME OF CONSTRUCTION.

NO SCALE



MISCELLANEOUS  
DETAILS

DATE: 1/11/2018

MANISTEE COUNTY  
ROAD COMMISSION  
8946 CHIPPEWA HWY  
BEAR LAKE, MI 49614

DRAWN BY	SHEET NO.
GLK	22

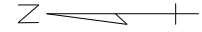
9:47:39 AM

1/11/2018



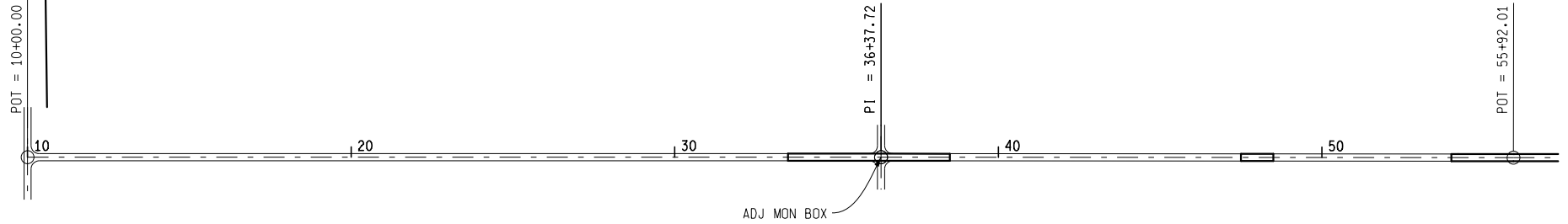
COATES HWY  
STA 10+00

FLARITY RD  
STA 36+40

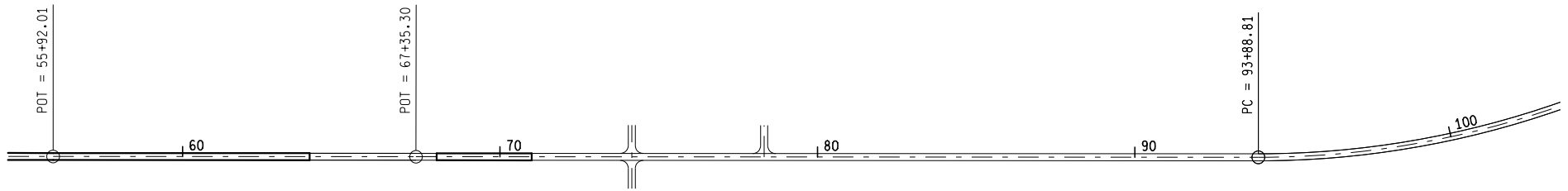



STA 10+60 TO STA 104+00  
CHIP SEAL & FOG SEAL  
21' WIDTH

POB STA 10+60  
DILLING ROAD



FIFE SPRINGS RD  
STA 74+15  
OLD DILLING RD  
STA 78+32



FULL WIDTH HMA SKIP PATCH  
THIS SHEET (SHOWN )

STA 33+50 TO STA 38+50  
STA 47+50 TO STA 48+50  
STA 54+00 TO STA 64+00  
STA 68+00 TO STA 71+00

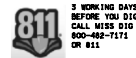
HMA 1/4 CROWN WEDGE  
THIS SHEET

STA 10+60 TO STA 13+00 LT  
STA 10+60 TO STA 13+50 RT  
STA 38+50 TO STA 40+00 RT

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

NO SCALE



LOCATION # 1

DILLING ROAD  
POB STA 10+60 TO STA 104+00  
DICKSON TWP

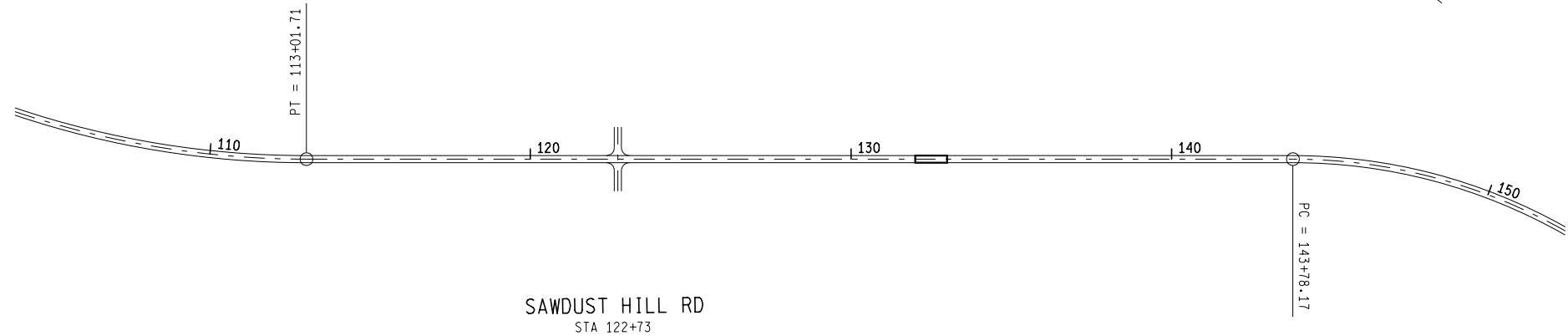
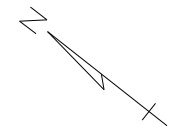
DATE: 1/2/2018

MANISTEE COUNTY  
ROAD COMMISSION  
8946 CHIPPEWA HWY  
BEAR LAKE, MI 49614

DRAWN BY GLK	SHEET NO. 23
-----------------	-----------------

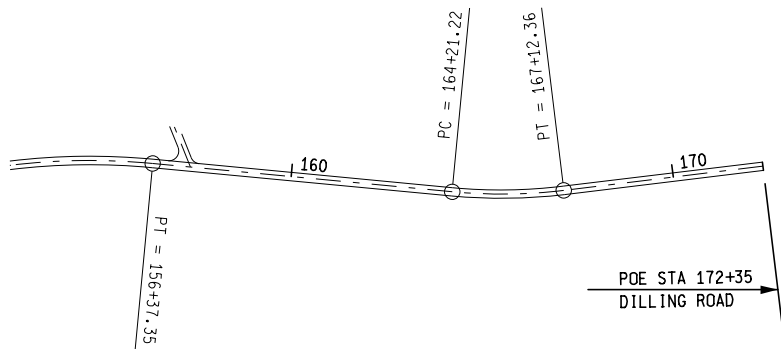
MARILLA RD  
STA 122+73


STA 104+00 TO STA 172+35  
CHIP SEAL & FOG SEAL  
21' WIDTH



SAWDUST HILL RD  
STA 122+73

RIVER RD  
STA 157+36



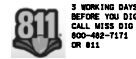
FULL WIDTH HMA SKIP PATCH  
THIS SHEET (SHOWN )  
STA 132+00 TO STA 135+00

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

LOCATION # 1

NO SCALE



DILLING ROAD  
STA 104+00 TO POE STA 172+35  
DICKSON TWP

MANISTEE COUNTY  
ROAD COMMISSION  
8946 CHIPPEWA HWY  
BEAR LAKE, MI 49614

DATE: 1/2/2018

DRAWN BY GLK	SHEET NO. 24
-----------------	-----------------

1/2/2018 7:54:41 AM

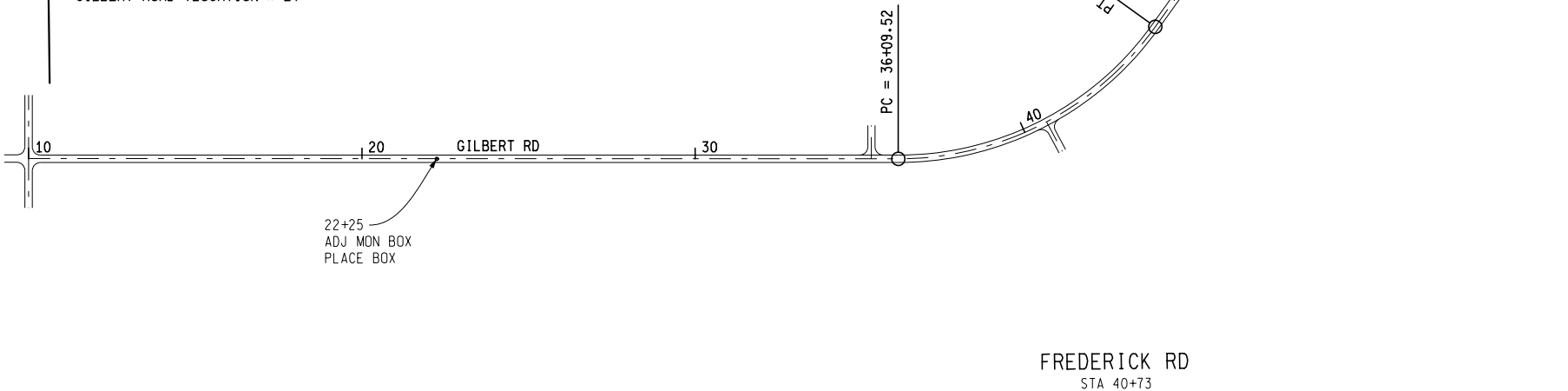
GLOVERS LAKE RD  
STA 10+00

HULL RD  
STA 35+29



STA 10+66 TO STA 60+00  
CHIP SEAL & FOG SEAL  
21' WIDTH

POB STA 10+66  
GILBERT ROAD (LOCATION # 2)



FREDERICK RD  
STA 40+73

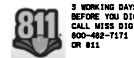
NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

LOCATION # 2

HMA 1/4 CROWN WEDGE THIS SHEET  
HMA CENTERLINE WEDGE THIS SHEET  
STA 28+50 TO STA 35+00 LT  
STA 45+50 TO STA 60+00 RT  
STA 55+50 TO STA 60+00 LT  
STA 20+00 TO STA 24+00

THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

NO SCALE



GILBERT ROAD/FREDERICK ROAD  
POB STA 10+66 TO STA 60+00  
ARCADIA TWP

DATE: 1/2/2018

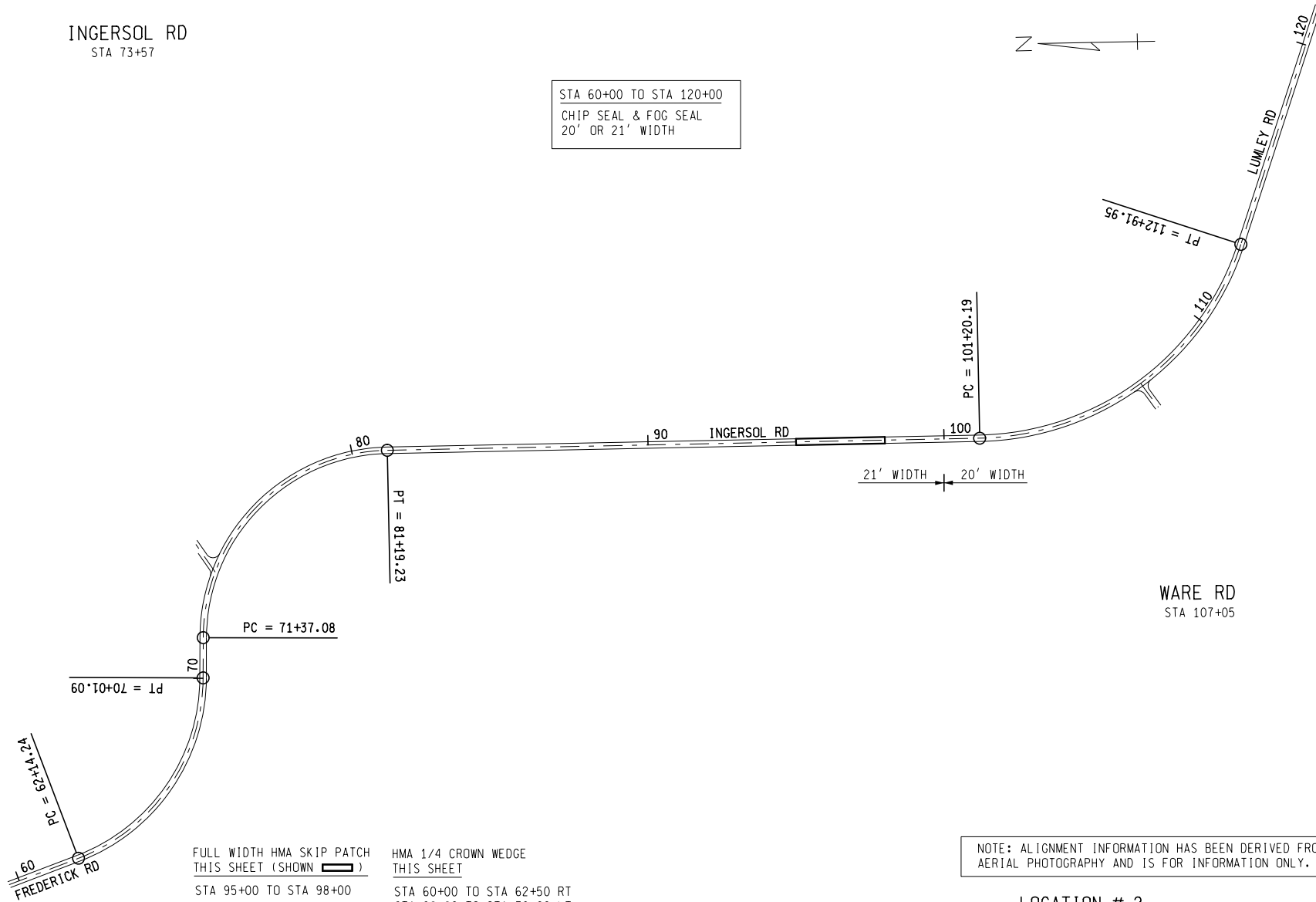
MANISTEE COUNTY  
ROAD COMMISSION  
8946 CHIPPEWA HWY  
BEAR LAKE, MI 49614

DRAWN BY GLK	SHEET NO. 25
-----------------	-----------------

7:54:45 AM 1/2/2018

INGERSOL RD  
STA 73+57

STA 60+00 TO STA 120+00  
CHIP SEAL & FOG SEAL  
20' OR 21' WIDTH



FULL WIDTH HMA SKIP PATCH  
THIS SHEET (SHOWN )

STA 95+00 TO STA 98+00

HMA 1/4 CROWN WEDGE  
THIS SHEET

STA 60+00 TO STA 62+50 RT  
STA 60+00 TO STA 70+00 LT  
STA 71+00 TO STA 76+00 LT  
STA 98+00 TO STA 120+00 LT  
STA 114+50 TO STA 120+00 RT

THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

LOCATION # 2

NO SCALE



FREDERICK/INGERSOL/LUMLEY RDS  
STA 60+00 TO STA 120+00  
ARCADIA TWP

DATE: 1/2/2018

MANISTEE COUNTY  
ROAD COMMISSION  
8946 CHIPPEWA HWY  
BEAR LAKE, MI 49614

DRAWN BY	SHEET NO.
GLK	26

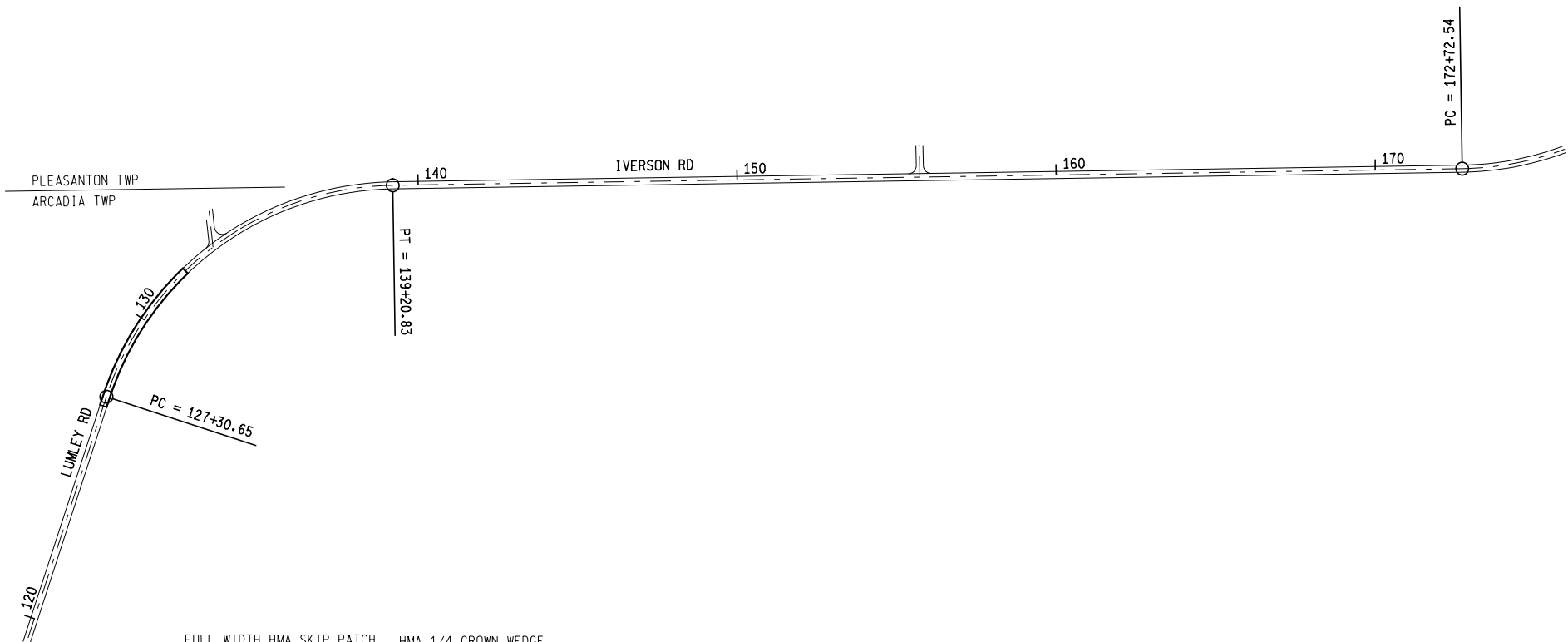
1/2/2018 7:54:50 AM


LUMLEY RD  
STA 133+13

ALKIRE RD  
STA 155+73



STA 120+00 TO STA 175+00  
CHIP SEAL & FOG SEAL  
20' WIDTH



FULL WIDTH HMA SKIP PATCH  
THIS SHEET (SHOWN )  
STA 127+00 TO STA 132+00

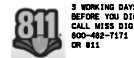
HMA 1/4 CROWN WEDGE  
THIS SHEET  
STA 120+00 TO STA 127+00 LT  
STA 120+00 TO STA 127+00 RT  
STA 132+00 TO STA 171+00 RT  
STA 140+00 TO STA 171+00 LT

THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

LOCATION # 2

NO SCALE



LUMLEY RD/IVERSON RD  
STA 120+00 TO STA 175+00  
ARCADIA & PLEASANTON TWPS

MANISTEE COUNTY  
ROAD COMMISSION  
8946 CHIPPEWA HWY  
BEAR LAKE, MI 49614

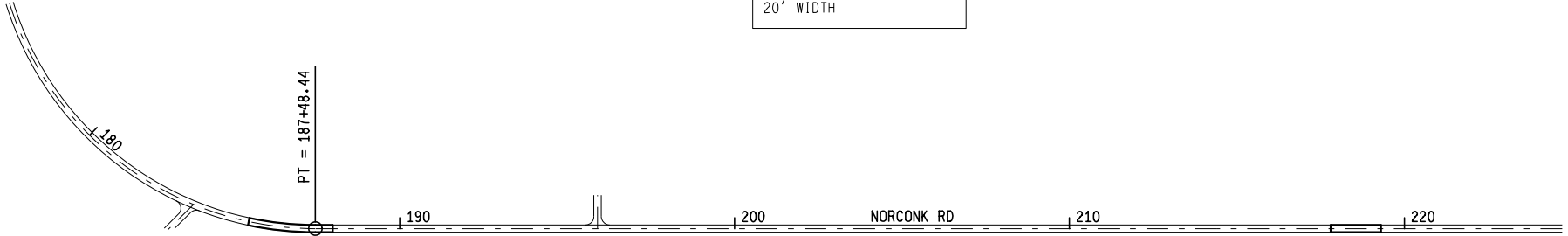
DATE: 1/2/2018

DRAWN BY GLK	SHEET NO. 27
-----------------	-----------------

7:54:53 AM 1/2/2018

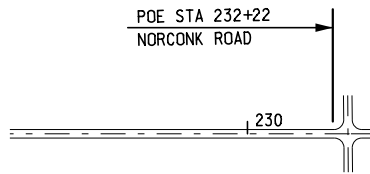
BABCOCK RD  
STA 195+91


STA 175+00 TO STA 232+22  
CHIP SEAL & FOG SEAL  
20' WIDTH



NORCONK RD  
STA 183+71

MYERS RD  
STA 232+61



FULL WIDTH HMA SKIP PATCH THIS SHEET (SHOWN  )	HMA 1/4 CROWN WEDGE THIS SHEET
STA 186+00 TO STA 188+00	STA 186+50 TO STA 217+80 LT
STA 217+80 TO STA 219+30	STA 188+00 TO STA 217+80 RT
	STA 219+30 TO STA 232+22 LT
	STA 219+30 TO STA 232+22 RT

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

LOCATION # 2

THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

NO SCALE



IVERSON RD/NORCONK RD  
STA 175+00 TO POE STA 232+22  
PLEASANTON TWP

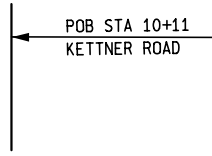
MANISTEE COUNTY  
ROAD COMMISSION  
8946 CHIPPEWA HWY  
BEAR LAKE, MI 49614

DATE: 1/2/2018

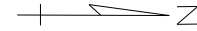
DRAWN BY	SHEET NO.
GLK	28

1/2/2018 7:54:57 AM

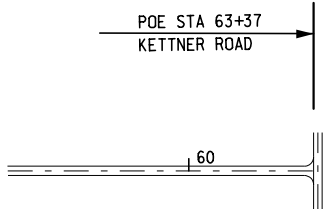
RIVER RD  
STA 10+00



STA 10+11 TO STA 63+37  
CHIP SEAL & FOG SEAL  
24' WIDTH (PLUS APPROACH  
AREAS AT POB & POE)



COATES HWY  
STA 63+49



HMA 1/4 CROWN WEDGE  
THIS SHEET

STA 10+59 TO STA 43+00 RT  
STA 11+00 TO STA 62+25 LT  
STA 49+00 TO STA 51+00 RT

THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

LOCATION # 3

NO SCALE



KETTNER ROAD  
POB STA 10+11 TO POE STA 63+37  
BROWN TWP

MANISTEE COUNTY  
ROAD COMMISSION  
8946 CHIPPEWA HWY  
BEAR LAKE, MI 49614

DATE: 1/2/2018

DRAWN BY	SHEET NO.
GLK	29

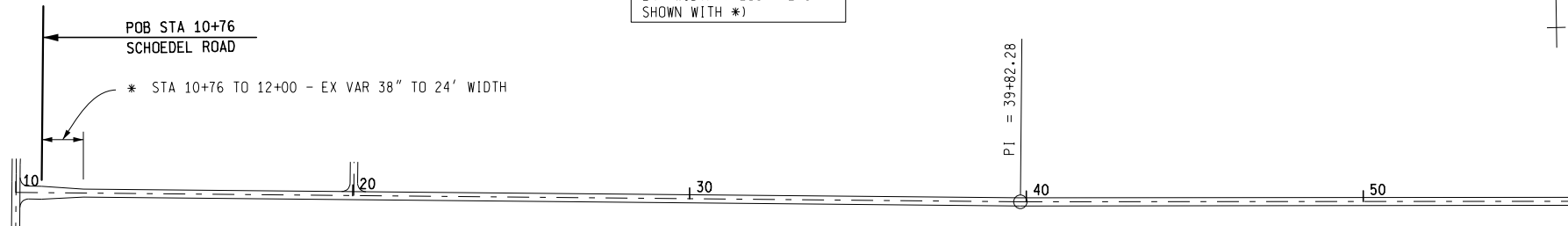
1/2/2018 7:55:00 AM

M-22  
STA 10+00

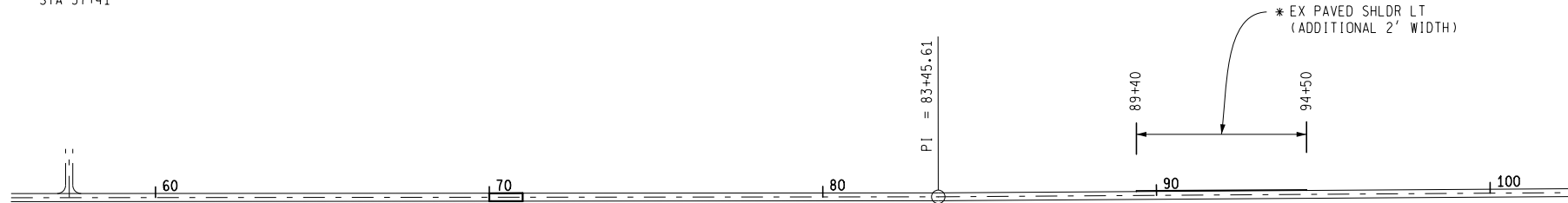
COHODAS ROAD  
STA 20+03




STA 10+76 TO STA 102+00  
CHIP SEAL & FOG SEAL  
24' WIDTH (PLUS AREAS  
SHOWN WITH \*)



COHODAS ROAD  
STA 57+41



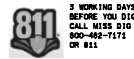
FULL WIDTH HMA SKIP PATCH  
THIS SHEET (SHOWN )  
STA 70+00 TO STA 71+00

THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

LOCATION # 4

NO SCALE



SCHOEDEL ROAD  
POB STA 10+76 TO STA 102+00  
MANISTEE TWP

DATE: 1/2/2018

MANISTEE COUNTY  
ROAD COMMISSION  
8946 CHIPPEWA HWY  
BEAR LAKE, MI 49614

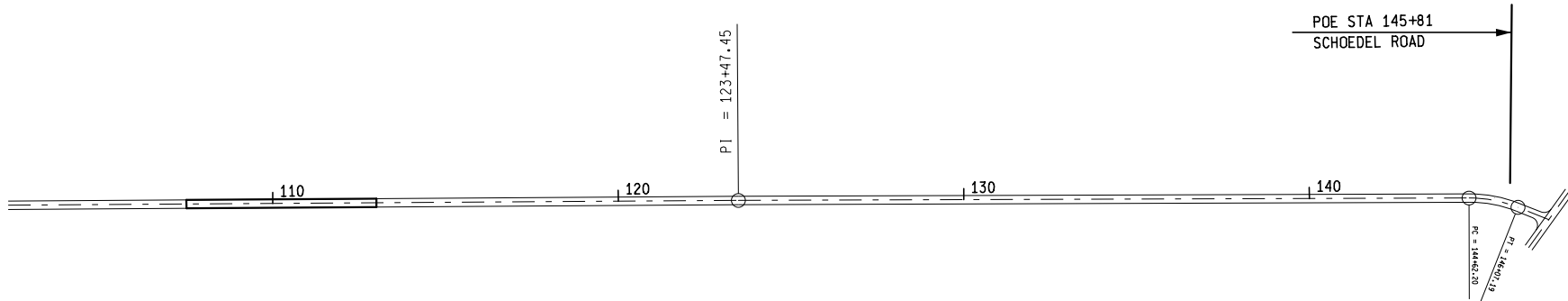
DRAWN BY: GLK  
SHEET NO.: 30


1/2/2018 7:55:03 AM



STA 102+00 TO STA 145+81  
CHIP SEAL & FOG SEAL  
24' WIDTH

US-31  
STA 146+96



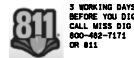
FULL WIDTH HMA SKIP PATCH  
THIS SHEET (SHOWN )  
STA 107+50 TO STA 113+00

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

LOCATION # 4

THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

NO SCALE



SCHOEDEL ROAD  
STA 102+00 TO POE STA 145+81  
MANISTEE TWP

MANISTEE COUNTY  
ROAD COMMISSION  
8946 CHIPPEWA HWY  
BEAR LAKE, MI 49614

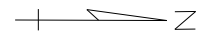
DATE: 1/2/2018

DRAWN BY	SHEET NO.
GLK	31

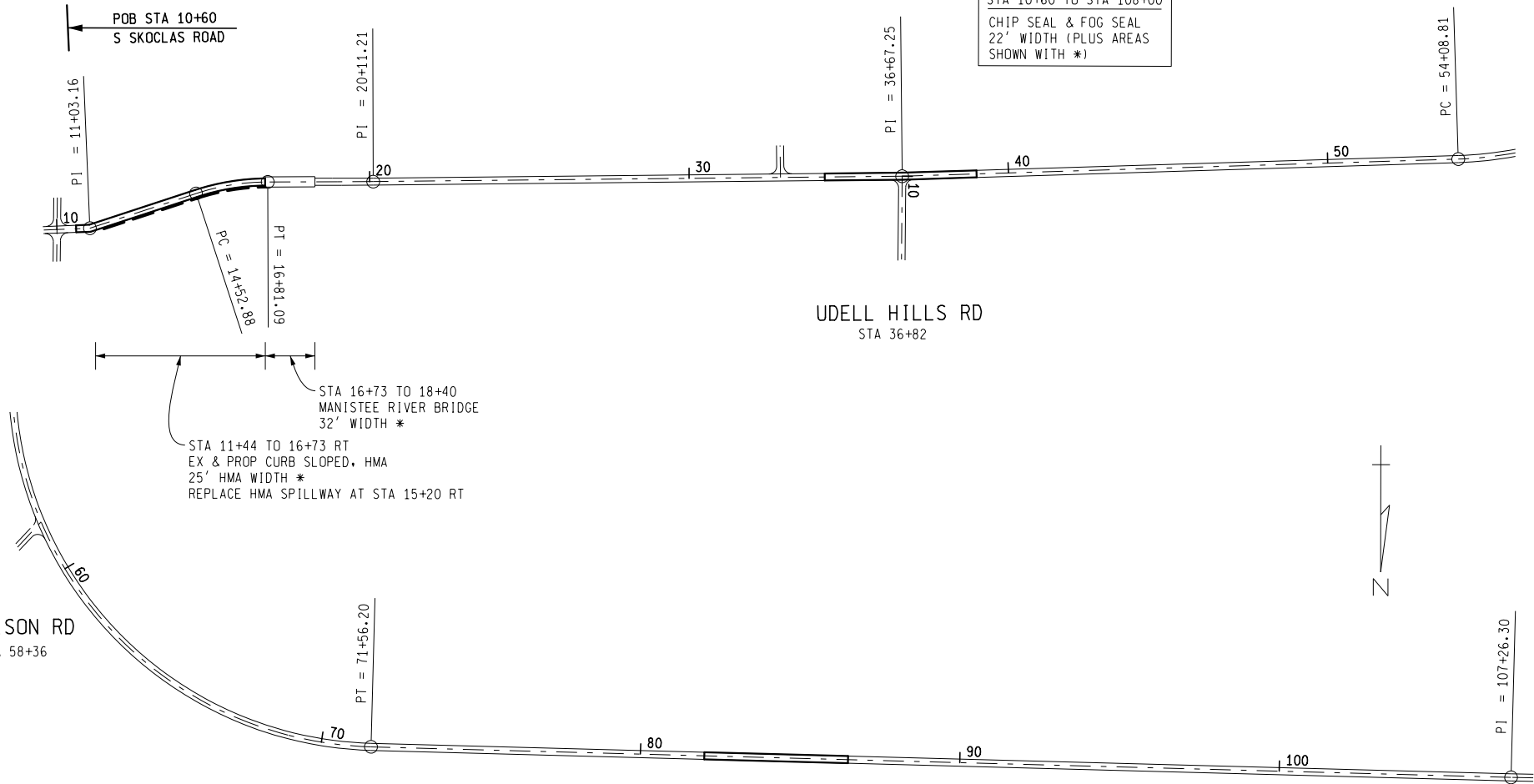
7:55:05 AM 1/2/2018

COUNTY LINE RD  
STA 10+00

NINE MILE BRIDGE RD  
STA 32+86




STA 10+60 TO STA 108+00  
CHIP SEAL & FOG SEAL  
22' WIDTH (PLUS AREAS  
SHOWN WITH \*)



STA 11+44 TO 16+73 RT  
EX & PROP CURB SLOPED, HMA  
25' HMA WIDTH \*  
REPLACE HMA SPILLWAY AT STA 15+20 RT

STA 16+73 TO 18+40  
MANISTEE RIVER BRIDGE  
32' WIDTH \*

FULL WIDTH HMA SKIP PATCH  
THIS SHEET (SHOWN )  
STA 10+60 TO STA 16+73  
STA 34+25 TO STA 39+00  
STA 82+00 TO STA 86+50

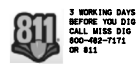
HMA 1/4 CROWN WEDGE  
THIS SHEET  
STA 18+40 TO STA 20+00 LT  
STA 39+00 TO STA 44+50 LT  
STA 52+00 TO STA 76+00 LT  
STA 55+00 TO STA 58+00 RT

HMA CENTERLINE WEDGE  
THIS SHEET  
STA 19+60 TO STA 23+00

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

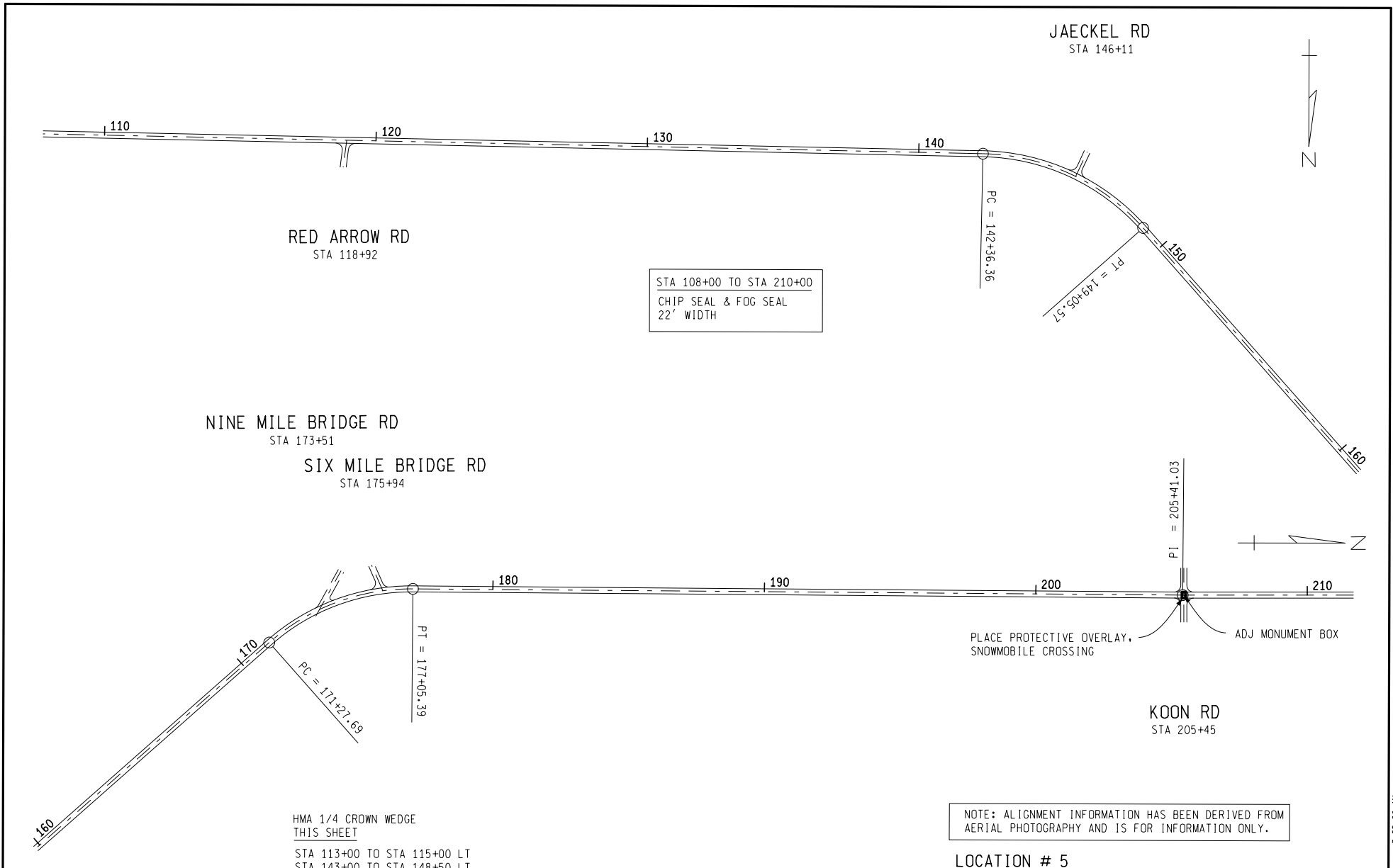
NO SCALE



LOCATION # 5

S SKOCELAS ROAD POB STA 10+60 TO STA 108+00 STRONACH TWP		MANISTEE COUNTY ROAD COMMISSION 8946 CHIPPEWA HWY BEAR LAKE, MI 49614	
DATE: 1/2/2018		DRAWN BY GLK	SHEET NO. 32

1/2/2018 7:55:13 AM



THE STATIONING INDICATED FOR THE HMA PREPARATION WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS WILL BE DETERMINED BY THE ENGINEER.

HMA 1/4 CROWN WEDGE  
THIS SHEET  
STA 113+00 TO STA 115+00 LT  
STA 143+00 TO STA 148+50 LT  
STA 171+00 TO STA 176+00 LT

NO SCALE



3 WORKING DAYS BEFORE YOU DIG CALL MISS 816 866-442-7171 OR 811

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

LOCATION # 5

S SKOCELAS ROAD  
STA 108+00 TO STA 210+00  
STRONACH TWP

DATE: 1/2/2018

MANISTEE COUNTY  
ROAD COMMISSION  
8946 CHIPPEWA HWY  
BEAR LAKE, MI 49614

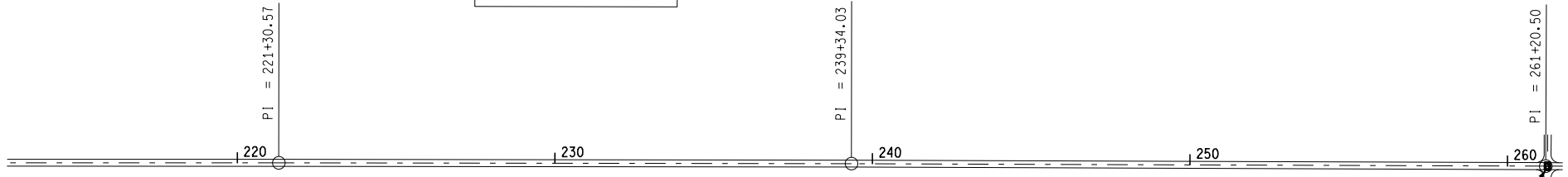
DRAWN BY	SHEET NO.
GLK	33

1/2/2018 7:55:20 AM



STEINBERG RD  
STA 261+26

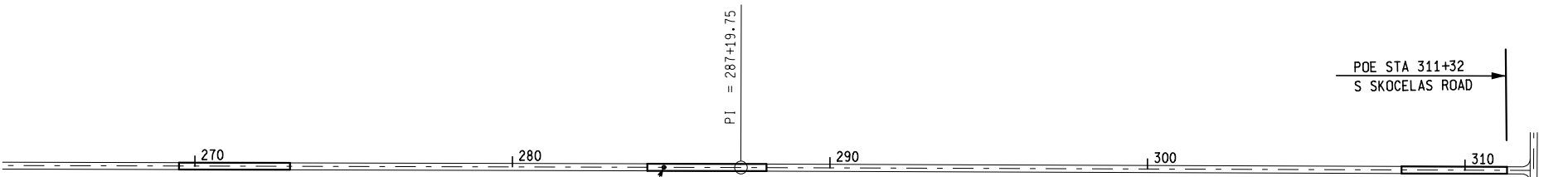
STA 210+00 TO STA 311+32  
CHIP SEAL & FOG SEAL  
22' WIDTH



PLACE PROTECTIVE OVERLAY,  
SNOWMOBILE CROSSING




M-55  
STA 312+16



POE STA 311+32  
S SKOCELAS ROAD

STA 284+77  
ADJ MON BOX

FULL WIDTH HMA SKIP PATCH  
THIS SHEET (SHOWN )  
STA 269+50 TO STA 273+00  
STA 284+25 TO STA 288+00  
STA 308+00 TO STA 311+32

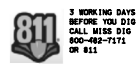
HMA 1/4 CROWN WEDGE  
THIS SHEET  
STA 279+00 TO STA 281+50 LT

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

LOCATION # 5

THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

NO SCALE



S SKOCELAS ROAD  
STA 210+00 TO POE STA 311+32  
STRONACH TWP

MANISTEE COUNTY  
ROAD COMMISSION  
8946 CHIPPEWA HWY  
BEAR LAKE, MI 49614

DATE: 1/2/2018

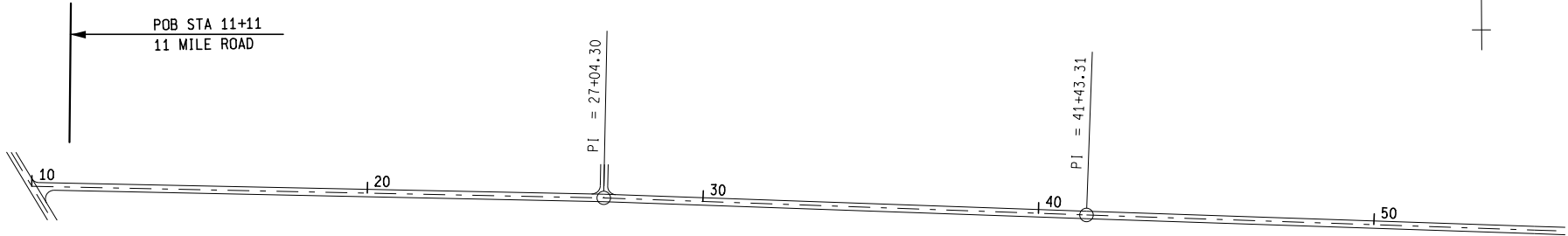
DRAWN BY: GLK  
SHEET NO.: 34

1/2/2018 7:55:23 AM

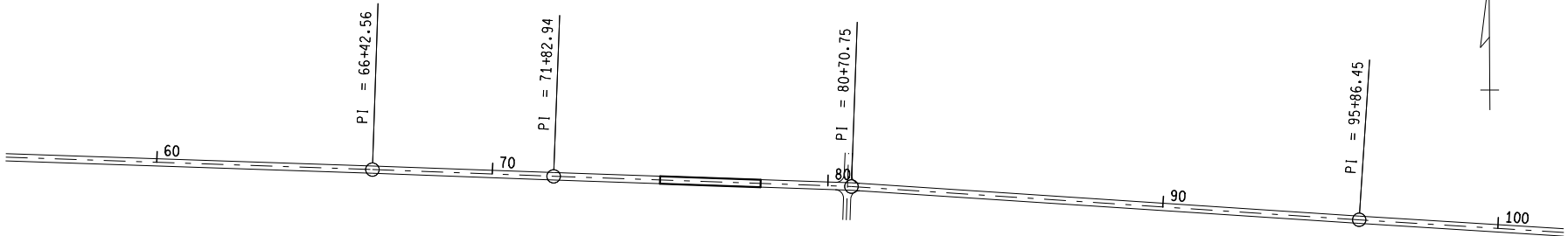
US-31  
STA 10+00


HOPKINS RD  
STA 27+05

STA 11+11 TO STA 102+00  
CHIP SEAL & FOG SEAL  
22' WIDTH



ANDERSON RD  
STA 80+59



FULL WIDTH HMA SKIP PATCH  
THIS SHEET (SHOWN )  
STA 75+00 TO STA 78+00

HMA 1/4 CROWN WEDGE  
THIS SHEET  
STA 11+11 TO STA 24+00 LT  
STA 11+11 TO STA 24+00 RT  
STA 36+50 TO STA 39+50 RT  
STA 40+00 TO STA 42+00 LT  
STA 41+50 TO STA 45+00 RT  
STA 51+00 TO STA 75+00 RT  
STA 54+00 TO STA 56+50 LT  
STA 78+00 TO STA 102+00 LT  
STA 78+00 TO STA 102+00 RT

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

LOCATION # 6

THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

NO SCALE



11 MILE ROAD  
POB STA 11+11 TO STA 102+00  
BEAR LAKE TWP

MANISTEE COUNTY  
ROAD COMMISSION  
8946 CHIPPEWA HWY  
BEAR LAKE, MI 49614

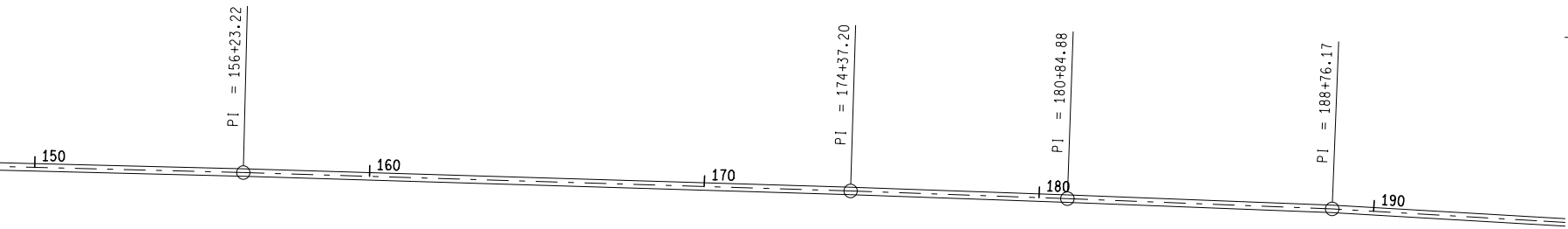
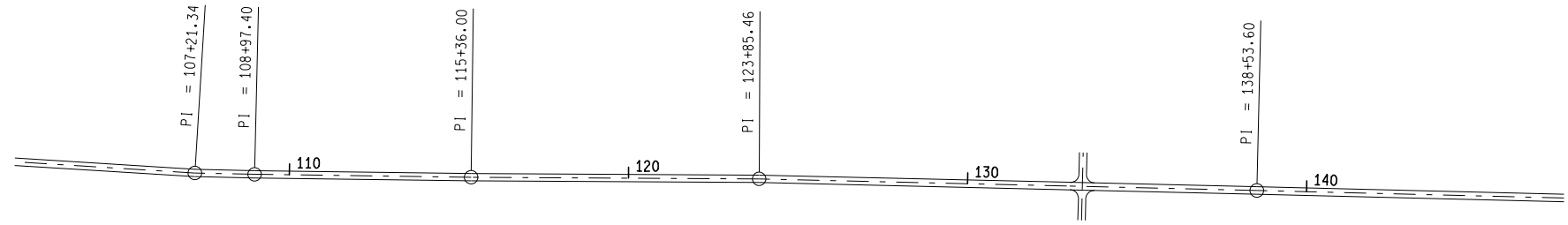
DATE: 1/2/2018

DRAWN BY GLK	SHEET NO. 35
-----------------	-----------------

1/2/2018 7:55:29 AM

STA 102+00 TO STA 195+00  
CHIP SEAL & FOG SEAL  
22' WIDTH

CHIEF RD  
STA 133+39



HMA 1/4 CROWN WEDGE  
THIS SHEET  
STA 102+00 TO STA 121+00 LT  
STA 102+00 TO STA 118+00 RT  
STA 165+00 TO STA 169+00 RT  
STA 174+50 TO STA 181+00 LT  
STA 193+00 TO STA 196+00 RT

HMA CENTERLINE WEDGE  
THIS SHEET  
STA 135+00 TO STA 145+00

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

LOCATION # 6

THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

NO SCALE



11 MILE ROAD  
STA 102+00 TO STA 195+00  
BEAR LAKE TWP

MANISTEE COUNTY  
ROAD COMMISSION  
8946 CHIPPEWA HWY  
BEAR LAKE, MI 49614

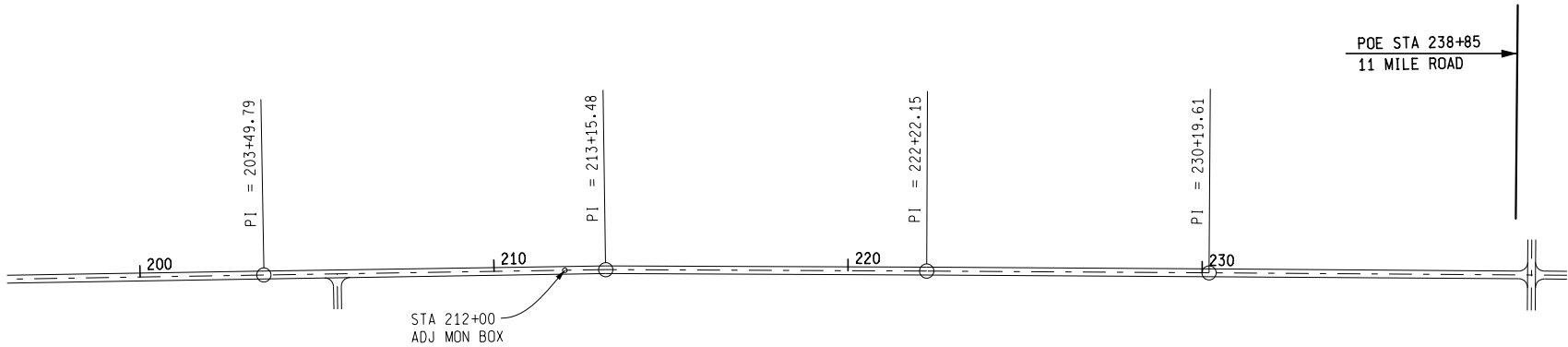
DATE: 1/2/2018

DRAWN BY	SHEET NO.
GLK	36

7:55:35 AM

1/2/2018

STA 195+00 TO STA 238+85  
CHIP SEAL & FOG SEAL  
22' WIDTH



OLD 11 MILE RD  
STA 205+57

BIG FOUR RD  
STA 239+31

HMA 1/4 CROWN WEDGE  
THIS SHEET

STA 235+00 TO STA 238+85 LT  
STA 235+00 TO STA 238+85 RT

HMA CENTERLINE WEDGE  
THIS SHEET

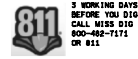
STA 207+00 TO STA 235+00

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

LOCATION # 6

THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

NO SCALE



11 MILE ROAD  
STA 195+00 TO POE STA 238+85  
BEAR LAKE TWP

DATE: 1/2/2018

MANISTEE COUNTY  
ROAD COMMISSION  
8946 CHIPPEWA HWY  
BEAR LAKE, MI 49614

DRAWN BY	SHEET NO.
GLK	37

7:55:43 AM 1/2/2018

LAKEVIEW RD  
STA 10+00

PERRY ST  
STA 21+62

BURTKER RD  
STA 27+53

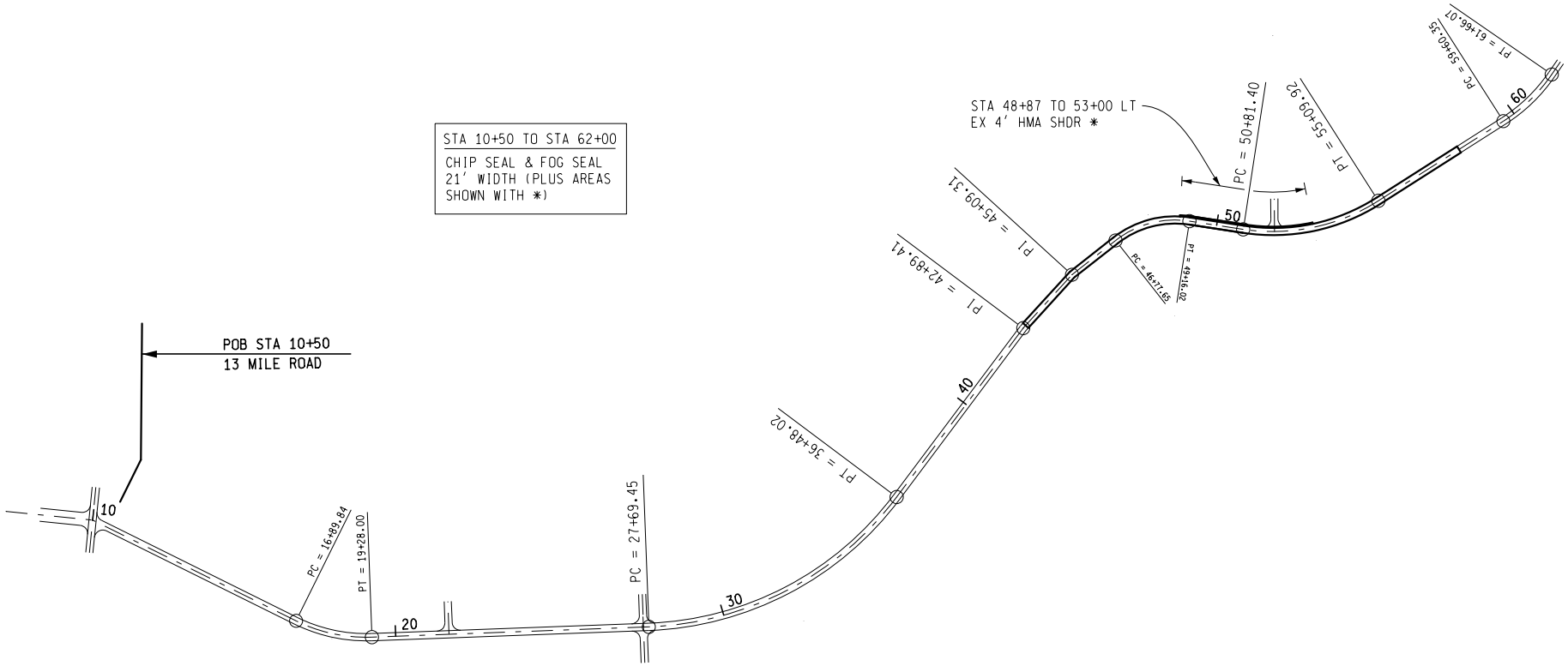
GEAR RD  
STA 51+76




STA 10+50 TO STA 62+00  
CHIP SEAL & FOG SEAL  
21' WIDTH (PLUS AREAS  
SHOWN WITH \*)

STA 48+87 TO 53+00 LT  
EX 4" HMA SHDR \*

POB STA 10+50  
13 MILE ROAD



FULL WIDTH HMA SKIP PATCH  
THIS SHEET (SHOWN )  
STA 43+00 TO STA 58+00

HMA 1/4 CROWN WEDGE  
THIS SHEET  
STA 10+50 TO STA 22+00 LT  
STA 10+50 TO STA 16+00 RT  
STA 30+00 TO STA 42+00 LT

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

LOCATION # 7

THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

NO SCALE



13 MILE ROAD POB STA 10+50 TO STA 62+00 ONEKAMA TWP	
DATE: 1/2/2018	

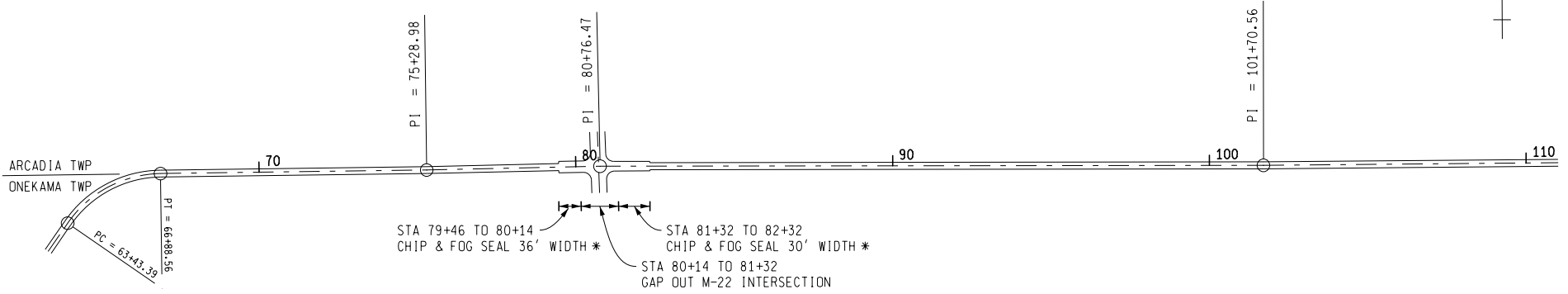
MANISTEE COUNTY ROAD COMMISSION 8946 CHIPPEWA HWY BEAR LAKE, MI 49614	
DRAWN BY GLK	SHEET NO. 38

1/2/2018 7:55:49 AM

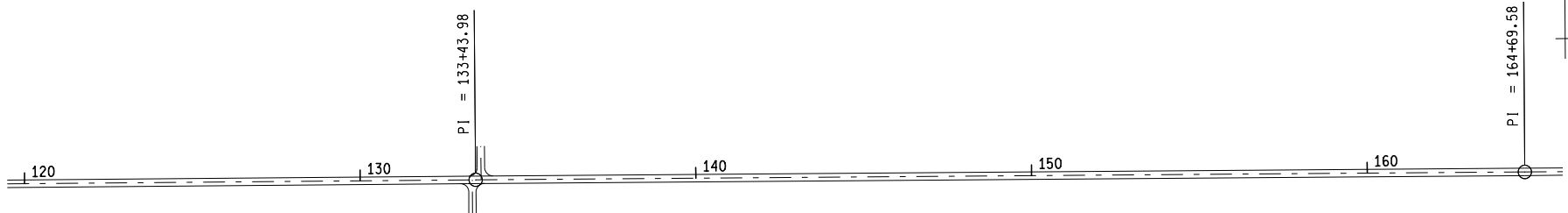


M-22  
STA 80+70

STA 62+00 TO STA 165+00  
CHIP SEAL & FOG SEAL  
21' WIDTH (PLUS AREAS  
SHOWN WITH \*)



ERDMAN RD  
STA 133+60



HMA 1/4 CROWN WEDGE  
THIS SHEET  
STA 68+00 TO STA 79+46 LT  
STA 78+00 TO STA 79+46 RT  
STA 82+32 TO STA 116+00 LT  
STA 82+32 TO STA 165+00 RT  
STA 122+00 TO STA 165+00 LT

ERDMAN RD  
STA 133+34

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

LOCATION # 7

THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

NO SCALE



13 MILE ROAD  
STA 62+00 TO STA 165+00  
ONEKAMA & ARCADIA TWPS

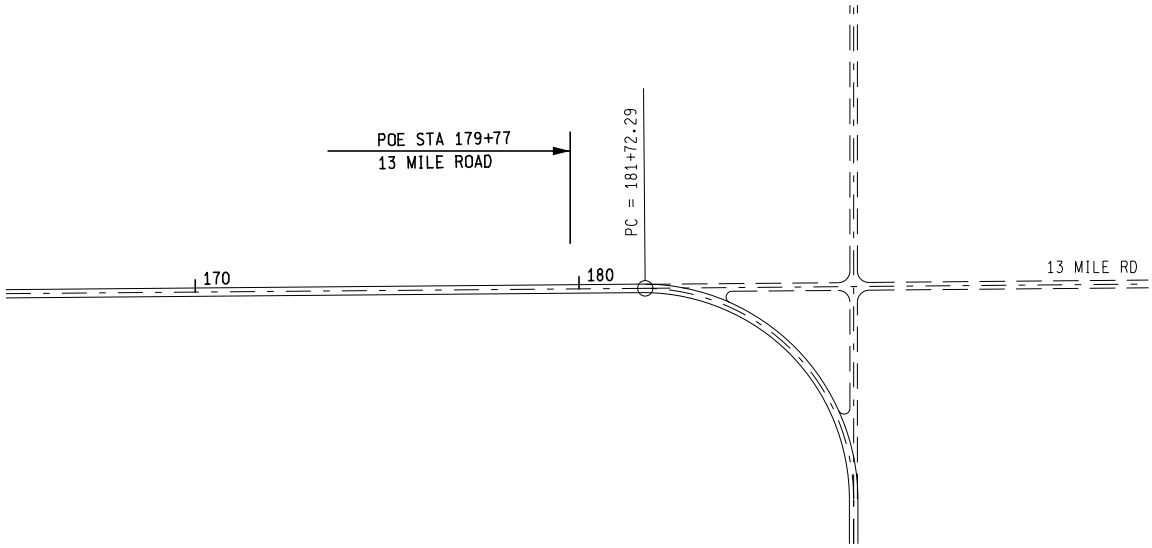
DATE: 1/2/2018

MANISTEE COUNTY  
ROAD COMMISSION  
8946 CHIPPEWA HWY  
BEAR LAKE, MI 49614

DRAWN BY	SHEET NO.
GLK	39

STA 165+00 TO STA 179+77  
CHIP SEAL & FOG SEAL  
21' WIDTH

MILARCH RD  
EX AGG





MILARCH RD  
EX HMA

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

HMA 1/4 CROWN WEDGE  
THIS SHEET  
STA 165+00 TO STA 179+77 LT  
STA 165+00 TO STA 179+77 RT

THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

LOCATION # 7

 NO SCALE	 <small>3 WORKING DAYS BEFORE YOU DIG CALL MISS 811 800-452-7171 OR 811</small>	13 MILE ROAD STA 165+00 TO POE STA 179+77 ONEKAMA & ARCADIA TWPS	MANISTEE COUNTY ROAD COMMISSION 8946 CHIPPEWA HWY BEAR LAKE, MI 49614
		DATE: 1/11/2018	DRAWN BY: GLK SHEET NO.: 40

9136-01 AM

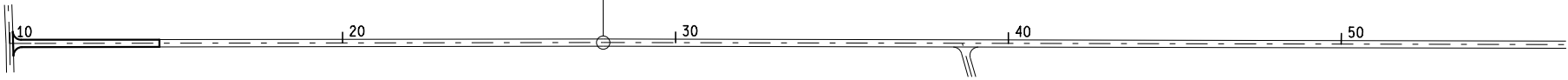
1/11/2018

S SKOCELAS RD  
STA 10+00

STA 10+11 TO STA 108+00  
CHIP SEAL & FOG SEAL  
21' WIDTH (PLUS APPROACH  
AREA AT POB)

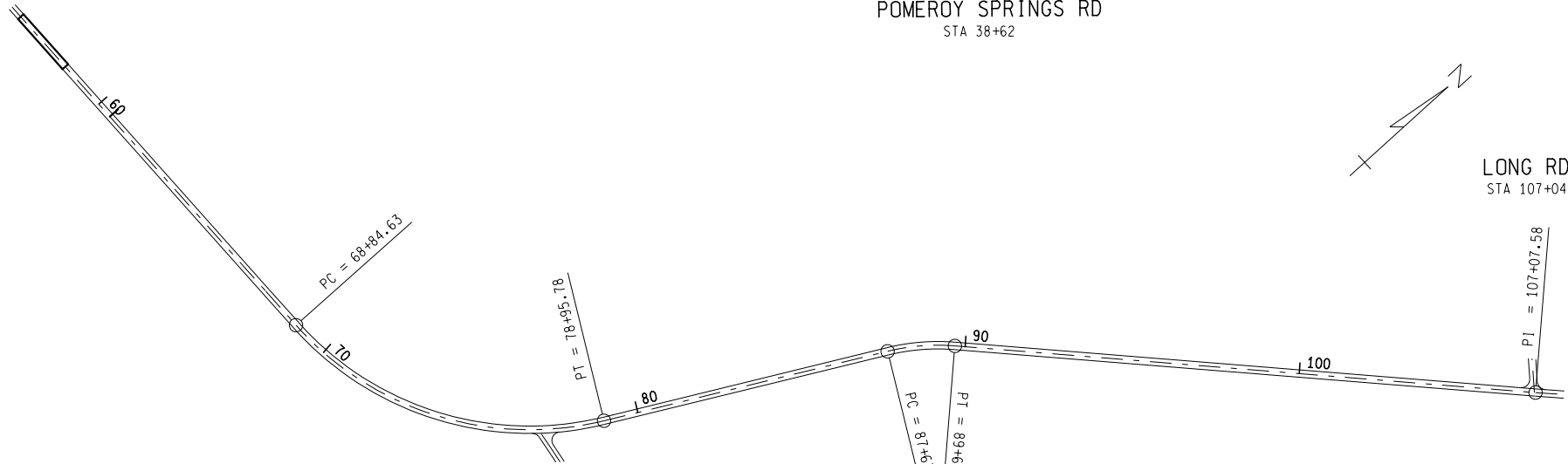
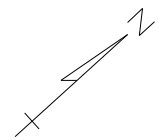
POB STA 10+11  
UDELL HILLS ROAD


PI = 27+83.04



POMEROY SPRINGS RD  
STA 38+62

LONG RD  
STA 107+04



FULL WIDTH HMA SKIP PATCH  
THIS SHEET (SHOWN )

HMA 1/4 CROWN WEDGE  
THIS SHEET

STA 10+11 TO STA 14+50  
STA 56+50 TO STA 58+50

STA 11+11 TO STA 24+00 LT  
STA 11+11 TO STA 24+00 RT

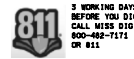
THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

LOCATION # 8

NINE MILE BRIDGE RD  
STA 77+00

NO SCALE



UDELL HILLS ROAD  
POB STA 10+11 TO STA 108+00  
STRONACH TWP

MANISTEE COUNTY  
ROAD COMMISSION  
8946 CHIPPEWA HWY  
BEAR LAKE, MI 49614

DATE: 1/2/2018

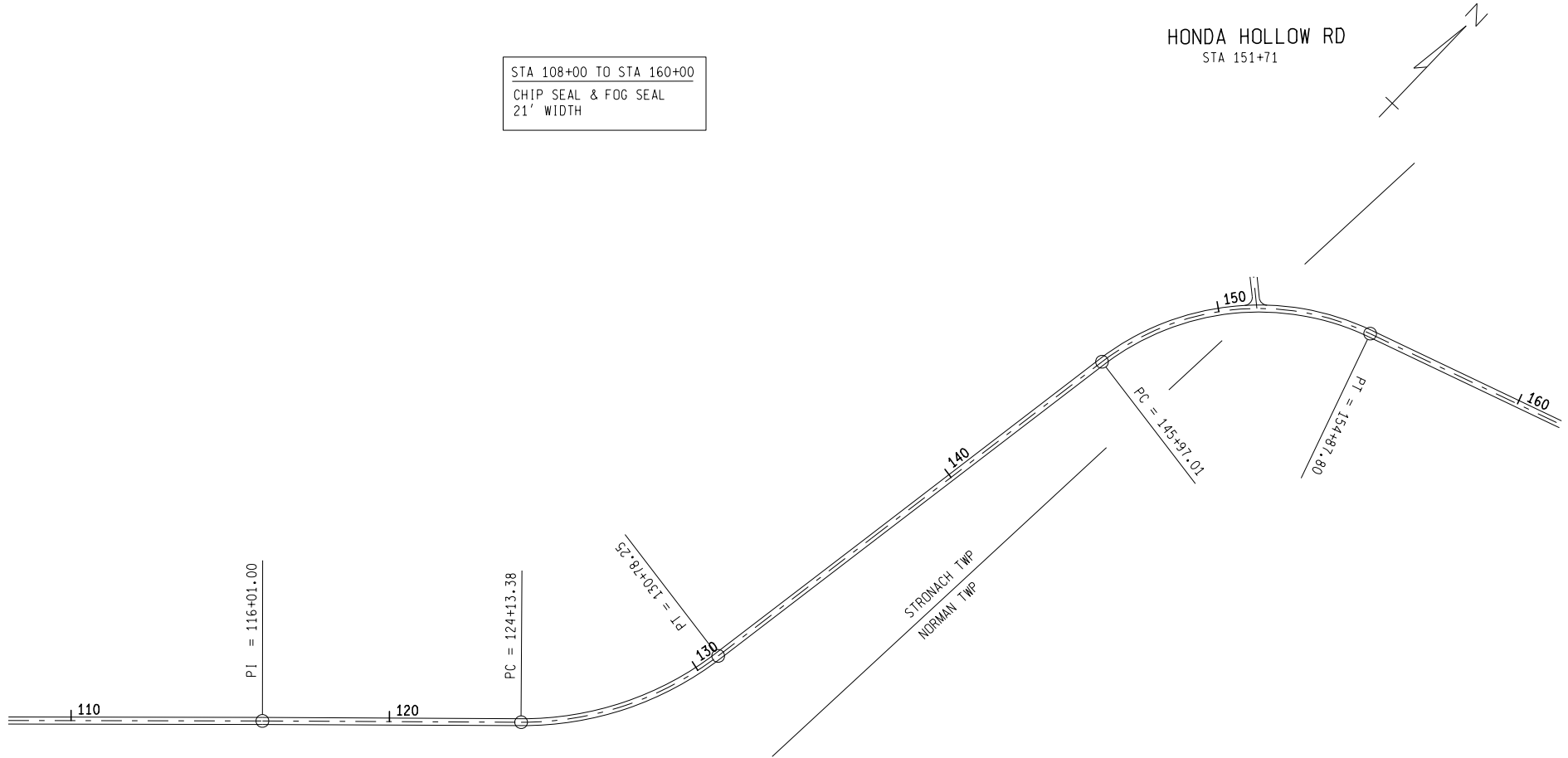
DRAWN BY	SHEET NO.
GLK	41

7:56:03 AM

1/2/2018

HONDA HOLLOW RD  
STA 151+71

STA 108+00 TO STA 160+00  
CHIP SEAL & FOG SEAL  
21' WIDTH



HMA 1/4 CROWN WEDGE  
THIS SHEET

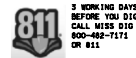
STA 117+50 TO STA 121+50 RT  
STA 124+50 TO STA 126+50 LT  
STA 129+00 TO STA 131+00 LT  
STA 134+00 TO SRA 157+00 RT

THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

LOCATION # 8

NO SCALE



UDELL HILLS ROAD  
STA 108+00 TO STA 160+00  
STRONACH & NORMAN TWPS

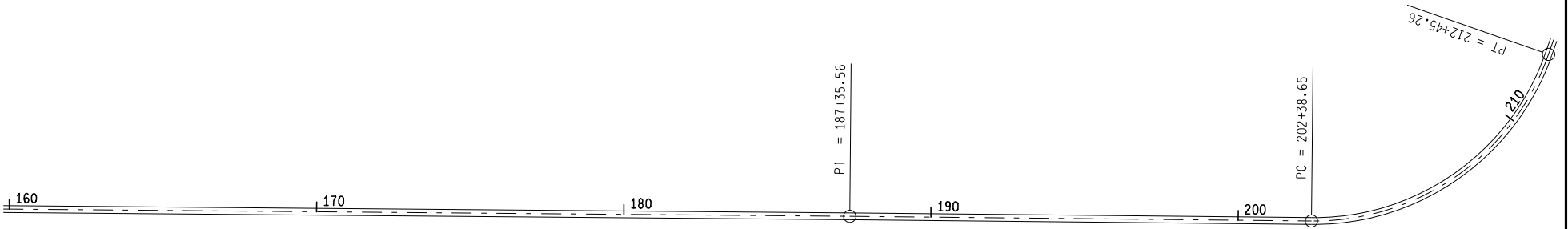
MANISTEE COUNTY  
ROAD COMMISSION  
8946 CHIPPEWA HWY  
BEAR LAKE, MI 49614

DATE: 1/2/2018

DRAWN BY	SHEET NO.
GLK	42

7:56:06 AM 1/2/2018



STA 160+00 TO STA 213+00  
 CHIP SEAL & FOG SEAL  
 21' WIDTH



NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
 AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

LOCATION # 8

NO SCALE

UDELL HILLS ROAD  
 STA 160+00 TO STA 213+00  
 NORMAN TWP

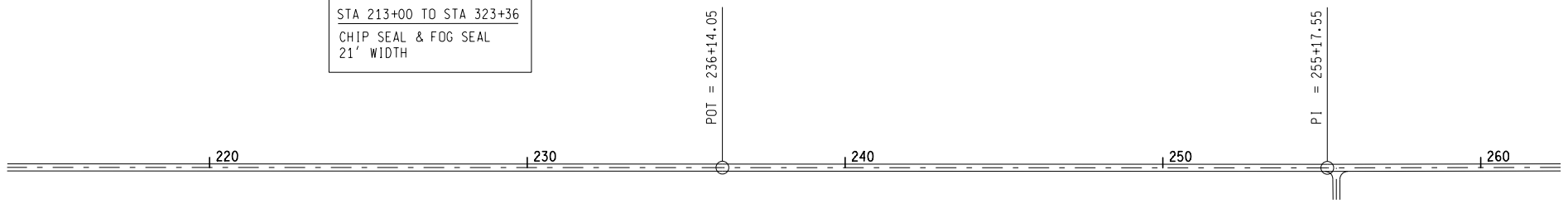
DATE: 1/2/2018

MANISTEE COUNTY  
 ROAD COMMISSION  
 8946 CHIPPEWA HWY  
 BEAR LAKE, MI 49614

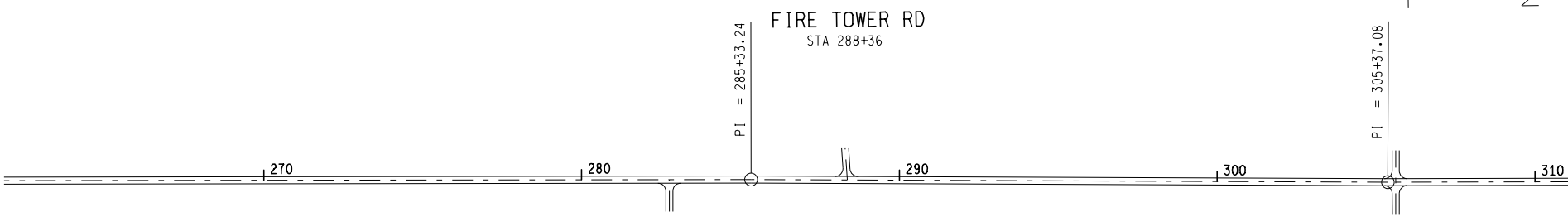
DRAWN BY	SHEET NO.
GLK	43

7:56:09 AM 1/2/2018

STA 213+00 TO STA 323+36  
CHIP SEAL & FOG SEAL  
21' WIDTH



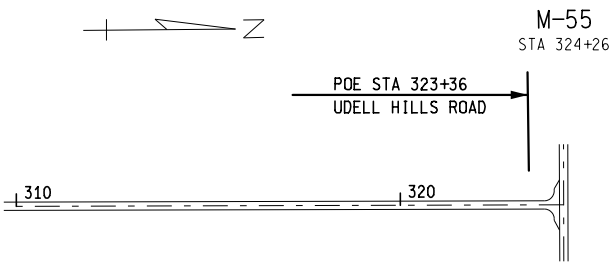
PINE LAKE RD  
STA 255+46



FIRE TOWER RD  
STA 288+36

FED FOREST # 8711  
STA 282+76

STEINBERG RD  
STA 305+62



NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM  
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

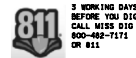
LOCATION # 8

HMA 1/4 CROWN WEDGE  
THIS SHEET

STA 231+00 TO STA 243+00 LT  
STA 249+00 TO STA 253+00 LT  
STA 276+00 TO STA 280+00 LT

THE STATIONING INDICATED FOR THE HMA PREPARATION  
WORK ABOVE IS APPROXIMATE. THE EXACT LOCATIONS  
WILL BE DETERMINED BY THE ENGINEER.

NO SCALE



UDELL HILLS ROAD  
STA 213+00 TO POE STA 323+36  
NORMAN TWP

MANISTEE COUNTY  
ROAD COMMISSION  
8946 CHIPPEWA HWY  
BEAR LAKE, MI 49614

DATE: 1/2/2018

DRAWN BY	SHEET NO.
GLK	44

Manistee County Road Commission  
Special Provision  
For  
**Maintaining Traffic**

KPM:GLK

Page 1 of 3

01/09/18

**General**

Traffic will be maintained in accordance with the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction including any supplemental specifications and as herein specified. All traffic control devices and their usage shall comply with the 2011 edition of the Michigan Manual of Uniform Traffic Control Devices (MMUTCD), as amended.

The Manistee County Road Commission (MCRC) may perform maintenance work within or adjacent to the Construction Influence Area (CIA). The MCRC will coordinate their operations to minimize the interference to the Contractor. No additional payment will be made to the Contractor for the joint use of the traffic control items.

**Construction Influence Area (CIA)**

The CIA limits shall include the area within the right-of-ways for the following roadways in Dickson, Arcadia, Pleasanton, Brown, Manistee, Stronach, Bear Lake, Onekama, & Norman Townships in Manistee County:

Dilling Road, from Coates Highway to end of road at Tippy Dam  
Gilbert/Frederick/Ingersol/Lumley/Iverson/Norconk Roads, from Glovers Lake Road to Myers Road  
Kettner Road, from River Road to Coates Hwy  
Schoedel Road, from M-22 to US-31  
South Skocelas Road, from So.County Line Road to M-55  
11 Mile Road, from US-31 to Big Four Road  
13 Mile Road, from Lakeview Road to Milarch Road  
Udell Hills Road, from S.Skocelas Road to M-55  
Burtker & Potter Roads, from 13 Mile Road to M-22  
Ellen Road, from M-22 to north end of road  
Leonard Avenue, from Crescent Beach Road to Lakeshore Road  
Olson Road, from M-55 to Pine Creek Road  
South Skocelas Road, from M-55 to Pine Creek Road

The CIA shall also extend a distance in advance of the project limits as required for the advanced construction signing and traffic control devices. The CIA shall extend down all intersecting roadways a distance of 550 feet.

**Traffic and Work Restrictions**

Conduct all work between sunrise and sunset local time. "Work" is defined as any activity on the project including the setting up and taking down of traffic control devices. No work shall be permitted on Sundays, holidays, or during

Manistee County 2018 Local County-Wide HMA Wedging and Chip Sealing

Manistee County Road Commission  
Special Provision  
For  
**Maintaining Traffic**

KPM:GLK

Page 2 of 3

01/09/18

special events unless approved by the MCRC due to special circumstances.  
Holiday periods are defined as:

Memorial Day – 5:00 pm, Friday 05/25/18 to 6:00 am, Tuesday, 05/29/18

Independence Day – 5:00 pm Tuesday, 07/03/18 to 6:00 am, Thursday,  
07/05/18

Labor Day - 5:00 pm, Friday 08/31/18 to 6:00 am, Tuesday, 09/04/18

A minimum of one lane of traffic shall be maintained at all times. All lanes shall be opened for traffic at night. HMA wedging, HMA overlays, and HMA patching and pavement repair work shall only be allowed on one side of the road at a time.

Traffic shall be maintained with traffic regulator control in accordance with the attached Maintaining Traffic Typical M0020a and M0140a. Daytime lane closures (traffic regulator control) shall be limited to two closures at the same time and shall be separated by a minimum of 2 miles.

When chip and fog sealing in intersection areas, lane closures (using traffic regulator control) may be required on the intersecting roadways. When the intersecting roadway is a state trunkline (M-22, M-55, and US-31), preferential treatment shall be provided to the state trunkline to reduce traffic backups.

R2-1 (Speed Limit) signs and G20-2 (End Road Work) signs will not be required on this short duration project.

Access for commercial and residential drives within the project limits and for emergency services shall be maintained at all times during construction.

**Traffic Control Devices**

All warning signs shall be 48" x 48" mounted at a 5' minimum bottom height in uncurbed areas and 7' minimum bottom height in curbed or pedestrian areas.

Temporary Traffic Control Devices shall conform to the attached MDOT Work Zone Device Special Detail WZD-125-E.

Quantities for traffic control devices have been estimated based on two (2) sequences of Maintaining Traffic Typical M0140a, plus ten (10) W20-1 "Road Work Ahead" signs to be placed on intersecting roads.

**Temporary Pavement Markings**

Manistee County 2018 Local County-Wide HMA Wedging and Chip Sealing



Manistee County Road Commission  
Special Provision  
For  
**Maintaining Traffic**

KPM:GLK

Page 3 of 3

01/09/18

Yellow temporary raised pavement markers shall be used for temporary centerline markings, spaced at 50' intervals. Use tabs with double covers to accommodate the subsequent fog seal.

**Measurement and Payment**

The completed work for Maintaining Traffic, including the furnishing and placement of all materials, labor, and equipment, will be measured and paid for at the contract unit price for the following item (pay item).

<b><u>Contract Item</u></b>	<b><u>Pay Unit</u></b>
Traffic Control.....	Lump Sum

Estimates of Maintaining Traffic Quantities

Lighted Arrow, Type C, Furn, .....	4 Each
Lighted Arrow, Type C, Oper, .....	4 Each
Sign, Type B, Temp, Prismatic Furn .....	480 Square Foot
Sign, Type B, Temp, Prismatic Oper.....	480 Square Foot
Traf Regulator Control (with Intermediate Flaggers) .....	1 Lump Sum
Minor Traf Devices .....	1 Lump Sum

Estimated quantities for the items above are provided for information only. They shall be included in the lump sum pay item for Traffic Control.

## MINIMUM MERGING TAPER LENGTH "L" (FEET)

OFFSET FEET	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)									
	25	30	35	40	45	50	55	60	65	70
1	10	15	20	27	45	50	55	60	65	70
2	21	30	41	53	90	100	110	120	130	140
3	31	45	61	80	135	150	165	180	195	210
4	42	60	82	107	180	200	220	240	260	280
5	52	75	102	133	225	250	275	300	325	350
6	63	90	123	160	270	300	330	360	390	420
7	73	105	143	187	315	350	385	420	455	490
8	83	120	163	213	360	400	440	480	520	560
9	94	135	184	240	405	450	495	540	585	630
10	104	150	204	267	450	500	550	600	650	700
11	115	165	225	293	495	550	605	660	715	770
12	125	180	245	320	540	600	660	720	780	840
13	135	195	266	347	585	650	715	780	845	910
14	146	210	286	374	630	700	770	840	910	980
15	157	225	307	400	675	750	825	900	975	1050

TAPER LENGTH "L" IN FEET

THE FORMULAS FOR THE MINIMUM LENGTH OF A MERGING TAPER IN DERIVING THE "L" VALUES SHOWN IN THE ABOVE TABLES ARE AS FOLLOWS:

"L" =  $\frac{W \times S^2}{60}$  WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 40 MPH OR LESS

"L" = S x W WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 45 MPH OR GREATER

- L = MINIMUM LENGTH OF MERGING TAPER
- S = POSTED SPEED LIMIT IN MPH PRIOR TO WORK AREA
- W = WIDTH OF OFFSET

### TYPES OF TAPERS

#### UPSTREAM TAPERS


- MERGING TAPER
- SHIFTING TAPER
- SHOULDER TAPER
- TWO-WAY TRAFFIC TAPER

#### DOWNSTREAM TAPERS

(USE IS OPTIONAL)

### TAPER LENGTH

- L - MINIMUM
- 1/2 L - MINIMUM
- 1/3 L - MINIMUM
- 100' - MAXIMUM
- 100' - MINIMUM (PER LANE)

 TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL	TABLES FOR "L", "D" AND "B" VALUES		
	DRAWN BY: CON:AE:djf	JUNE 2006	M0020a
CHECKED BY: BMM	PLAN DATE:	1 OF 2	
FILE: K:/DGN/TSR/STDS/ENGLISH/MNTTRF/M0020a.dgn		REV.	08/21/2006

DISTANCE BETWEEN TRAFFIC CONTROL DEVICES "D"  
AND LENGTH OF LONGITUDINAL BUFFER SPACE ON  
"WHERE WORKERS PRESENT" SEQUENCES


"D" DISTANCES	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)									
	25	30	35	40	45	50	55	60	65	70
D (FEET)	250	300	350	400	450	500	550	600	650	700

GUIDELINES FOR LENGTH OF  
LONGITUDINAL BUFFER SPACE "B"

SPEED* MPH	LENGTH FEET
20	33
25	50
30	83
35	132
40	181
45	230
50	279
55	329
60	411
65	476
70	542

\* POSTED SPEED, OFF PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED

1 BASED UPON AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) BRAKING DISTANCE PORTION OF STOPPING SIGHT DISTANCE FOR WET AND LEVEL PAVEMENTS (A POLICY ON GEOMETRIC DESIGN OF HIGHWAY AND STREETS), AASHTO. THIS AASHTO DOCUMENT ALSO RECOMMENDS ADJUSTMENTS FOR THE EFFECT OF GRADE ON STOPPING AND VARIATION FOR TRUCKS.

 Michigan Department of Transportation TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL	TABLES FOR "L", "D" AND "B" VALUES		
	DRAWN BY: CON:AE:djf CHECKED BY: BMM	JUNE 2006 PLAN DATE:	M0020a
FILE: K:/DGN/TSR/STDS/ENGLISH/MNTTRF/M0020a.dgn      REV. 08/21/2006			




PLACE THROUGHOUT WORK AREA AS INDICATED AND AFTER ALL MAJOR CROSSROADS IF PERMANENT SIGNS ARE NOT IN PLACE.

PLACE THIS SIGN ALONG WITH THE ADVANCE WORK ZONE SIGNING AS DEPICTED ON THE APPROPRIATE TYPICAL M0030a-M0080a.

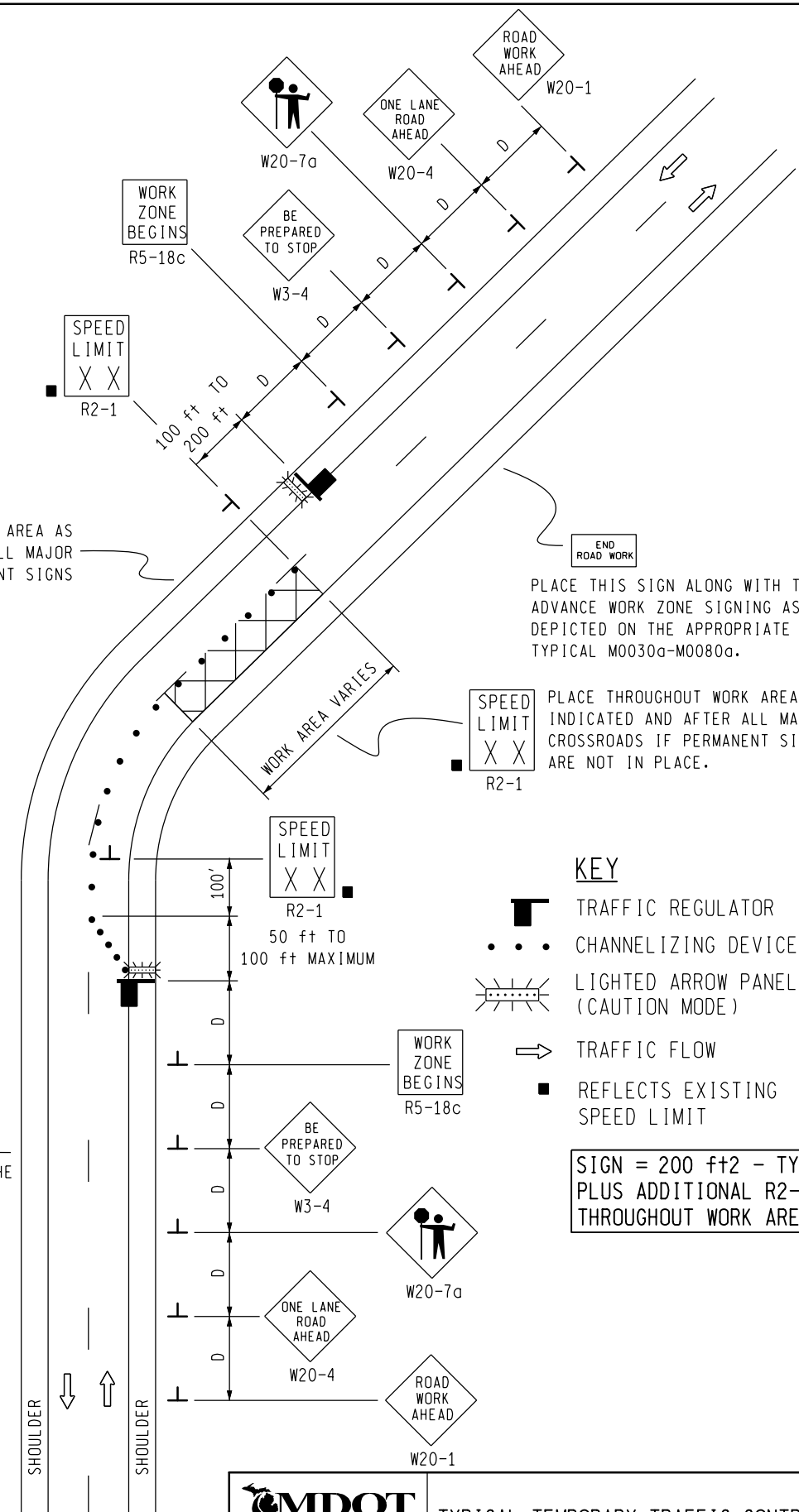
PLACE THROUGHOUT WORK AREA AS INDICATED AND AFTER ALL MAJOR CROSSROADS IF PERMANENT SIGNS ARE NOT IN PLACE.

PLACE THIS SIGN ALONG WITH THE ADVANCE WORK ZONE SIGNING AS DEPICTED ON THE APPROPRIATE TYPICAL M0030a-M0080a.


**KEY**

-  TRAFFIC REGULATOR
-  CHANNELIZING DEVICES
-  LIGHTED ARROW PANEL (CAUTION MODE)
-  TRAFFIC FLOW
-  REFLECTS EXISTING SPEED LIMIT

SIGN = 200 ft± - TYPE B PLUS ADDITIONAL R2-1's THROUGHOUT WORK AREA



NOT TO SCALE

 Michigan Department of Transportation TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL		TYPICAL TEMPORARY TRAFFIC CONTROL FOR A TWO-LANE TWO-WAY ROADWAY WHERE ONE LANE IS CLOSED UTILIZING TRAFFIC REGULATORS, NO SPEED REDUCTION	
DRAWN BY: CON:AE:djf CHECKED BY: BMM:CRB	OCTOBER 2011 PLAN DATE:	M0140a	SHEET 1 OF 2
FILE: PW RD/TS/Typicals/Signs/MT NON Fwy/M0140a.dgn REV. 10/04/2011			


## NOTES

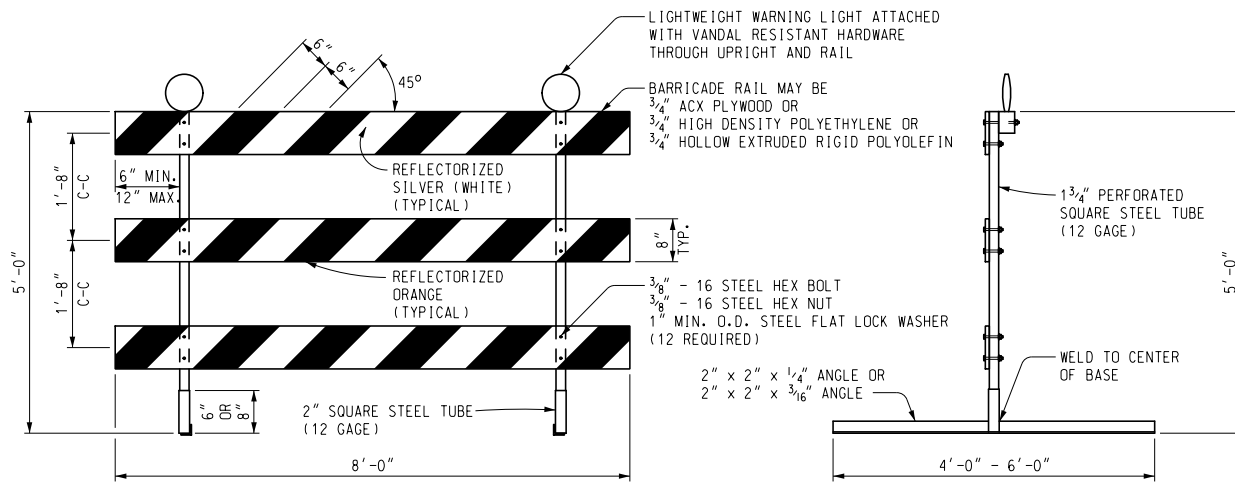
- 1H. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES AND LENGTH OF LONGITUDINAL BUFFERS  
SEE **M0020a** FOR "D" VALUES.
2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.
3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.
- 3A. THE "WORK ZONE BEGINS" (R5-18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.
- 4A. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES IN THE TAPER AREA(S) SHOULD BE 15 FEET AND SHOULD BE EQUAL IN FEET TO TWICE THE POSTED SPEED IN MILES PER HOUR IN THE PARALLEL AREA(S).
5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.
6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.
7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.
9. ALL TRAFFIC REGULATORS SHALL BE PROPERLY TRAINED AND SUPERVISED.
- 9A. IN ANY OPERATION INVOLVING MORE THAN ONE TRAFFIC REGULATOR, ONE PERSON SHOULD BE DESIGNATED AS HEAD TRAFFIC REGULATOR.
10. ALL TRAFFIC REGULATORS' CONDUCT, THEIR EQUIPMENT, AND TRAFFIC REGULATING PROCEDURES SHALL CONFORM TO THE CURRENT EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD) AND THE CURRENT EDITION OF THE MDOT HANDBOOK ENTITLED "TRAFFIC REGULATORS INSTRUCTION MANUAL."
11. WHEN TRAFFIC REGULATING IS ALLOWED DURING THE HOURS OF DARKNESS, APPROPRIATE LIGHTING SHALL BE PROVIDED TO SUFFICIENTLY ILLUMINATE THE TRAFFIC REGULATOR'S STATIONS.
- 12E. THE MAXIMUM DISTANCE BETWEEN THE TRAFFIC REGULATORS SHALL BE NO MORE THAN 2 MILES IN LENGTH UNLESS RESTRICTED FURTHER IN THE SPECIAL PROVISIONS FOR MAINTAINING TRAFFIC. ALL SEQUENCES OF MORE THAN 2 MILES IN LENGTH WILL REQUIRE WRITTEN PERMISSION FROM THE ENGINEER BEFORE PROCEEDING.
13. WHEN INTERSECTING ROADS OR SIGNIFICANT TRAFFIC GENERATORS (SHOPPING CENTERS, MOBILE HOME PARKS, ETC.) OCCUR WITHIN THE ONE-LANE TWO-WAY OPERATION, INTERMEDIATE TRAFFIC REGULATORS AND APPROPRIATE SIGNING SHALL BE PLACED AT THESE LOCATIONS.
14. ADDITIONAL SIGNING AND/OR ELONGATED SIGNING SEQUENCES SHOULD BE USED WHEN TRAFFIC VOLUMES ARE SIGNIFICANT ENOUGH TO CREATE BACKUPS BEYOND THE W3-4 SIGNS.
15. THE HAND HELD (PADDLE) SIGNS REQUIRED BY THE MMUTCD TO CONTROL TRAFFIC WILL BE PAID FOR AS PART OF FLAG CONTROL.
- 28E. THE TRAFFIC REGULATORS SHOULD BE POSITIONED AT OR NEAR THE SIDE OF THE ROAD SO THAT THEY ARE SEEN CLEARLY AT A MINIMUM DISTANCE OF 500 FEET. THIS MAY REQUIRE EXTENDING THE BEGINNING OF THE LANE CLOSURE TO OVERCOME VIEWING PROBLEMS CAUSED BY HILLS AND CURVES.

### SIGN SIZES

DIAMOND WARNING - 48" x 48"  
 R2-1 REGULATORY - 48" x 60"  
 R5-18c REGULATORY - 48" x 48"

NOT TO SCALE

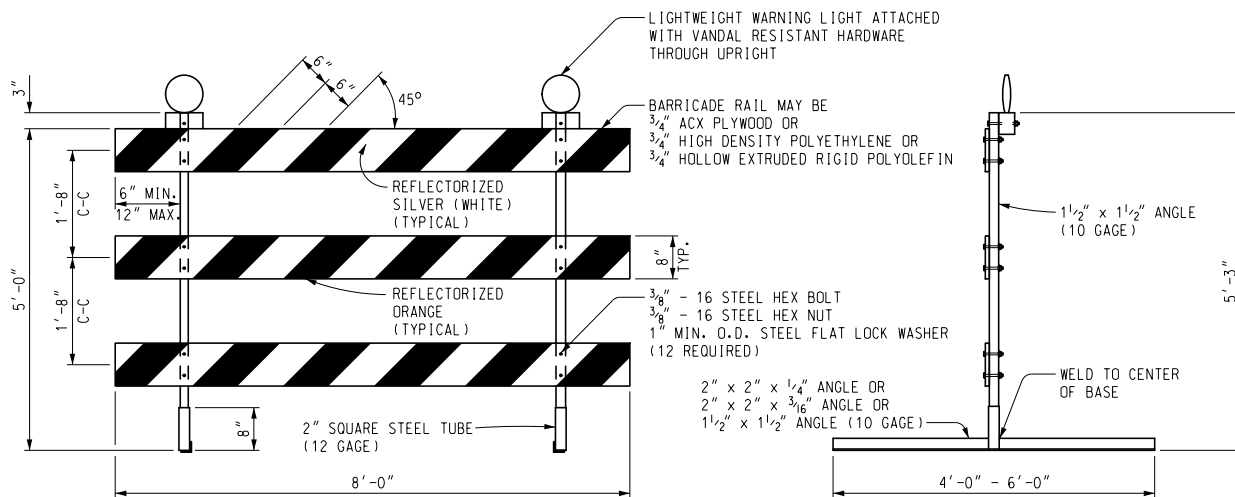
 Michigan Department of Transportation TRAFFIC AND SAFETY <b>MAINTAINING TRAFFIC          TYPICAL</b>	<b>TYPICAL TEMPORARY TRAFFIC CONTROL FOR          A TWO-LANE TWO-WAY ROADWAY WHERE ONE          LANE IS CLOSED UTILIZING TRAFFIC          REGULATORS, NO SPEED REDUCTION</b>		
DRAWN BY: CON:AE:djf	OCTOBER 2011	<b>M0140a</b>	
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0140a.dgn REV. 10/04/2011			



FRONT ELEVATION

SIDE VIEW

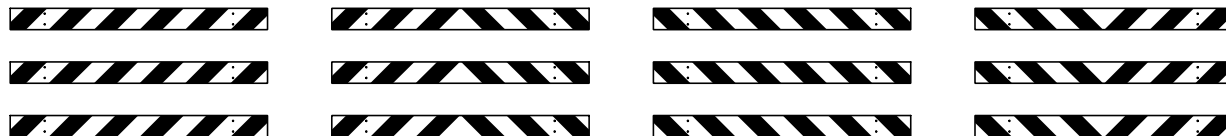
PERFORATED SQUARE STEEL TUBE OPTION



FRONT ELEVATION

SIDE VIEW

ANGLE IRON OPTION



LEFT DIRECTIONAL

BI-DIRECTIONAL

RIGHT DIRECTIONAL

CLOSURES

BARRICADE RAIL SHEETING OPTIONS  
TYPE III BARRICADES

Other Type III Barricades meeting current NCHRP crash worthy criteria can be found on the FHWA Safety website at [http://safety.fhwa.dot.gov/roadway\\_dept/road\\_hardware/wzd.htm](http://safety.fhwa.dot.gov/roadway_dept/road_hardware/wzd.htm)



PREPARED BY  
DESIGN DIVISION

DRAWN BY: ECH

CHECKED BY: MWB

DEPARTMENT DIRECTOR  
Kirk T. Steudle

APPROVED BY: \_\_\_\_\_  
DIRECTOR, BUREAU OF FIELD SERVICES  
ENGINEER OF DEVELOPMENT

APPROVED BY: \_\_\_\_\_  
(SPECIAL DETAIL)  
DIRECTOR, BUREAU OF DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION  
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

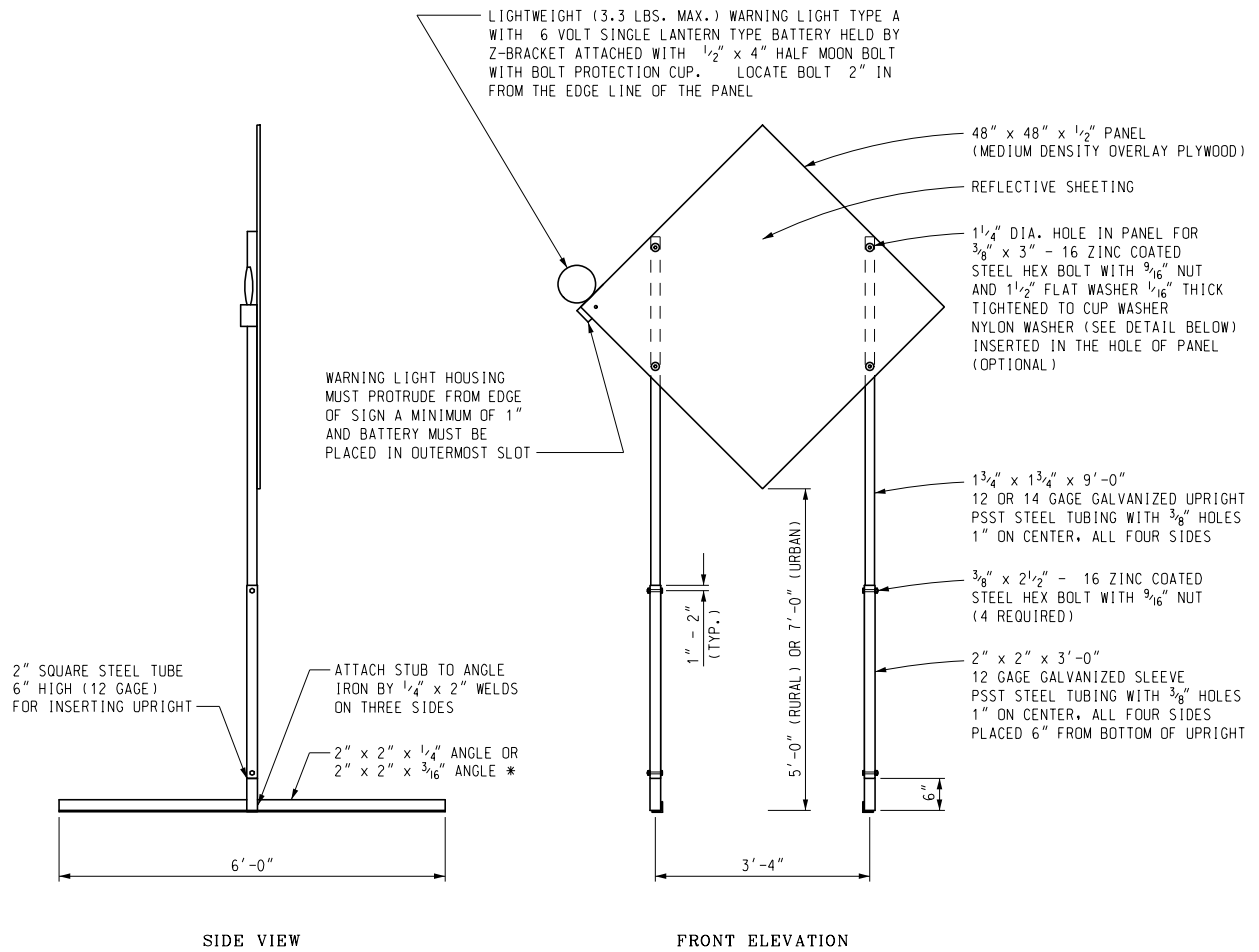
Temporary  
Traffic Control Devices

F.H.W.A. APPROVAL

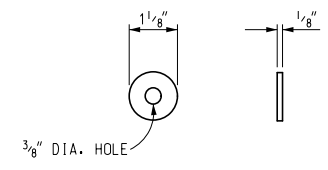
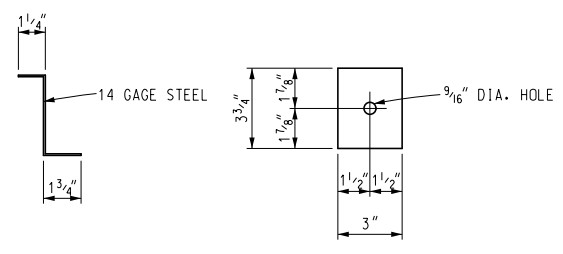
1/18/11  
PLAN DATE

WZD-125-E

SHEET  
1 OF 3



**TEMPORARY SIGN SUPPORT**  
 (WARNING LIGHT PLACED ON SIDE CLOSEST TO TRAFFIC)  
 \* SIGN STAND IS BALLASTED WITH FOUR OR MORE 35 LB SANDBAGS. A MINIMUM OF ONE ON EACH END.  
 UPRIGHTS SHALL NOT EXTEND ABOVE THE SIGN PANEL.



Other temporary sign supports meeting current NCHRP crash worthy criteria can be found on the FHWA Safety website at [http://safety.fhwa.dot.gov/roadway\\_dept/road\\_hardware/wzd.htm](http://safety.fhwa.dot.gov/roadway_dept/road_hardware/wzd.htm)

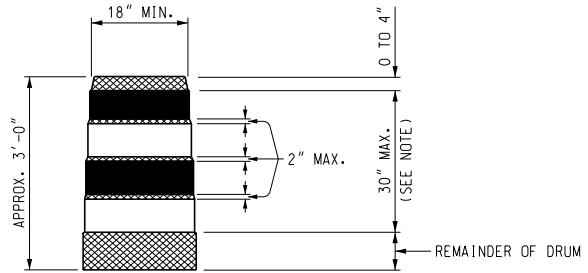
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	SPECIAL DETAIL F.H.W.A. APPROVAL	1/18/11 PLAN DATE	WZD-125-E	SHEET 2 OF 3
--	-------------------------------------	----------------------	-----------	-----------------

NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.

- PLASTIC DRUM
- ▲▲▲ PROPOSED TYPE III BARRICADE
- △△△ EXISTING TYPE III BARRICADE

**SYMBOLS TO BE USED ON PLANS**



- REFLECTORIZED ORANGE
- REFLECTORIZED WHITE
- NON REFLECTORIZED ORANGE

**NOTE:**  
 DRUMS SHALL HAVE AT LEAST 4 HORIZONTAL REFLECTORIZED STRIPES (2 ORANGE AND 2 WHITE) OF 6" UNIFORM WIDTH, ALTERNATING IN COLOR WITH THE TOPMOST REFLECTORIZED STRIPE BEING ORANGE. NON REFLECTORIZED SPACES BETWEEN THE HORIZONTAL REFLECTORIZED ORANGE AND WHITE STRIPES SHALL BE ORANGE IN COLOR AND EQUAL IN WIDTH.

**PLASTIC DRUM**

**NOTES:**

2" PERFORATED SQUARE STEEL TUBES MAY BE USED TO FABRICATE THE HORIZONTAL BASE OF THE TYPE III BARRICADE.

WARNING LIGHTS SHALL BE PLACED ACCORDING TO THE CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND ALL OTHER PROVISIONS IN THE CONTRACT ON TYPE III BARRICADES.

SEE ROAD STANDARD PLANS R-113-SERIES FOR TEMPORARY CROSSOVERS FOR DIVIDED ROADWAY, AND R-126-SERIES FOR TYPICAL LOCATION AND SPACING OF PLASTIC DRUMS FOR PLACEMENT OF TEMPORARY CONCRETE BARRIER.

SIGNS, BARRICADES, AND PLASTIC DRUMS SHALL BE FACED WITH PRESSURE-SENSITIVE REFLECTIVE SHEETING ACCORDING TO THE CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

SANDBAGS SHALL BE USED WHEN SUPPLEMENTAL WEIGHTS ARE REQUIRED TO ACHIEVE STABILITY OF THE BARRICADE. THE SANDBAGS SHALL BE PLACED SO THEY WILL NOT COVER OR OBSTRUCT ANY REFLECTIVE PORTION OF THE TRAFFIC CONTROL DEVICE.

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION  
 BUREAU OF DEVELOPMENT STANDARD PLAN

(SPECIAL DETAIL)  
 F.H.W.A. APPROVAL

1/18/11  
 PLAN DATE

WZD-125-E

SHEET  
 3 OF 3

NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.



**MANISTEE COUNTY ROAD COMMISSION  
HMA APPLICATION ESTIMATE**

KPM:GLK

1 of 2

DATE: 01/09/18

**a. Description.-** This work shall be done in accordance with the requirements of Division 5 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction except as herein specified.

**b. Construction Methods.-** The construction methods shall be in accordance with Section 501 of the MDOT 2012 Standard Specifications for Construction.

**c. Tests.-** The Nuclear Gauge Method or Coring Method for testing the compaction is hereby waived for this project. The Number of Rollers Method chart below shall apply.

Average Laydown Rate, Square Yards Per Hour	Number of Rollers Required	
	Compaction Rollers	Finish Rollers
Less than 800	1	*1
800-1800	1	1
1800-4000	2	1
4000-7200	3	1

\*The compaction roller may also be used as the finish roller.

**d. Materials.-:**

The HMA, 4E1 for full width HMA skip paving shall have an average yield of 220 pounds per square yard.

The HMA, 4E1 for quarter crown and centerline wedging courses to correct existing distorted and damaged pavement areas shall have a variable yield per square yard.

MANISTEE COUNTY ROAD COMMISSION  
HMA APPLICATION ESTIMATE

KPM:GLK

2 of 2

DATE: 01/09/18

The Hand Patching shall be HMA, 4E1 or other Engineer-approved mix and shall have a variable yield per square yard.

The Performance Grade asphalt binder grade for all HMA shall be 58-28.

Reclaimed Asphalt Pavement (RAP) in the HMA top courses shall not exceed 17% RAP binder by weight of total binder in the mixture.

The Target Air Void percentage shall be 3.5% for all HMA on this project.

The HMA Bond Coat material shall be per Section 501.02 of the MDOT 2012 Standard Specifications for Construction. The uniform rate of application shall be 0.05 to 0.15 gallons per square yard.

HMA Bond Coat is included with payment for the applicable HMA mixture.

The Contractor shall provide an HMA mix design that meets the proposed HMA mixtures in these bid documents and in accordance with the MDOT 2012 Standard Specifications for Construction.

**The Contractor shall provide written certification that the HMA materials used on the projects meet the requirements of these bid documents, the HMA Application Estimate, and the MDOT 2012 Standard Specifications for Construction.**

The MCRC (or their Consultant) may obtain samples of the HMA mixtures from the HMA plant or the project site at their discretion to test the materials to verify conformance with the HMA mix design provided by the Contractor.

**e. Measurement and Payment.-** Measurement and Payment shall be at the contract unit price per ton of the HMA, 4E1 and Hand Patching Items.

MANISTEE COUNTY ROAD COMMISSION

SPECIAL PROVISION

FOR

**Chip Seal-Modified**

KPM:GLK

1 of 4

1-23-15

**Description:**

This work shall consist of all labor, materials, and equipment required to Chip Seal as specified herein.

**Equipment:**

All equipment must meet the requirements under Section 505 of MDOT's 2012 Standard Specifications for Construction, except as modified herein:

Pressure Distributor:

The pressure distributor shall have a computerized application rate and speed control device interconnected with the asphalt emulsion pump such that the specified application rate will be supplied at any speed. This control shall have a radar ground sensing device that controls the application rate regardless of ground speed or spray bar width. The pressure distributor shall be capable of maintaining the asphalt emulsion at the specified temperature. The spray bar nozzles shall produce a uniform fan spray, and the shutoff shall be instantaneous with no dripping. Each pressure distributor shall be capable of maintaining the specified rate of application within +/- 0.015 gallons per square yard for each load.

Aggregate Chip Spreader:

Use a self-propelled chip spreader which shall have a computerized application rate and speed control device capable of uniformly spreading the cover material at the designated rate. It shall be equipped with pneumatic tires and with a screen to remove oversized material.

Compacting Equipment:

Use three (3) self-propelled, pneumatic-tired rollers, weighing not less than 10 tons.

Broom/Sweeper:

The use of 3 rotary-powered brooms are required to remove the loose material from the surface to be treated and for removing loose aggregate after the work has been completed.

Miscellaneous:

Provide all equipment including hand tools, thermometers, etc. Equip all self-propelled equipment with at least one approved, flashing, rotating or oscillating amber light, visible to traffic in all directions. Equip chip spreaders with one such light on each side of the spreader. The use of a pilot car is optional to the Contractor, but no additional payment will be made if used.

**Prepaving Meeting:**

A pre-paving meeting will be held on site with the Engineer before beginning work to discuss the following:

- Work schedule.
- Traffic control plan.
- Equipment calibration and adjustments.
- Condition of materials and equipment, including transport units.
- Mix design(s) including job-mix-formula (JMF); coarse aggregate gradation; application rate of asphalt emulsion and coarse aggregate (by stationing and course).
- Contractor's quality control plan (method of yield check, etc.).

**Seasonal Limitations:**

The chip seal shall be placed when the pavement and the atmospheric temperature are above 55°F. Placement is not permitted when temperatures are forecasted to be below 32°F within 24 hours from the time of work. Placement is not permitted when the existing pavement temperature is 130°F or above.

**General Placement Operations:**

1. The Contractor shall establish 1000-foot intervals along the entire length of the project, prior to placing materials. The stations shall be clearly identified and maintained until project completion.
2. Perform all surface preparation that may affect the performance of the chip seal. Remove all plastic pavement markings using an abrasion method. Remove markings just before the surfacing operation. Clean all pavements to be treated with a motorized power broom to remove all loose material. Clean all depressions not reached by the power broom using a hand broom. Thoroughly clean the outer edges of the pavement or shoulder. For single chip seal and double chip seal, extend cleaning 1 foot onto the adjacent paved shoulder.
3. Keep all vehicles and equipment involved in the chip sealing operation as close to each other as practical. Keep the asphalt emulsion distributor within 150 feet of the chip spreader. Do not place cover aggregate on asphalt after it breaks.
4. Locate longitudinal construction joints as follows:
  - Single chip seal-on a painted lane line or at the outside edge of the shoulder.
  - Double chip seal-place the joint to overlap the centerline by 6 inches for the first course and place the joint on the centerline for the second course.
  - Shoulder chip seal-at the edge of the driving lane or at a location requiring the least overlap onto the driving lane.
5. Perform rolling within five minutes of placing the coarse aggregate and before the asphalt has begun to cool. Make a minimum of two complete passes over the coarse aggregate. A complete pass is one trip, forward and backward, over the same path. Overlap each pass by one-half the width of the roller. Use a minimum of two rollers and proceed in a longitudinal direction at a speed not greater than 5 mph.
6. Use the appropriate equipment and perform an initial sweeping of the completed chip seal to remove excess loose aggregate before the end of each day's work or within 24 hours with the approval of the County Inspector. For single chip seal and double chip seal, sweep beyond the edge of pavement to help prevent migration of loose aggregate back onto the pavement. Do not sweep loose aggregate into curbed areas or intersections.
7. Before opening to traffic, place W8-7 (LOOSE GRAVEL) signs with 35 mph speed plaques mounted below. Place these signs throughout the completed work, beginning 50 feet before the treated area in the direction of oncoming traffic at a maximum spacing of 0.5 mile.
8. Before beginning the chip seal operation, protect all utility castings, monument boxes and raised pavement markers using tarpaper or other approved materials. Remove these protective coverings before sweeping and opening to traffic.
9. Allow the new surface sufficient cure time to prevent damage by vehicle tires before opening to traffic. Protect the new surface from potential damage at intersections and driveways. Repair all traffic damage to the new surface at the Contractor's expense.

**Submittals:**

Upon completion the Contractor shall provide an Inspector’s daily report for each day work was performed containing the following information:

- Road Name / project number
- Date / air temperature / pavement temperature / humidity
- Asphalt Emulsion temperature
- Yield checks on asphalt emulsion
- Yield checks on coarse aggregate
- Length / Width / Total Square Yards
- Contractor’s Signature

Other required documentation:

- Aggregate Certification or Shipment of Tested Stock Report (MDOT Form 1922).
- Asphalt Emulsion/ MultiGrade Asphalt: per current acceptance procedures.

The above submittals shall be placed in order by date in a folder with the certification statement in the back.

**Application:**

The Contractor shall apply the multi grade asphalt at a temperature 280°F min, immediately followed by a uniform application of coarse aggregate.

**Multi Grade Asphalt:**

CM-90, or approved equal (per properties of attached table 1) shall be spread at a residual target rate (after correction for temperature expansion and distillate loss) of .30 gallons per square yard. (min application rate .29).

If the target rate of .30 gallons per square yard is not the optimum application rate due to the gradation of the coarse aggregate or due to existing surface conditions of the pavement, the Contractor shall notify the Road Commission’s Inspector immediately and prior to application. Upon approval of changes by the Engineer, the Contractor shall then document the new JMF rate(s) by stationing. All truck demurrage will be the responsibility of the Contractor.

**Table 1 – Chip Seal Matrix Modified Asphalt (CSMMA) – CM-90 (or approved equal) Amend table 904-2**

TESTS	Requirements
	CM90
Modified Koppers Vacuum Viscosity, 25°C, P, ASTM D 4957	2000 to 20,000
Flash Point, deg °C:	
Tag Flash Point, °C, min, ASTM D 3143-98	65.5
Water in Petroleum, ASTM D 95-05, %, max	1.0
Cut-Back Distillation, ASTM D 402-02	
Distillate, % by Vol of Total Distillate to 360° C	
To 225° C	0-2
To 260° C	0-5
To 315.5° C	10-65
Residue from Distillation to 360° C, min	90
Test on Residue from Distillation, ASTM D 402	
Penetration, 25° C, 100 g, 5 sec, ASTM D5-05a	90-150
Ductility at 25° C, cm, min, ASTM D 113	Report
Solubility in Trichloroethylene, %, min, ASTM D 2042-01	99.0
Softening Point, °C, min, ASTM D 36-95	60

Float Test, 60° C, sec, min, ASTM D 139-95	1200
--	------

**Coarse Aggregate Application Rates:**

Cover material to be used will be 34CS-M Slag. Slag placement rate shall be within the range of 16 to 19 pounds per square yard, with a target rate of 17 pounds per syd.

If the target rate is not the optimum application rate due to the gradation of the coarse aggregate or due to existing surface conditions of the pavement, the Contractor shall notify the Road Commission's Inspector immediately and prior to application. Upon approval of changes by the Engineer, the Contractor shall then document the new JMF rate(s) by stationing. All truck demurrage will be the responsibility of the Contractor.

**Stockpiling Aggregate Material:**

Aggregate stockpile locations are the responsibility of the Contractor..

**Measurement and Payment:**

Completed work, as measured, will be paid for at the contract unit price for the following contract items:

<u>Pay Item</u>	<u>Pay Unit</u>
Chip Seal -Modified	Square Yard

Payment for the Chip Seal - Modified includes all equipment, labor and materials for placement of a single or double application of asphalt emulsion and coarse aggregate, brooming, and establishment of yield intervals. Furnishing and operating the W8-7 (LOOSE GRAVEL) signing shall also be included in payment for Chip Seal – Modified.

No adjustments in the unit price will be made for approved rate of Multi-Grade Asphalt and/or coarse aggregate that are within the ranges identified in Multi Grade Asphalt and Coarse Aggregate Application.

The contract unit price shall be payment in full for all labor and equipment needed to accomplish the work.

MANISTEE COUNTY ROAD COMMISSION

SPECIAL PROVISION

FOR

**Chip Seal-Modified Alternate Bid**

KPM:GLK

1 of 4

1-10-18

**Description:**

This work shall consist of all labor, materials, and equipment required to Chip Seal as specified herein.

**Equipment:**

All equipment must meet the requirements under Section 505 of MDOT's 2012 Standard Specifications for Construction, except as modified herein:

Pressure Distributor:

The pressure distributor shall have a computerized application rate and speed control device interconnected with the asphalt emulsion pump such that the specified application rate will be supplied at any speed. This control shall have a radar ground sensing device that controls the application rate regardless of ground speed or spray bar width. The pressure distributor shall be capable of maintaining the asphalt emulsion at the specified temperature. The spray bar nozzles shall produce a uniform fan spray, and the shutoff shall be instantaneous with no dripping. Each pressure distributor shall be capable of maintaining the specified rate of application within +/- 0.015 gallons per square yard for each load.

Aggregate Chip Spreader:

Use a self-propelled chip spreader which shall have a computerized application rate and speed control device capable of uniformly spreading the cover material at the designated rate. It shall be equipped with pneumatic tires and with a screen to remove oversized material.

Compacting Equipment:

Use two (2) self-propelled, pneumatic-tired rollers, weighing not less than 10 tons.

Broom/Sweeper:

The use of 2 rotary-powered brooms are required to remove the loose material from the surface to be treated and for removing loose aggregate after the work has been completed.

Miscellaneous:

Provide all equipment including hand tools, thermometers, etc. Equip all self-propelled equipment with at least one approved, flashing, rotating or oscillating amber light, visible to traffic in all directions. Equip chip spreaders with one such light on each side of the spreader. The use of a pilot car is optional to the Contractor, but no additional payment will be made if used.

**Prepaving Meeting:**

A pre-paving meeting will be held on site with the Engineer before beginning work to discuss the following:

- Work schedule.
- Traffic control plan.
- Equipment calibration and adjustments.
- Condition of materials and equipment, including transport units.
- Mix design(s) including job-mix-formula (JMF); coarse aggregate gradation; application rate of asphalt emulsion and coarse aggregate (by stationing and course).
- Contractor's quality control plan (method of yield check, etc.).

**Seasonal Limitations:**

The chip seal shall be placed when the pavement and the atmospheric temperature are above 55°F. Placement is not permitted when temperatures are forecasted to be below 32°F within 24 hours from the time of work. Placement is not permitted when the existing pavement temperature is 130°F or above.

**General Placement Operations:**

1. The Contractor shall establish 1000-foot intervals along the entire length of the project, prior to placing materials. The stations shall be clearly identified and maintained until project completion.
2. Perform all surface preparation that may affect the performance of the chip seal. Remove all plastic pavement markings using an abrasion method. Remove markings just before the surfacing operation. Clean all pavements to be treated with a motorized power broom to remove all loose material. Clean all depressions not reached by the power broom using a hand broom. Thoroughly clean the outer edges of the pavement or shoulder.
3. Keep all vehicles and equipment involved in the chip sealing operation as close to each other as practical. Keep the asphalt emulsion distributor within 150 feet of the chip spreader. Do not place cover aggregate on asphalt after it breaks.
4. Locate longitudinal construction joints as follows:
  - Single chip seal-on a painted lane line or at the outside edge of the shoulder.
  - Double chip seal-place the joint to overlap the centerline by 6 inches for the first course and place the joint on the centerline for the second course.
  - Shoulder chip seal-at the edge of the driving lane or at a location requiring the least overlap onto the driving lane.
5. Perform rolling within two minutes of placing the coarse aggregate and before the asphalt has begun to cool. Make a minimum of two complete passes over the coarse aggregate. A complete pass is one trip, forward and backward, over the same path. Overlap each pass by one-half the width of the roller. Use a minimum of two rollers and proceed in a longitudinal direction at a speed not greater than 5 mph.
6. Use the appropriate equipment and perform an initial sweeping of the completed chip seal to remove excess loose aggregate before the end of each day's work or within 24 hours with the approval of the County Inspector. For single chip seal and double chip seal, sweep beyond the edge of pavement to help prevent migration of loose aggregate back onto the pavement. Do not sweep loose aggregate into curbed areas or intersections.
7. Before opening to traffic, place W8-7 (LOOSE GRAVEL) signs with 35 mph speed plaques mounted below. Place these signs throughout the completed work, beginning 50 feet before the treated area in the direction of oncoming traffic at a maximum spacing of 0.5 mile.
8. Before beginning the chip seal operation, protect all utility castings, monument boxes and raised pavement markers using tarpaper or other approved materials. Remove these protective coverings before sweeping and opening to traffic.
9. Allow the new surface sufficient cure time to prevent damage by vehicle tires before opening to traffic. Protect the new surface from potential damage at intersections and driveways. Repair all traffic damage to the new surface at the Contractor's expense.



**Submittals:**

Upon completion, the Contractor shall provide an Inspector’s daily report for each day work was performed containing the following information:

- Road Name / project number
- Date / air temperature / pavement temperature / humidity
- Asphalt Emulsion temperature
- Yield checks on asphalt emulsion
- Yield checks on coarse aggregate
- Length / Width / Total Square Yards
- Contractor’s Signature

Other required documentation:

- Aggregate Certification or Shipment of Tested Stock Report (MDOT Form 1922).
- Asphalt Emulsion: per current acceptance procedures.

The above submittals shall be placed in order by date in a folder with the certification statement in the back.

**Application:**

The Contractor shall apply CRS-2M at a temperature between 170°F and 190°F, immediately followed by a uniform application of coarse aggregate.

**Emulsified Asphalt:**

Emulsified Asphalt to be used shall be CRS-2M and shall meet the requirements stated in Table 904-6 of the MDOT 2012 Standards Specifications for Construction. Target application range shall be 0.39 to 0.44 gallons per square yard (after correction for temperature expansion and distillate loss).

If the target rate is not the optimum application rate due to the gradation of the coarse aggregate or due to existing surface conditions of the pavement, the Contractor shall notify the Road Commission’s Inspector immediately and prior to application. Upon approval of changes by the Engineer, the Contractor shall then document the new JMF rate(s) by stationing. All truck demurrage will be the responsibility of the Contractor.

**Coarse Aggregate Application Rates:**

Cover material to be used will be 34CS-M Slag. Slag placement rate shall be within the range of 19 to 24 pounds per square yard, with a target rate of 22 pounds per syd.

If the target rate is not the optimum application rate due to the gradation of the coarse aggregate or due to existing surface conditions of the pavement, the Contractor shall notify the Road Commission’s Inspector immediately and prior to application. Upon approval of changes by the Engineer, the Contractor shall then document the new JMF rate(s) by stationing. All truck demurrage will be the responsibility of the Contractor.

**Stockpiling Aggregate Material:**

Aggregate stockpile locations are the responsibility of the Contractor..

**Measurement and Payment:**

Completed work, as measured, will be paid for at the contract unit price for the following contract items:

<u>Pay Item</u>	<u>Pay Unit</u>
Chip Seal –Modified Alternate Bid	Square Yard

Payment for the Chip Seal – Modified Alternate Bid includes all equipment, labor and materials for placement of a single or double application of asphalt emulsion and coarse aggregate, brooming, and establishment of yield

intervals. Furnishing and operating the W8-7 (LOOSE GRAVEL) signing shall also be included in payment for Chip Seal – Modified Alternate Bid.

No adjustments in the unit price will be made for approved rate of Emulsified Asphalt and/or coarse aggregate that are within the ranges identified in Emulsified Asphalt and Coarse Aggregate Application.

The contract unit price shall be payment in full for all labor and equipment needed to accomplish the work.

MANISTEE COUNTY ROAD COMMISSION

SPECIAL PROVISION

FOR

**Fog Seal-Modified**

KPM:GLK

1 of 2

01-10-18

**Description:**

This work shall consist of all labor, materials, and equipment required to Fog Seal as specified herein.

**Equipment:**

All equipment must meet the requirements under Section 505 of MDOT's 2012 Standard Specifications for Construction, except as modified herein:

Pressure Distributor:

The pressure distributor shall have a computerized application rate and speed control device interconnected with the asphalt emulsion pump such that the specified application rate will be supplied at any speed. This control shall have a radar ground sensing device that controls the application rate regardless of ground speed or spray bar width. The pressure distributor shall be capable of maintaining the asphalt emulsion at the specified temperature. The spray bar nozzles shall produce a uniform fan spray, and the shutoff shall be instantaneous with no dripping. Each pressure distributor shall be capable of maintaining the specified rate of application within +/- 0.015 gallons per square yard for each load.

Broom/Sweeper:

The use of a rotary-powered broom is required to remove the loose material from the surface to be treated and for removing loose aggregate after the work has been completed.

Miscellaneous:

Provide all equipment including hand tools, thermometers, etc. Equip all self-propelled equipment with at least one approved, flashing, rotating or oscillating amber light, visible to traffic in all directions. Before opening to traffic, place W21-2 (FRESH OIL) signs throughout the completed work, beginning 50 feet before the treated area in the direction of oncoming traffic at a maximum spacing of 0.5 mile.

**Fog Seal – Application Rates:**

CSS-1h (at 50% dilution) shall be spread at a target rate between 0.10 and 0.15 gallons per square yard with a target rate of 0.12 gallons per square yard.

If the target rate of 0.12 gallons per square yard is not the optimum application rate due to the gradation of the coarse aggregate or due to existing surface conditions of the pavement, the contractor shall notify the Road Commission's inspector immediately and prior to application. Upon approval of changes by the engineer, the contractor shall then document the new JMF rate(s) by stationing. All truck demurrage will be the responsibility of the contractor.

Fog Seal shall be placed 24-48 hours after completion of chip seal and brooming.

**Measurement and Payment:**

Completed work, as measured, will be paid for at the contract unit price for the following contract items:

<u>Pay Item</u>	<u>Pay Unit</u>
Fog Seal - Modified	Square Yard

Payment for the fog seal includes all equipment, labor and materials for placement of a single application of asphalt emulsion, brooming before fogging, and establishment of yield intervals. Furnishing and operating the W21-2 (FRESH OIL) signing shall also be included in payment for Fog Seal – Modified.

No adjustments in the unit price will be made for approved rate of asphalt emulsion and/or coarse aggregate that are within the ranges identified in Asphalt Emulsion and Coarse Aggregate Application.

The contract unit price shall be payment in full for all labor and equipment needed to accomplish the work.

MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
**PROTECTIVE OVERLAY FOR PAVEMENT AT SNOWMOBILE TRAIL CROSSINGS**

OFS:JD

1 of 5

APPR:TES:KPK:07-13-16  
FHWA:APPR:07-13-16

**a. Description.** This work consists of providing all materials, equipment, and labor necessary to prepare substrate and install a protective overlay for pavements at snowmobile trail crossings in accordance with the standard specifications and this special provision.

**b. Materials.**

1. Portland Cement Concrete Substrates. For snowmobile trail crossings on Portland cement concrete substrates, use a two component, 100 percent solids epoxy overlay system. Ensure containers are marked clearly "Part A" or "Part B". The epoxies that are approved are shown in Table 1.

Ensure aggregate meets the gradation requirements in Table 2 and has hardness of seven or higher on the Mohs hardness scale. Ensure aggregate is angular, consists of natural silica sand, basalt, or other nonfriable aggregate, and contains less than 0.2 percent moisture when tested in accordance with *ASTM C 566*.

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

2. HMA Substrates. For snowmobile trail crossings on hot mix asphalt concrete substrates select the protective overlay system from the following list of approved materials or a Department approved equal:

<u>Material</u>	<u>Supplier/Approved Contractor</u>
Cleansol E4	Clark Highway Services

**c. Construction.** Use one of the following processes when placing a new protective overlay.

1. Surface Preparation for Portland Cement Concrete Substrate. Immediately prior to application of the epoxy overlay, clean the entire concrete surface by shot blasting to remove all materials that may interfere with the bonding or curing of the epoxy overlay. Ensure the prepared concrete surface meets the *International Concrete Repair Institute Guideline No. 03732*, concrete surface profile (CSP) 7. Ensure mortar which is sound, and sufficiently bonded to the coarse aggregate, has open pores due to cleaning to be considered adequate for bond. Ensure traffic paint lines and tining are removed. Use a vacuum cleaner or oil-free moisture-free air blast to remove all dust and other loose material. Brooms are prohibited.

Do not place the epoxy overlay on concrete patches less than 28 days of age. The Engineer must inspect and approve patching and cleaning operations prior to placement of the overlay.

Remove any contamination of the concrete surface, or to intermediate courses, after initial cleaning. Ensure both courses are applied within 24 hours following the final cleaning and prior to opening area to traffic. Ensure there is no visible moisture present on the surface of the concrete at the time of application of the epoxy overlay. Tape an 18 inch by 18 inch piece of transparent polyethylene sheet (4 mil) to the deck in accordance with *ASTM D 4263*. Seal all edges with tape that will stick to the concrete substrate. Leave the plastic sheet in place for a minimum of 16 hours to detect the presence of moisture in the deck concrete. Ensure there is no moisture visible on the polyethylene sheet. Ensure alternate methods to detect moisture are approved by the Engineer. Compressed air may be used to dry the concrete surface, provided it is moisture and oil free.

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. 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 2½ gallons per 100 square feet. Ensure the second course is no less than 5 gallons per 100 square feet.

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 concrete surface 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.

Plan and execute 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.

3. Surface Preparation for Hot Mix Asphalt Concrete Substrate. When a new protective overlay is being applied onto a hot mix asphalt concrete substrate, perform all work according to the approved material supplier's recommendations with the respective approved Contractor. Apply a minimum of three layers. Center the seams of the underlying layers in the center of each successive layer to avoid any cold joints. Silica sand will be metered onto the surface of the material as it is being applied as recommended by the manufacturer.

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

**Pay Item**

**Pay Item**

Protective Ovly, Snowmobile Trail Crossing .....Square Yard

**Protective Ovly, Snowmobile Trail Crossing** will be measured based on actual field quantity.

**Table 1: Approved Two Component 100% Solids Epoxy Systems**

Supplier	Product	Contact Information
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
E-Chem	EP50	E-Chem, LLC (Ray Breer) 2944 William St. SE Albuquerque, NM 87102 (505) 217-2121
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

**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



**Table 3: Approved Aggregate Suppliers**

Earth Work Solutions – E.O. Sowerwine P.O. Box 1007 Gillette, WY 82717 (307) 682-4346
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
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 103 <sup>rd</sup> Ave. Ct. E Suite C302 Graham, WA 98338 (253) 377-3438

**Table 4: Anticipated Cure Time (Hours)**

Average Temp. of Deck, Epoxy and Aggregate Components, Degrees F.							
Temp Range	<60	60-65	65-70	70-75	75-80	80-85	>85
1 <sup>st</sup> Course		2	2	1.75	1.75	1.5	1
2 <sup>nd</sup> Course	(a)	2	2	1.75	1.75	1.5	1
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.							



**INDIVIDUAL CONSTRUCTION PERMIT**  
**For Operations within State Highway Right-of-Way**

**Issued To:**  
**Manistee County Road Commission**

**8946 Chippewa Hwy**  
**Bear Lake MI 49614**

**Contact:**  
**Mark Sohlden**  
**231-889-0000(O) 231-357-9807(Cell)**  
**manager@manisteecrc.org**

**Permit Number:** 51031-051773-18-011018  
**Permit Type:** Individual Application  
**Permit Fee:** \$.00  
**Effective Date:** Jan 10, 2018 to Jan 10, 2019  
**Bond Numbers:**  
**Liability Insurance Expiration Date:**

**Contractor:**  
**KPM ENGINEERING, PLLC**  
  
**1984 WALTON RD**  
**KINGSLEY MI 49649-9648**

**Contact:**  
  
**Gary Karttunen**  
  
**231-889-0000(O) 231-878-0869(Cell)**  
**garyk@kpmengineering.com**

**THIS PERMIT IS VALID ONLY FOR THE FOLLOWING PROPOSED OPERATIONS:**

**PURPOSE:**

This project includes placing chip seal, fog seal, and HMA paving on 13 various county roads within Manistee County. At 11 of these locations, there will be work within the vicinity of intersections with State trunklines (M-22, M-55, & US-31) and will likely involve the placement of temporary construction signing and traffic control devices within the ROW of M-22, M-55, & US-31. The locations are as follows: M-22 at Schoedel Rd (begins 76' east of M-22), US-31 at Schoedel Rd (begins 115' west of US-31), M-55 at S.Skocelas Rd (begins 84' south of M-55 and 75' north of M-55), US-31 at 11 Mile Rd (begins 111' east of US-31), M-22 at 13 Mile Road (begins 56' west of M-22 and 62' east of M-22), M-55 at Udell Hills Rd (begins 90' south of M-55), M-22 at Potter Road (begins 89' west of M-22), M-22 at Ellen Rd (begins 16' north of M-22), M-55 at Olson Rd (begins 60' east of M-55). Log Plans and Maintaining Traffic SP attached.

**STATE ROUTE:** M-22      **TOWNSHIP OF:** Manistee      **COUNTY:** Manistee County  
**TOWN**      **RANGE**      **SECTION**  
T 22 N      R 16 W      10

<b>NEAREST INTERSECTION:</b>	<b>SIDE OF ROAD:</b>	<b>DISTANCE TO NEAREST INTERSECTION:</b>	<b>(in feet)</b>	<b>DIRECTION TO NEAREST INTERECTION:</b>
M-22	E	76.00		West

<b>CONTROL SECTION:</b>	<b>MILE POINT FROM:</b>	<b>MILE POINT TO:</b>	<b>LOCATION:</b>			
51031	2.230	2.230	LEFT	MEDIAN	RIGHT	TRANSVERSE
			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**REQUISITION NUMBER:**      **WORK ORDER NUMBER:**      **MDOT JOB NUMBER:**      **ORG JOB NUMBER:**

**51031-051773-18-011018 Issued To:Manistee County Road Commission****This permit is incomplete without "General Conditions and Supplemental Specifications"****I certify that I accept the following:**

1. I am the legal owner of this property or facility, the owner's authorized representative, or have statutory authority to work within state highway Right-of-Way.
2. Commencement of work set forth in the permit application constitutes acceptance of the permit as issued.
3. Failure to object, ***within ten (10) days*** to the permit as issued constitutes acceptance of the permit as issued.
4. If this permit is accepted by either of the above methods, I will comply with the provisions of the permit.
5. I agree that Advance Notice for Permitted Activities for shall be submitted **5 days prior** to the commencement of the proposed work.

I agree that Advance Notice for Permitted Utility Tree Trimming and Tree Removal Activities shall be submitted **15 days prior** to the commencement of the proposed work for an annual permit.

**CAUTION**

**Work shall NOT begin until the Advance Notice has been approved.  
Failure to submit the advance notice may result in a Stop Work Order.**

-----  
**Manistee County Road  
 Commission**

**Jeremy Wiest**  
 MDOT

January 10, 2018  
 Approved Date

-----

**TSC Contact Info**

**Traverse City T**

**(231) 941-1986**

**THE STANDARD ATTACHMENTS, ATTACHMENTS AND SPECIAL CONDITIONS MARKED BELOW  
 ARE A PART OF THIS PERMIT.**

**STANDARD ATTACHMENTS:**

- 1 Special Conditions For Underground Construction (2205C)
- 2 General Conditions for Permit (General Conditions)
- 3 ENVIRONMENTAL REQUIREMENTS FORACTIVITIES WITHIN MDOT RIGHT-OF-WAY (2486)
- 4 The Northern Long Ear and Indiana Bat Advisory (Bat Advisory)
- 5 Historical and Archaeological Discoveries During Construction Operations (Const. Advisory Historical/Archae

**ADDITIONAL ATTACHMENTS:**

- 1 2018 County Wide Wedge & CS Plans & Specs.pdf
- 2 County Wide Wedge & Chip Seal MOT.pdf
- 3 mdot\_wzd-125-e (Temporary Traffic Control Devices).pdf
- 4 mdot\_wzd-100-a (Ground Driven Sign Supports For Temp Signs).pdf
- 5 m0050a (Advance Signing).pdf

**51031-051773-18-011018 Issued To:Manistee County Road Commission**

**AMENDMENT ATTACHMENTS:**

**SPECIAL CONDITIONS:**

- 1 The Department of Transportation does not, by issuance of this permit, assume any liability claims or maintenance costs resulting from the local agency workzone signing facility placed by this permit. The Department reserves the right to require removal of all or any portion of this facility as needed for highway maintenance or construction purposes without replacement or reimbursement of any costs incurred by the permitted or other party. The permitted will defend, indemnify and hold harmless the Department for any claims whatsoever resulting from the construction or the removal of the authorized by this permit.
- 2 All disturbed areas within the right of way shall be top-soiled, seeded and mulched to match existing areas per current MDOT standards and specifications.
- 3 Permittee shall submit an Advance Notice 5 days prior to starting any work within the MDOT right-of-way.
- 4 All work zone signage shall follow the attached typical and conform to the current version of the MMUTCD.