# Manistee County Road Commission
# Plans and Specifications
**January 11, 2019**

# 2019 Local HMA Wedging &Chip Seal

## Project Locations

**1). Chief Road, from Coates Hwy to 11 Mile Road**
**(5.99 Miles)**
**Brown & Bear Lake Townships**

**2). Collins Road, from Kerry Road to Lyman Road**
**(0.99 Miles)**
**Brown Township**

**3). Litzen/Simpson/Viaduct Roads, from Faylor Road to Lindy Road**
**(3.06 Miles)**
**Cleon Township**

**4). Marilla Road, from Coates Hwy to Faylor Road**
**(13.28 Miles)**
**Dickson, Marilla, & Cleon Townships**

**5). North Skocelas Road, from Pine Creek Road to North End of Road**
**(2.94 Miles)**
**Stronach & Brown Townships**

**6). Butwell Road, from Norconk Road to Glovers Lake Road**
**(2.50 Miles)**
**Pleasanton Township**

**7). Keillor Road, from Glovers Lake Road to Taylor Road**
**(1.84 Miles)**
**Pleasanton Township**

**8). Taylor Road, from Keillor Rd to Putney Road**
**(0.28 Miles)**
**Pleasanton Township**

**9). Lindy Road, from 0.837 miles west of Viaduct Rd to No.1 Rd**
**(1.83 Miles)**
**Cleon Township**

**10). Erdman Road, from 11 Mile Road to 13 Mile Road**
**(1.88 Miles)**
**Onekama Township**

# MANISTEE COUNTY ROAD COMMISSION

PLANS OF PROPOSED IMPROVEMENTS TO

## CHIEF RD, COLLINS RD, LITZEN/SIMPSON/VIADUCT RD, MARILLA RD, NO SKOCELAS RD, BUTWELL RD, KEILLOR RD, TAYLOR RD, LINDY RD, ERDMAN RD

**INDEX TO SHEETS**


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| 1 | TITLE SHEET |
| 2-18 | DESCRIPTION OF WORK |
| 19-21 | TYPICAL SECTION SHEETS |
| 22-46 | STRIP PLAN SHEETS |


## BEAR LAKE, BROWN, CLEON, DICKSON, MARILLA, STRONACH, ONEKAMA & PLEASANTON TWPS
## MANISTEE COUNTY

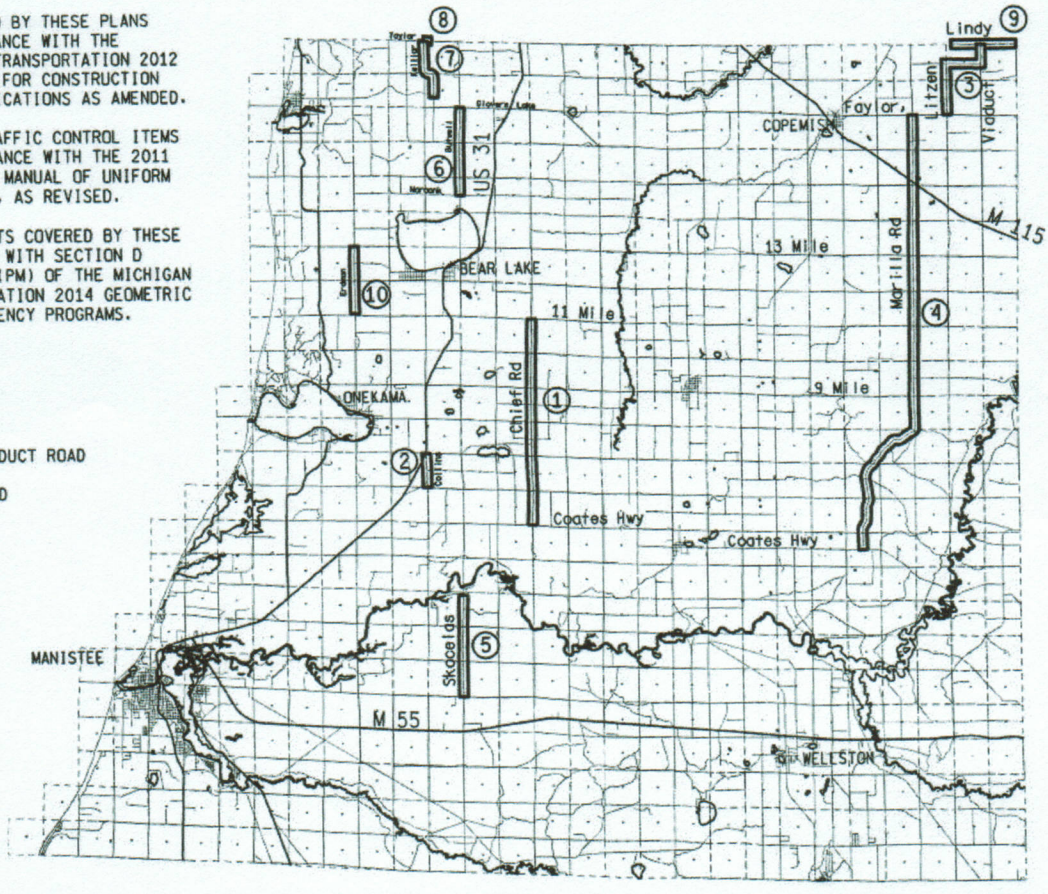
THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2012 STANDARD SPECIFICATIONS FOR CONSTRUCTION AND SUPPLEMENTAL SPECIFICATIONS AS AMENDED.

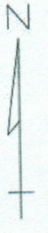
PLACING OF TEMPORARY TRAFFIC CONTROL ITEMS SHALL BE DONE IN ACCORDANCE WITH THE 2011 EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, AS REVISED.

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.

**PROJECT LOCATIONS**

| | |
|---|---|
| 1 | CHIEF ROAD |
| 2 | COLLINS ROAD |
| 3 | LITZEN/SIMPSON/VIADUCT ROAD |
| 4 | MARILLA ROAD |
| 5 | NORTH SKOCELAS ROAD |
| 6 | BUTWELL ROAD |
| 7 | KEILLOR ROAD |
| 8 | TAYLOR ROAD |
| 9 | LINDY ROAD |
| 10 | ERDMAN ROAD |




811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

PROJECT LENGTH: 34.59 MILES
CONTRACT FOR: CHIP SEAL, FOG SEAL & INTERMITTENT HMA PAVING

STATE OF MICHIGAN
GARY L. KARTTUNEN
ENGINEER
No. 30565
LICENSED PROFESSIONAL ENGINEER

PREPARED UNDER SUPERVISION OF

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

1/8/19

KPM Engineering
CIVIL ENGINEERING CONSULTANTS

COUNTY ROAD COMMISSION APPROVAL

MARK P. SOHLDEN, MCRC MANAGER — DATE 1/9/19

SHEET NO. 1

9:16:25 AM 1/4/2019

## PROJECT LOGS

## 2019 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
## CHIEF ROAD, FROM COATES HWY TO 11 MILE ROAD
## BROWN & BEAR LAKE TWPS

**Project Location:**
The project is on Chief Road, from 16' north of the centerline of Coates Hwy (POB = Station 10+16) northerly to 11' south of the centerline of 11 Mile Road (POE = Station 326+27). This segment length is 5.99 miles.

Refer to the Project Title Sheet.

**Description of Work:**
The work at this location involves 5.99 miles of Chip Seal and Fog Seal, intermittent Hot Mix Asphalt (HMA) skip paving and quarter crown wedging, aggregate shoulders, and maintaining traffic.

**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, Cl 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 9 Mile Road intersection (Station 220+56 to 222+02).

| | | |
|---|---|---|
| **HMA, 4E1** (Skip Paving) | **296** | **Ton** |
| **HMA, 4E1** (Quarter Crown Wedging) | **514** | **Ton** |
| **Chip Seal – Modified** | **77,068** | **Syd** |

## PROJECT LOGS

## 2019 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING
## MANISTEE COUNTY

| | | |
|---|---|---|
| **Fog Seal – Modified** | **77,068** | **Syd** |
| **Shoulder, Cl II** | **945** | **Ton** |
| **Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional** | **632** | **Ea** |
| **Traffic Control** | **0.17** | **LSUM** |
| Pavt Mrkg, Waterborne, 4 inch, White * | 62,930 | Ft |
| Pavt Mrkg, Waterborne, 4 inch, Yellow * | 27,119 | Ft |

Items marked with an * are not a part of this contract. Pavement Markings will be placed by others after completion of the project.

## LOCATION # 2
## COLLINS ROAD, FROM KERRY ROAD TO LYMAN ROAD
## BROWN TWP

**Project Location:**
The project is on Collins Road, from 60’ north of the centerline of Kerry Road (POB = Station 10+60) northerly to 21’ south of the centerline of Lyman Road (POE = Station 62+64). This segment length is 0.99 miles.

Refer to the Project Title Sheet.

**Description of Work:**
The work at this location involves 0.99 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.

| | | |
|---|---|---|
| **Chip Seal – Modified** | **16,896** | **Syd** |
| **Fog Seal – Modified** | **16,896** | **Syd** |
| **Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional** | **104** | **Ea** |
| **Traffic Control** | **0.03** | **LSUM** |
| Pavt Mrkg, Waterborne, 4 inch, White * | 10,408 | Ft |
| Pavt Mrkg, Waterborne, 4 inch, Yellow * | 4,224 | Ft |

Items marked with an * are not a part of this contract. Pavement Markings will be placed by others after completion of the project.

**PROJECT LOGS**

**2019 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING**
**MANISTEE COUNTY**

## LOCATION # 3
## LITZEN/SIMPSON/VIADUCT ROAD, FROM FAYLOR ROAD TO LINDY ROAD
## CLEON TWP

**Project Location:**
The project is on Litzen/Simpson/Viaduct Road, from 11' north of the centerline of Faylor Road (POB = Station 10+11) northerly to 11' south of the centerline of Lindy Road (POE = Station 171+46). 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, and maintaining traffic.

**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, Cl 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.

| | | |
|---|---|---|
| **HMA, 4E1** (Skip Paving) | **67** | **Ton** |
| **HMA, 4E1** (Quarter Crown Wedging) | **1,228** | **Ton** |
| **Chip Seal – Modified** | **38,125** | **Syd** |
| **Fog Seal – Modified** | **38,125** | **Syd** |
| **Shoulder, Cl II** | **2,117** | **Ton** |
| **Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional** | **323** | **Ea** |
| **Traffic Control** | **0.09** | **LSUM** |
| Pavt Mrkg, Waterborne, 4 inch, White * | 32,270 | Ft |
| Pavt Mrkg, Waterborne, 4 inch, Yellow * | 17,295 | Ft |

Items marked with an * are not a part of this contract. Pavement Markings will be placed by others after completion of the project.

**PROJECT LOGS**

**2019 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING**
**MANISTEE COUNTY**

## LOCATION # 4
## MARILLA, FROM COATES HWY TO FAYLOR ROAD
## DICKSON, MARILLA & CLEON TWPS

**Project Location:**
The project is on Marilla Road, from 56' north of the centerline of Coates Hwy (POB = Station 10+56) northerly to 11' south of the centerline of Faylor Road (POE = Station 711+60). This segment length is 13.28 miles.

Refer to the Project Title Sheet.

**Description of Work:**
The work at this location involves 13.28 miles of Chip Seal and Fog Seal, intermittent Hot Mix Asphalt (HMA) skip paving and quarter crown and centerline wedging, edge trimming, aggregate shoulders, and maintaining traffic.

**Items of Work:**
In accordance with the typical cross sections, place intermittent full width HMA skip paving and quarter crown and centerline wedging at the locations indicated. Exact locations will be as directed by the Engineer. Perform Edge Trimming – Modified between 9 Mile Road and Beers Road where directed by the Engineer. Adjust monument box at 9 Mile Road (Station 287+44) and Rice Road (Station 605+27). Install monument box at Valencourt Road (Station 552+10). Bring up shoulders with Shoulder, Cl II as needed.

Place Chip Seal - Modified and Fog Seal – Modified on the pavement in accordance with the applicable special provisions. Omit these items at the HMA overlay locations from Station 164+00 to 186+00 and from Station 285+50 to 288+00. Gap out the 13 Mile Road and M-115 intersections. **Cover and protect the existing stop rumble strips north and south of the 13 Mile Road intersection prior to chip and fog sealing.**

| | | |
|---|---|---|
| **HMA, 4E1** (Skip Paving) | **1,252** | **Ton** |
| **HMA, 4E1** (Quarter Crown Wedging) | **435** | **Ton** |
| **HMA, 4E1** (Centerline Wedging) | **215** | **Ton** |
| **Edge Trimming – Modified** | **900** | **Ft** |
| **HMA, 4E1** (for Edge Trimming – Modified) | **52** | **Tons** |
| **Chip Seal – Modified** | **168,593** | **Syd** |
| **Fog Seal – Modified** | **168,593** | **Syd** |

## PROJECT LOGS

## 2019 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING
## MANISTEE COUNTY

| | | |
|---|---|---|
| **Shoulder, Cl II** | **1,074** | **Ton** |
| **Monument Box Adjust** | **2** | **Ea** |
| **Monument Box** | **1** | **Ea** |
| **Monument Preservation** | **1** | **Ea** |
| **Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional** | **1,348** | **Ea** |
| **Traffic Control** | **0.39** | **LSUM** |
| Pavt Mrkg, Waterborne, 4 inch, White * | 139,746 | Ft |
| Pavt Mrkg, Waterborne, 4 inch, Yellow * | 79,796 | Ft |

Items marked with an * are not a part of this contract. Pavement Markings will be placed by others after completion of the project.

## LOCATION # 5
## NORTH SKOCELAS ROAD, FROM PINE CREEK RD TO NORTH END OF ROAD
## STRONACH & BROWN TWPS

**Project Location:**
The project is on North Skocelas Road, from 37’ south of the centerline of Pine Creek Road (POB = Station 9+63) northerly to the northerly end of road (POE = Station 165+05). This segment length is 2.94 miles.

Refer to the Project Title Sheet.

**Description of Work:**
The work at this location involves 2.94 miles of Chip Seal and Fog Seal, intermittent Hot Mix Asphalt (HMA) skip paving and quarter crown wedging, aggregate shoulders, and maintaining traffic.

**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, Cl 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

## 2019 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING
## MANISTEE COUNTY

Prior to placing the full width Chip Seal – Modified, place a 4' strip of Chip Seal – Modified along each edge of pavement. Omit this work where HMA preparation work is performed (HMA ship patches and HMA quarter crown wedging).

| | | |
|---|---|---|
| **HMA, 4E1** (Skip Paving) | **94** | **Ton** |
| **HMA, 4E1** (Quarter Crown Wedging) | **231** | **Ton** |
| **Chip Seal – Modified** | **46,327** | **Syd** |
| **Fog Seal – Modified** | **36,023** | **Syd** |
| **Shoulder, Cl II** | **390** | **Ton** |
| **Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional** | **311** | **Ea** |
| **Traffic Control** | **0.09** | **LSUM** |
| Pavt Mrkg, Waterborne, 4 inch, White * | 31,084 | Ft |
| Pavt Mrkg, Waterborne, 4 inch, Yellow * | 6,586 | Ft |

Items marked with an * are not a part of this contract. Pavement Markings will be placed by others after completion of the project.

## LOCATION # 6
## BUTWELL ROAD, FROM NORCONK ROAD TO GLOVERS LAKE ROAD
## PLEASANTON TWP

**Project Location:**
The project is on Butwell Road, from 11' north of the centerline of Norconk Road (POB = Station 10+11) northerly to 11' south of the centerline of Glovers Lake Road (POE = Station 142+15). This segment length is 2.50 miles.

Refer to the Project Title Sheet.

**Description of Work:**
The work at this location involves 2.50 miles of Chip Seal and Fog Seal, intermittent Hot Mix Asphalt (HMA) quarter crown wedging, aggregate shoulders, and maintaining traffic.

**Items of Work:**
In accordance with the typical cross sections, place intermittent quarter crown wedging at the locations indicated. Exact locations will be as directed by the Engineer. Bring up shoulders with Shoulder, Cl II as needed.

## PROJECT LOGS

## 2019 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING
## MANISTEE COUNTY

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

| | | |
|---|---|---|
| **HMA, 4E1** (Quarter Crown Wedging) | **67** | **Ton** |
| **Chip Seal – Modified** | **32,336** | **Syd** |
| **Fog Seal – Modified** | **32,336** | **Syd** |
| **Shoulder, Cl II** | **104** | **Ton** |
| **Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional** | **264** | **Ea** |
| **Traffic Control** | **0.07** | **LSUM** |
| Pavt Mrkg, Waterborne, 4 inch, White * | 26,408 | Ft |
| Pavt Mrkg, Waterborne, 4 inch, Yellow * | 9,714 | Ft |

Items marked with an * are not a part of this contract. Pavement Markings will be placed by others after completion of the project.

## LOCATION # 7
## KEILLOR ROAD, FROM GLOVERS LAKE ROAD TO TAYLOR ROAD
## PLEASANTON TWP

**Project Location:**
The project is on Keillor Road, from 200’ north of the centerline of Glovers Lake Road (POB = Station 12+00) northerly to 10’ south of the centerline of Taylor Road (POE = Station 108+95). This segment length is 1.84 miles.

Refer to the Project Title Sheet.

**Description of Work:**
The work at this location involves 1.84 miles of Chip Seal and Fog Seal, intermittent Hot Mix Asphalt (HMA) quarter crown wedging, aggregate shoulders, and maintaining traffic.

**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, Cl 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**

**2019 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING**
**MANISTEE COUNTY**

| | | |
|---|---|---|
| **HMA, 4E1** (Quarter Crown Wedging) | **155** | **Ton** |
| **Chip Seal – Modified** | **21,574** | **Syd** |
| **Fog Seal – Modified** | **21,574** | **Syd** |
| **Shoulder, Cl II** | **250** | **Ton** |
| **Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional** | **194** | **Ea** |
| **Traffic Control** | **0.05** | **LSUM** |
| Pavt Mrkg, Waterborne, 4 inch, White * | 19,390 | Ft |
| Pavt Mrkg, Waterborne, 4 inch, Yellow * | 9,009 | Ft |

Items marked with an * are not a part of this contract. Pavement Markings will be placed by others after completion of the project.

**LOCATION # 8**
**TAYLOR ROAD, FROM KEILLOR ROAD TO PUTNEY ROAD**
**PLEASANTON TOWNSHIP**

**Project Location:**
The project is on Taylor Road from 64' west of the centerline of Keillor Road (POB = Station 9+36) thence easterly to 69' east of the centerline of Putney Road (POE = Station 23+92). This segment length is 1456' (0.28 mile).

Refer to the Project Title Sheet.

**Description of Work:**
The work at this location involves 0.28 mile of Chip Seal and Fog Seal, intermittent Hot Mix Asphalt (HMA) quarter crown wedging, aggregate shoulders, and maintaining traffic.

**Items of Work:**
In accordance with typical cross sections, place intermittent quarter crown wedging on the existing pavement. Exact locations will be as directed by the Engineer. Bring up the shoulders with Shoulder, CL 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.

| | | |
|---|---|---|
| **HMA, 4E1** (Quarter Crown Wedging) | **90** | **Ton** |
| **Chip Seal – Modified** | **3,400** | **Syd** |
| **Fog Seal – Modified** | **3,400** | **Syd** |

| | | |
|---|---|---|
| **Shoulder, Cl II** | **75** | **Ton** |
| **Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional** | **37** | **Ea** |
| **Traffic Control** | **0.01** | **LSUM** |
| Pavt Mrkg, Waterborne, 4 inch, Yellow * | 1,696 | Ft |

Items marked with an * are not a part of this contract. Pavement markings will be placed by others after completion of the project.

## LOCATION # 9
## LINDY ROAD, FROM 0.837 MILE WEST OF VIADUCT ROAD TO No. 1 ROAD
## CLEON TOWNSHIP

**Project Location:**
The project is on Lindy Road from 0.837 mile (4418') west of the centerline of Viaduct Road (POB = Station 5+82) thence easterly to 34' west of the centerline of No. 1 Road (POE = Station 102+63). This segment length is 1.83 mile.

Refer to the Project Title Sheet.

**Description of Work:**
The work at this location involves 1.83 miles of Chip Seal and Fog Seal, intermittent Hot Mix Asphalt (HMA) quarter crown wedging, aggregate shoulders, and maintaining traffic.

**Items of Work:**
In accordance with typical cross sections, place intermittent quarter crown wedging on the existing pavement. Exact locations will be as directed by the Engineer. Bring up the shoulders with Shoulder, CL 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.

| | | |
|---|---|---|
| **HMA, 4E1** (Quarter Crown Wedging) | **550** | **Ton** |
| **Chip Seal – Modified** | **23,670** | **Syd** |
| **Fog Seal – Modified** | **23,670** | **Syd** |
| **Shoulder, Cl II** | **500** | **Ton** |
| **Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional** | **194** | **Ea** |
| **Traffic Control** | **0.05** | **LSUM** |
| Pavt Mrkg, Waterborne, 4 inch, White * | 19,312 | Ft |

**PROJECT LOGS**

**2019 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING**
**MANISTEE COUNTY**

| | | |
|---|---|---|
| Pavt Mrkg, Waterborne, 4 inch, Yellow * | 8,506 | Ft |

Items marked with an * are not a part of this contract. Pavement markings will be placed by others after completion of the project.

**LOCATION # 10**
**ERDMAN ROAD**
**FROM 0.09 MILE NORTH OF 11 MILE ROAD TO 13 MILE ROAD**
**ONEKAMA TOWNSHIP**

**Project Location:**
The project is on Erdman Road from 0.09 mile (492') north of the centerline of 11 Mile Road (POB = Station 4+92) thence northerly to 12' south of the centerline of 13 Mile Road (POE = Station 104+06). This segment length is 1.88 mile.

Refer to the Project Title Sheet.

**Description of Work:**
The work at this location involves 1.88 miles of Chip Seal and Fog Seal, intermittent Hot Mix Asphalt (HMA) quarter crown wedging, aggregate shoulders, and maintaining traffic.

**Items of Work:**
In accordance with typical cross sections, place intermittent quarter crown wedging on the existing pavement at the locations indicated. Exact locations will be as directed by the Engineer. Bring up the shoulders with Shoulder, CL 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.

| | | |
|---|---|---|
| **HMA, 4E1** (Quarter Crown Wedging) | **550** | **Ton** |
| **Chip Seal – Modified** | **23,252** | **Syd** |
| **Fog Seal – Modified** | **23,252** | **Syd** |
| **Shoulder, Cl II** | **550** | **Ton** |
| **Raised Pavt Marker, Temp, Type 1, Yellow, Bidirectional** | **204** | **Ea** |
| **Traffic Control** | **0.05** | **LSUM** |
| Pavt Mrkg, Waterborne, 4 inch, Yellow * | 4,900 | Ft |

## PROJECT LOGS

## 2019 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING
## MANISTEE COUNTY

Items marked with an * are not a part of this contract. Pavement markings will be placed by others after completion of the project.

## 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, Cl 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.

| | | |
|---|---|---|
| **Hand Patching** | **25** | **Ton** |
| **HMA, 4E1** | **500** | **Ton** |
| **Shoulder, Cl II** | **200** | **Ton** |
| **Monument Box** | **5** | **Ea** |
| **Monument Preservation** | **5** | **Ea** |

**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.

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

## LOG OF EXISTING PAVEMENT MARKINGS

The following pavement marking information is for information only. Permanent pavement markings will be placed by others after completion of the project.

Location # 1 – Chief Road

| | |
|---|---|
| Sta 10+16 to Sta 35+50 | Single Skip |
| Sta 35+50 to Sta 41+60 | NB Solid, SB Skip |
| Sta 41+60 to Sta 45+40 | Single Skip |
| Sta 45+40 to Sta 51+70 | NB Skip, SB Solid |
| Sta 51+70 to Sta 53+20 | Single Skip |
| Sta 53+20 to Sta 60+30 | NB Solid, SB Skip |
| Sta 60+30 to Sta 63+10 | Single Skip |
| Sta 63+10 to Sta 70+40 | NB Skip, SB Solid |
| Sta 70+40 to Sta 74+10 | Single Skip |
| Sta 74+10 to Sta 81+00 | NB Solid, SB Skip |
| Sta 81+00 to Sta 84+10 | Single Skip |
| Sta 84+10 to Sta 89+30 | NB Skip, SB Solid |
| Sta 89+30 to Sta 90+90 | Double Yellow |
| Sta 90+90 to Sta 95+30 | NB Solid, SB Skip |
| Sta 95+30 to Sta 99+30 | Single Skip |
| Sta 99+30 to Sta 105+30 | NB Skip, SB Solid |
| Sta 105+30 to Sta 108+10 | Single Skip |
| Sta 108+10 to Sta 113+00 | NB Solid, SB Skip |
| Sta 113+00 to Sta 118+50 | Single Skip |
| Sta 118+50 to Sta 123+10 | NB Skip, SB Solid |
| Sta 123+10 to Sta 141+70 | Single Skip |
| Sta 141+70 to Sta 151+70 | NB Solid, SB Skip |
| Sta 151+70 to Sta 152+80 | Double Yellow |
| Sta 152+80 to Sta 163+00 | NB Skip, SB Solid |

| | |
|---|---|
| Sta 163+00 to Sta 201+10 | Single Skip |
| Sta 201+10 to Sta 211+00 | NB Solid, SB Skip |
| Sta 211+00 to Sta 220+56 | NB Skip, SB Solid |
| Sta 220+56 to Sta 222+02 | Gap Out 9 Mile Intersection |
| Sta 222+02 to Sta 231+30 | Single Skip |
| Sta 231+30 to Sta 241+20 | NB Solid, SB Skip |
| Sta 241+20 to Sta 243+80 | Double Yellow |
| Sta 243+80 to Sta 253+70 | NB Skip, SB Solid |
| Sta 253+70 to Sta 265+00 | Single Skip |
| Sta 265+00 to Sta 273+50 | NB Solid, SB Skip |
| Sta 273+50 to Sta 274+80 | Single Skip |
| Sta 274+80 to Sta 280+80 | NB Skip, SB Solid |
| Sta 280+80 to Sta 283+70 | Double Yellow |
| Sta 283+70 to Sta 290+50 | NB Solid, SB Skip |
| Sta 290+50 to Sta 297+70 | NB Skip, SB Solid |
| Sta 297+70 to Sta 300+50 | Double Yellow |
| Sta 300+50 to Sta 307+60 | NB Solid, SB Skip |
| Sta 307+60 to Sta 316+60 | NB Skip, SB Solid |
| Sta 316+60 to Sta 317+60 | Double Yellow |
| Sta 317+60 to Sta 326+27 | NB Solid, SB Skip |

Location # 2 – Collins Road

| | |
|---|---|
| Sta 10+60 to Sta 21+40 | Single Skip |
| Sta 21+40 to Sta 31+20 | NB Solid, SB Skip |
| Sta 31+20 to Sta 36+70 | Double Yellow |
| Sta 36+70 to Sta 46+50 | NB Skip, SB Solid |
| Sta 46+50 to Sta 62+64 | Single Skip |

Location # 3 – Litzen/Simpson/Viaduct Roads

| | |
|---|---|
| Sta 10+11 to Sta 39+50 | Double Yellow |
| Sta 39+50 to Sta 49+20 | NB Skip, SB Solid |
| Sta 49+20 to Sta 79+10 | Single Skip |
| Sta 79+10 to Sta 88+20 | NB Solid, SB Skip |
| Sta 88+20 to Sta 89+90 | Double Yellow |
| Sta 89+90 to Sta 99+10 | NB Skip, SB Solid |
| Sta 99+10 to Sta 106+10 | Single Skip |
| Sta 106+10 to Sta 111+20 | NB Solid, SB Skip |
| Sta 111+20 to Sta 114+20 | Single Skip |

| | |
|---|---|
| Sta 114+20 to Sta 119+50 | NB Skip, SB Solid |
| Sta 119+50 to Sta 135+60 | Single Skip |
| Sta 135+60 to Sta 144+80 | NB Solid, SB Skip |
| Sta 144+80 to Sta 148+40 | Single Skip |
| Sta 148+40 to Sta 156+30 | NB Skip, SB Solid |
| Sta 156+30 to Sta 158+70 | Double Yellow |
| Sta 158+70 to Sta 163+80 | NB Solid, SB Skip |
| Sta 163+80 to Sta 171+46 | Double Yellow |

Location # 4 – Marilla Road

| | |
|---|---|
| Sta 10+56 to Sta 31+50 | Single Skip |
| Sta 31+50 to Sta 41+60 | NB Solid, SB Skip |
| Sta 41+60 to Sta 57+20 | Double Yellow |
| Sta 57+20 to Sta 67+50 | NB Skip, SB Solid |
| Sta 67+50 to Sta 77+90 | NB Solid, SB Skip |
| Sta 77+90 to Sta 235+70 | Double Yellow |
| Sta 235+70 to Sta 245+90 | NB Skip, SB Solid |
| Sta 245+90 to Sta 301+60 | Single Skip |
| Sta 301+60 to Sta 310+30 | NB Solid, SB Skip |
| Sta 310+30 to Sta 311+40 | Single Skip |
| Sta 311+40 to Sta 321+40 | NB Skip, SB Solid |
| Sta 321+40 to Sta 353+10 | Single Skip |
| Sta 353+10 to Sta 363+10 | NB Solid, SB Skip |
| Sta 363+10 to Sta 367+20 | Single Skip |
| Sta 367+20 to Sta 376+90 | NB Skip, SB Solid |
| Sta 376+90 to Sta 383+00 | Single Skip |
| Sta 383+00 to Sta 393+30 | NB Solid, SB Skip |
| Sta 393+30 to Sta 403+70 | NB Skip, SB Solid |
| Sta 403+70 to Sta 414+70 | Single Skip |
| Sta 414+70 to Sta 425+80 | NB Solid, SB Skip |
| Sta 425+80 to Sta 454+20 | Double Yellow |
| Sta 454+20 to Sta 463+70 | NB Skip, SB Solid |
| Sta 463+70 to Sta 486+10 | Single Skip |
| Sta 486+10 to Sta 498+00 | NB Solid, SB Skip |
| Sta 498+00 to Sta 500+08 | Double Yellow |
| Sta 500+08 to Sta 500+32 | Gap Out 13 Mile Rd Intersection |
| Sta 500+32 to Sta 505+50 | Double Yellow |
| Sta 505+50 to Sta 515+20 | NB Skip, SB Solid |

**PROJECT LOGS**

**2019 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING**
**MANISTEE COUNTY**

| | |
|---|---|
| Sta 515+20 to Sta 577+50 | Single Skip |
| Sta 577+50 to Sta 586+10 | NB Solid, SB Skip |
| Sta 586+10 to Sta 591+20 | Single Skip |
| Sta 591+20 to Sta 599+70 | NB Skip, SB Solid |
| Sta 599+70 to Sta 603+30 | Single Skip |
| Sta 603+30 to Sta 609+07 | NB Solid, SB Skip |
| Sta 609+07 to Sta 611+14 | Gap Out M-115 Intersection |
| Sta 611+14 to Sta 616+80 | Double Yellow |
| Sta 616+80 to Sta 625+30 | NB Solid, SB Skip |
| Sta 625+30 to Sta 628+60 | Single Skip |
| Sta 628+60 to Sta 637+90 | NB Skip, SB Solid |
| Sta 637+90 to Sta 640+40 | Single Skip |
| Sta 640+40 to Sta 649+60 | NB Solid, SB Skip |
| Sta 649+60 to Sta 651+00 | Single Skip |
| Sta 651+00 to Sta 661+50 | NB Skip, SB Solid |
| Sta 661+50 to Sta 663+30 | Single Skip |
| Sta 663+30 to Sta 671+60 | NB Solid, SB Skip |
| Sta 671+60 to Sta 673+40 | Single Skip |
| Sta 673+40 to Sta 678+80 | NB Skip, SB Solid |
| Sta 678+80 to Sta 683+40 | Double Yellow |
| Sta 683+40 to Sta 687+20 | NB Solid, SB Skip |
| Sta 687+20 to Sta 689+60 | Single Skip |
| Sta 689+60 to Sta 699+30 | NB Skip, SB Solid |
| Sta 699+30 to Sta 702+00 | Single Skip |
| Sta 702+00 to Sta 711+60 | NB Solid, SB Skip |

<u>Location # 5 – N.Skocelas Road</u>

| | |
|---|---|
| Sta 9+63 to Sta 26+70 | Single Skip |
| Sta 26+70 to Sta 30+20 | NB Solid, SB Skip |
| Sta 30+20 to Sta 97+50 | Single Skip |
| Sta 97+50 to Sta 103+90 | NB Solid, SB Skip |
| Sta 103+90 to Sta 107+50 | Single Skip |
| Sta 107+50 to Sta 113+90 | NB Skip, SB Solid |
| Sta 113+90 to Sta 134+90 | Single Skip |
| Sta 134+90 to Sta 140+10 | NB Solid, SB Skip |
| Sta 140+10 to Sta 144+90 | Single Skip |
| Sta 144+90 to Sta 150+40 | NB Skip, SB Solid |
| Sta 150+40 to Sta 165+05 | Single Skip |

**PROJECT LOGS**

**2019 LOCAL COUNTY-WIDE HMA WEDGING AND CHIP SEALING**
**MANISTEE COUNTY**

Location # 6 – Butwell Road

| | |
|---|---|
| Sta 10+11 to Sta 40+90 | Single Skip |
| Sta 40+90 to Sta 50+80 | NB Solid, SB Skip |
| Sta 50+80 to Sta 52+20 | Double Yellow |
| Sta 52+20 to Sta 62+20 | NB Skip, SB Solid |
| Sta 62+20 to Sta 88+50 | Single Skip |
| Sta 88+50 to Sta 96+00 | NB Solid, SB Skip |
| Sta 96+00 to Sta 98+40 | Single Skip |
| Sta 98+40 to Sta 106+10 | NB Skip, SB Solid |
| Sta 106+10 to Sta 118+50 | Single Skip |
| Sta 118+50 to Sta 128+60 | NB Solid, SB Skip |
| Sta 128+60 to Sta 132+50 | Double Yellow |
| Sta 132+50 to Sta 142+15 | NB Skip, SB Solid |

Location # 7 – Keillor Road

| | |
|---|---|
| Sta 12+00 to Sta 15+20 | Single Skip |
| Sta 15+20 to Sta 23+00 | NB Solid, SB Skip |
| Sta 23+00 to Sta 26+00 | Single Skip |
| Sta 26+00 to Sta 34+20 | NB Skip, SB Solid |
| Sta 34+20 to Sta 36+00 | Single Skip |
| Sta 36+00 to Sta 45+40 | NB Solid, SB Skip |
| Sta 45+40 to Sta 63+20 | Double Yellow |
| Sta 63+20 to Sta 72+50 | NB Skip, SB Solid |
| Sta 72+50 to Sta 108+95 | Single Skip |

Location # 8 – Taylor Road

| | |
|---|---|
| Sta 10+36 to Sta 20+12 | WB Skip, EB Solid |
| Sta 20+12 to Sta 22+50 | Double Yellow |

Location # 9 – Lindy Road

| | |
|---|---|
| Sta 5+82 to Sta 18+16 | Double Yellow |
| Sta 18+16 to Sta 34+75 | EB Skip, WB Solid |
| Sta 34+75 to Sta 55+07 | Single Skip |
| Sta 55+07 to Sta 64+75 | WB Skip, EB Solid |
| Sta 64+75 to Sta 69+18 | Single Skip |
| Sta 69+18 to Sta 75+34 | EB Skip, WB Solid |
| Sta 75+34 to Sta 84+11 | Double Yellow |

| | |
|---|---|
| Sta 84+11 to Sta 94+34 | EB Skip, WB Solid |
| Sta 94+34 to Sta 102+63 | Single Skip |

Location # 10 – Erdman Road

| | |
|---|---|
| Sta 4+92 to Sta 5+93 | Double Yellow |
| Sta 5+93 to Sta 15+90 | NB Skip, SB Solid |
| Sta 15+90 to Sta 19+20 | Single Skip |
| Sta 19+20 to Sta 25+48 | SB Skip, NB Solid |
| Sta 25+48 to Sta 29+20 | Single Skip |
| Sta 29+20 to Sta 35+44 | NB Skip, SB Solid |
| Sta 35+44 to Sta 103+60 | 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.

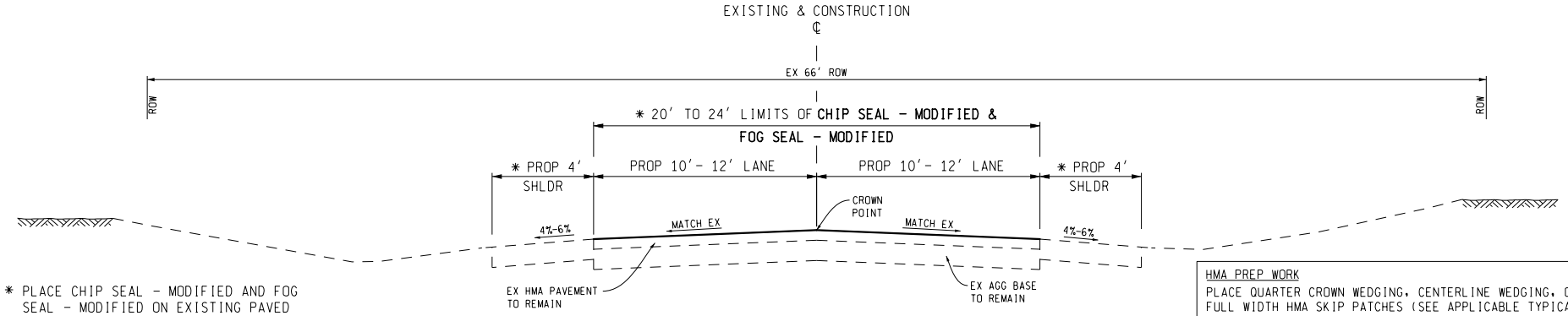
| | |
|---|---|
| MONUMENT BOXES | R-11-E |

**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.




* PLACE CHIP SEAL - MODIFIED AND FOG SEAL - MODIFIED ON EXISTING PAVED PORTIONS OF SHOULDERS WHERE INDICATED.

## PROPOSED CHIP SEAL SECTION

SECTION APPLIES:

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.

### CHIEF ROAD - LOCATION # 1

| STATIONING | WIDTH | COMMENTS |
|---|---|---|
| POB STA 10+16 TO STA 10+59 | 34' | APPROACH AREA |
| STA 10+59 TO STA 10+95 | 34' TO 22' | EX TAPER |
| STA 10+95 TO STA 220+56 | 22' | |
| STA 220+56 TO STA 222+02 | -- | GAP OUT 9 MILE INTERSECTION |
| STA 222+02 TO POE STA 326+27 | 22' | |

### COLLINS ROAD - LOCATION # 2

| STATIONING | WIDTH | COMMENTS |
|---|---|---|
| POB STA 10+60 TO STA 19+75 | 29' | |
| STA 19+75 TO STA 22+00 | 30' | |
| STA 22+00 TO STA 37+42 | 28' | |
| STA 37+42 TO STA 46+00 | 29' | HMA CURB LT |
| STA 46+00 TO STA 56+25 | 30' | HMA CURB LT & RT |
| STA 56+25 TO STA 59+44 | 30' | HMA CURB RT |
| STA 59+44 TO POE STA 62+64 | 31' & VAR | |

### LITZEN/SIMPSON/VIADUCT ROAD - LOCATION # 3

| STATIONING | WIDTH | COMMENTS |
|---|---|---|
| POB STA 10+11 TO POE STA 171+46 | 21' | |

### MARILLA ROAD - LOCATION # 4

| STATIONING | WIDTH | COMMENTS |
|---|---|---|
| POB STA 10+56 TO STA 164+00 | 22' | |
| STA 164+00 TO STA 186+00 | 22' | HMA SKIP PATCH, OMIT CHIP SEAL |
| STA 186+00 TO STA 285+50 | 22' | |
| STA 285+50 TO STA 288+00 | 22' & VAR | HMA SKIP PATCH, OMIT CHIP SEAL |
| STA 288+00 TO STA 312+80 | 23' | |
| STA 312+80 TO STA 315+05 | 30' & VAR | PAVED APPROACH RIGHT |
| STA 315+05 TO STA 455+25 | 22' | |
| STA 455+25 TO STA 455+90 | 28' | EX HMA CURB RT |
| STA 455+90 TO STA 461+75 | 30' | EX HMA CURB LT & RT |
| STA 461+75 TO STA 487+08 | 22' | |
| STA 487+08 TO STA 498+95 | 33' | EX HMA CURB LT & RT |
| STA 498+95 TO STA 500+08 | 22' | |
| STA 500+08 TO STA 500+32 | -- | GAP OUT 13 MILE INTERSECTION |
| STA 500+32 TO STA 504+30 | 25' | |
| STA 504+30 TO STA 608+28 | 22' | |
| STA 608+28 TO STA 609+07 | VAR 22' TO 39' | |
| STA 609+07 TO STA 611+14 | -- | GAP OUT M-115 INTERSECTION |

### MARILLA ROAD - LOCATION # 4 (CONTINUED)

| STATIONING | WIDTH | COMMENTS |
|---|---|---|
| STA 611+14 TO STA 611+70 | VAR 31' TO 24' | |
| STA 611+70 TO STA 675+00 | 24' | |
| STA 675+00 TO POE STA 711+60 | 21' | |

### BUTWELL ROAD - LOCATION # 6

| STATIONING | WIDTH | COMMENTS |
|---|---|---|
| POB STA 10+11 TO POE STA 142+15 | 22' | |

### KEILLOR ROAD - LOCATION # 7

| STATIONING | WIDTH | COMMENTS |
|---|---|---|
| POB STA 12+00 TO POE STA 108+95 | 20' | |

### TAYLOR ROAD - LOCATION # 8

| STATIONING | WIDTH | COMMENTS |
|---|---|---|
| POB STA 9+36 TO POE STA 23+92 | 21' | |

### LINDY ROAD - LOCATION # 9

| STATIONING | WIDTH | COMMENTS |
|---|---|---|
| POB STA 5+82 TO POE STA 102+63 | 22' | |

### ERDMAN ROAD - LOCATION # 10

| STATIONING | WIDTH | COMMENTS |
|---|---|---|
| POB STA 4+92 TO POE STA 104+06 | 21' | |

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

NO SCALE

KPM Engineering

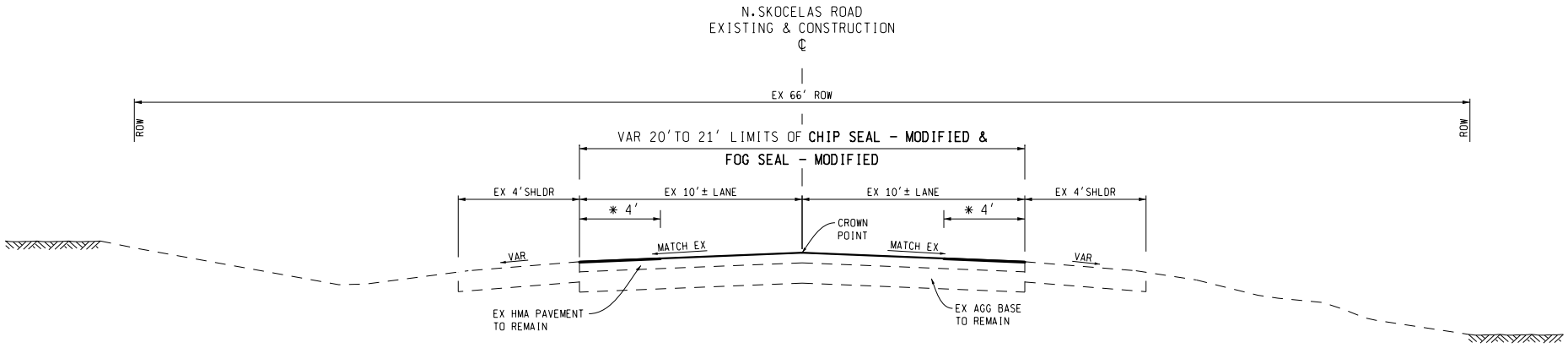
2019 LOCAL COUNTY WIDE HMA WEDGING AND CHIP SEALING TYPICAL SHEET 1

DATE: 1/4/2019

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

| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 19 |

1/4/2019 9:26:36 AM




## EXISTING/PROPOSED CHIP SEAL SECTION

SECTION APPLIES:

**N.SKOCELAS ROAD - LOCATION # 5**

| STATIONING | WIDTH |
|---|---|
| POB STA 9+63 TO STA 143+32 | 21' |
| STA 143+32 TO POE STA 165+05 | 20' |

* PLACE A 4' STRIP OF CHIP SEAL - MODIFIED ALONG EACH EDGE OF PAVEMENT PRIOR TO PLACING FULL WIDTH CHIP SEAL.

NOTE: GAP OUT THIS WORK WHERE HMA PREPARATION WORK IS PERFORMED (HMA SKIP PATCHES AND HMA 1/4 CROWN WEDGING).

HMA PREP WORK

PLACE QUARTER CROWN WEDGING AND HMA SKIP PATCHES 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

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM Engineering

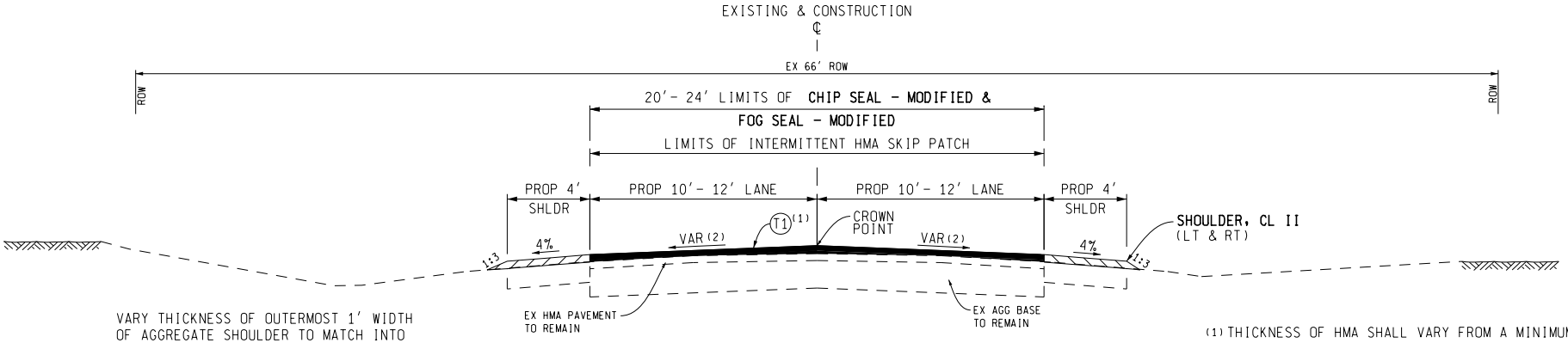
2019 LOCAL COUNTY WIDE HMA WEDGING AND CHIP SEALING
N.SKOCELAS ROAD TYPICAL

DATE: 1/4/2019

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

| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 20 |

9:28:11 AM 1/4/2019




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

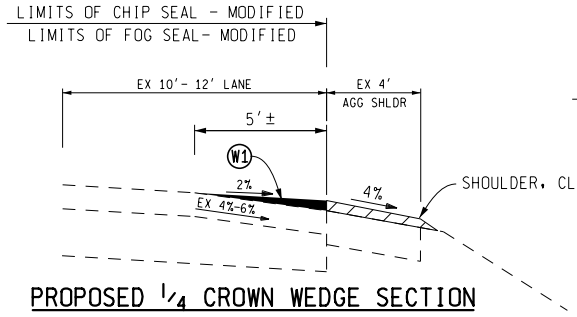
SECTION APPLIES:
WHERE CALLED FOR IN THE PLAN SHEETS

NOTES:

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

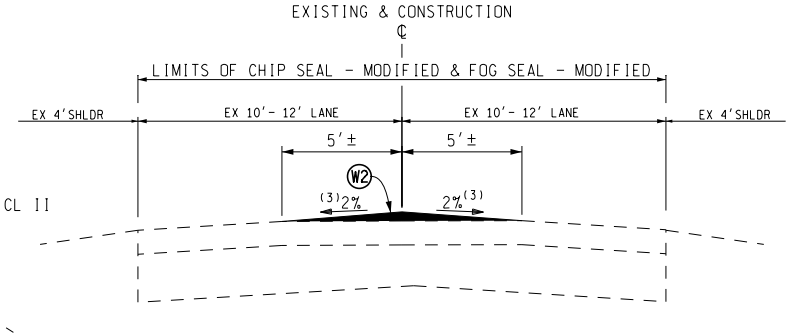
(1) THICKNESS OF HMA SHALL VARY FROM A MINIMUM OF 1.5 INCHES AT THE QUARTER CROWN TO 2± INCHES AT THE CENTERLINE AND EDGE OF PAVED SHOULDER TO OBTAIN UNIFORM LANE SLOPES (LT & RT).

(2) VARY SLOPE 1.5% TO 3.0% (2% DESIRABLE) AS DIRECTED BY THE ENGINEER. MATCH EX SUPERELEVATION IN SUPERELEVATED SECTIONS.




## PROPOSED 1/4 CROWN WEDGE SECTION

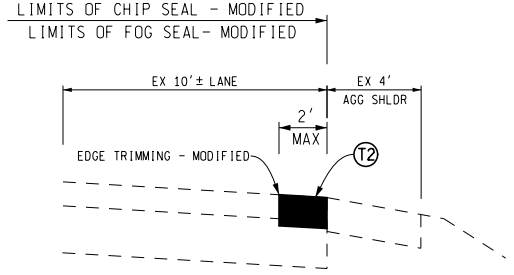
SECTION APPLIES:
WHERE CALLED FOR IN THE PLAN SHEETS




## 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




## PROPOSED EDGE TRIMMING - MODIFIED

PERFORM EDGE TRIMMING, - MODIFIED WHERE DIRECTED BY THE ENGINEER. FILL VOID WITH HMA, 4E1

### 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 |
| T2 | HMA, 4E1 | 330# (AVG) | PG 58-28 | FILL VOID FROM EDGE TRIMMING |
| | * BOND COAT | 0.05-0.15 GAL/SYD | | |

* FOR INFORMATION ONLY

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM Engineering

2019 COUNTY WIDE HMA WEDGING AND CHIP SEALING
TYPICAL SHEET 3

DATE: 1/4/2019

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

| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 21 |

1/4/2019 9:30:14 AM

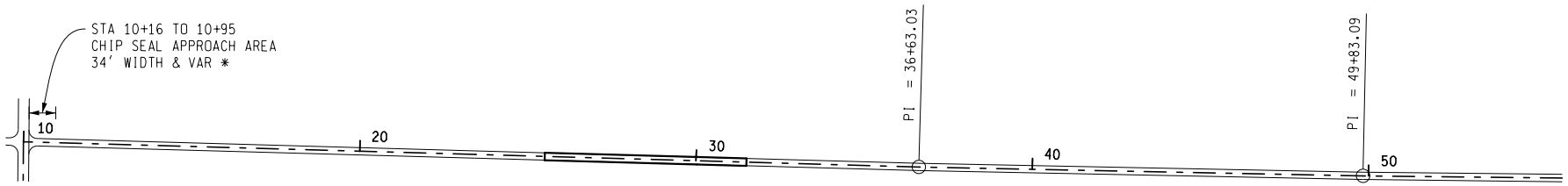
COATES HWY
STA 10+00

POB STA 10+16
CHIEF ROAD

STA 10+16 TO STA 100+00
CHIP SEAL & FOG SEAL
22' WIDTH (PLUS AREAS SHOWN WITH ✳)

N

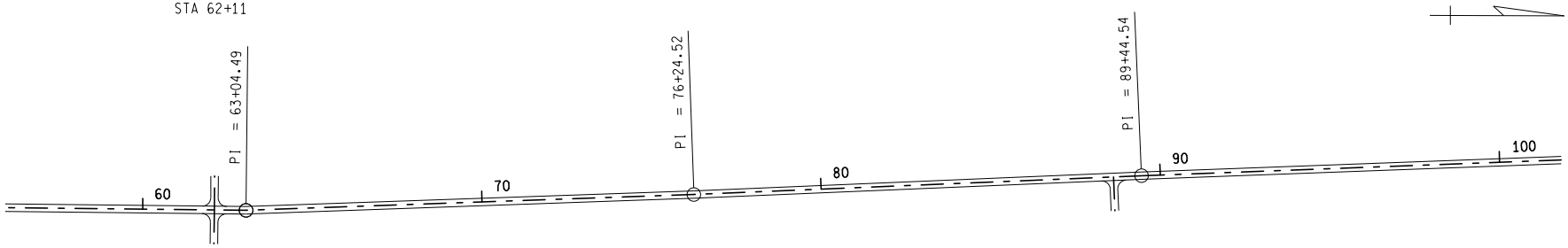
STA 10+16 TO 10+95
CHIP SEAL APPROACH AREA
34' WIDTH & VAR ✳




COATES HWY
STA 10+00

KERRY RD
STA 62+11

N




KERRY RD
STA 62+11

FELDHAK RD
STA 88+62

FULL WIDTH HMA SKIP PATCH
THIS SHEET (SHOWN ▭)

STA 25+50 TO STA 31+50

HMA 1/4 CROWN WEDGE
THIS SHEET

STA 11+00 TO STA 14+00 LT
STA 31+50 TO STA 43+00 LT
STA 48+00 TO STA 53+00 LT
STA 62+50 TO STA 74+00 LT
STA 83+50 TO STA 93+00 LT

STA 11+00 TO STA 16+00 RT
STA 31+50 TO STA 43+00 RT
STA 62+50 TO STA 74+00 RT
STA 83+50 TO STA 89+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 # 1

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

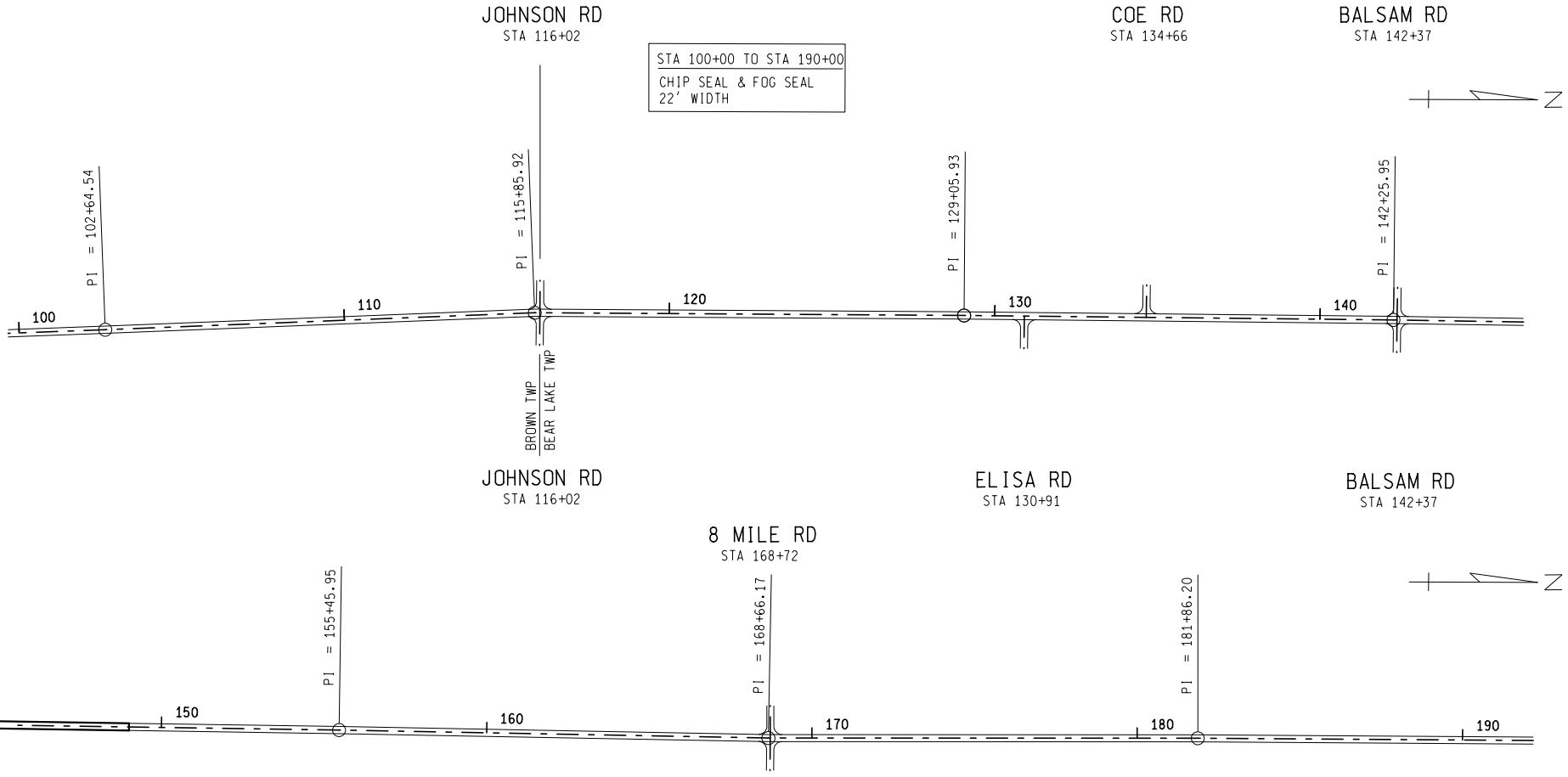
CHIEF ROAD
POB STA 10+16 TO STA 100+00
BROWN TWP

DATE: 1/8/2019

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

| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 22 |

1/8/2019 10:56:54 AM




FULL WIDTH HMA SKIP PATCH THIS SHEET (SHOWN ▭)

STA 144+50 TO STA 149+00

HMA 1/4 CROWN WEDGE THIS SHEET

STA 116+50 TO STA 120+00 LT
STA 151+00 TO STA 155+00 RT
STA 161+00 TO STA 165+00 LT
STA 171+50 TO STA 177+00 RT
STA 171+50 TO STA 186+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 # 1

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

CHIEF ROAD
STA 100+00 TO STA 190+00
BROWN & BEAR LAKE TWPS

DATE: 1/4/2019

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

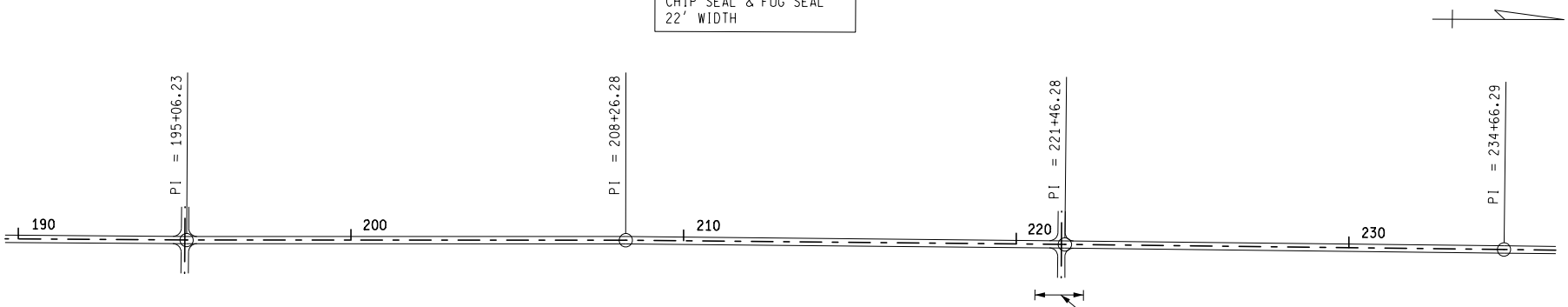
| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 23 |

1/4/2019 10:06:30 AM

TANNERVILLE RD
STA 195+01

STA 190+00 TO STA 220+56
STA 222+02 TO STA 280+00
CHIP SEAL & FOG SEAL
22' WIDTH

9 MILE RD
STA 221+36

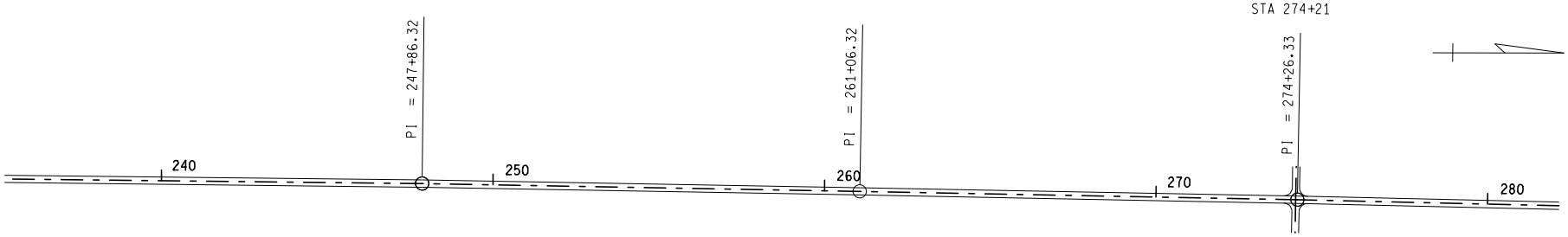



STA 220+56 TO 222+02
GAP OUT CHIP & FOG SEAL
ACROSS 9 MILE INTERSECTION

TANNERVILLE RD
STA 195+01

9 MILE RD
STA 221+36

MAIDENS RD
STA 274+21




MAIDENS RD
STA 274+21

HMA 1/4 CROWN WEDGE
THIS SHEET

STA 222+50 TO STA 234+00 LT
STA 252+00 TO STA 257+00 RT
STA 259+00 TO STA 261+00 LT
STA 275+00 TO STA 277+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 # 1

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

CHIEF ROAD
STA 190+00 TO STA 280+00
BEAR LAKE TWP

DATE: 1/4/2019

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

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

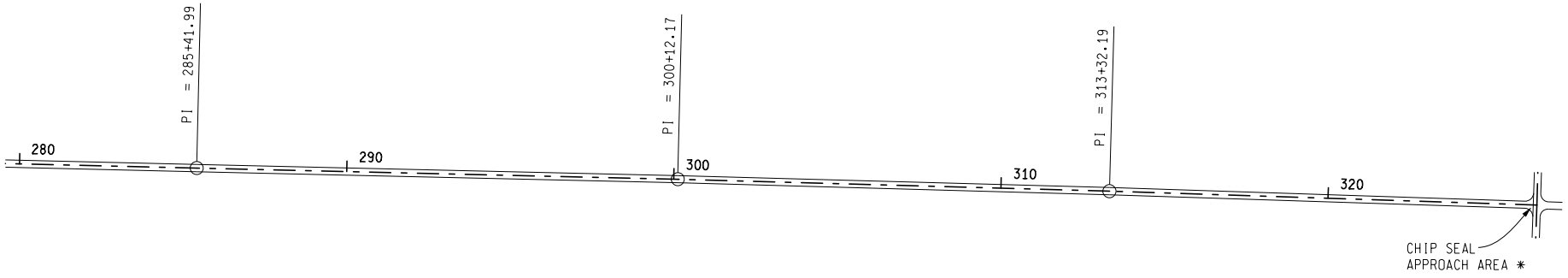
1/4/2019 10:06:34 AM

11 MILE RD
STA 326+38

STA 280+00 TO STA 326+27
CHIP SEAL & FOG SEAL
22' WIDTH (PLUS AREAS
SHOWN WITH *)

N

POE STA 326+27
CHIEF ROAD




11 MILE RD
STA 326+38

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

HMA 1/4 CROWN WEDGE
THIS SHEET
STA 299+00 TO STA 326+00 LT

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

LOCATION # 1

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

CHIEF ROAD
STA 280+00 TO POE STA 326+27
BEAR LAKE TWP

DATE: 1/4/2019

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

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

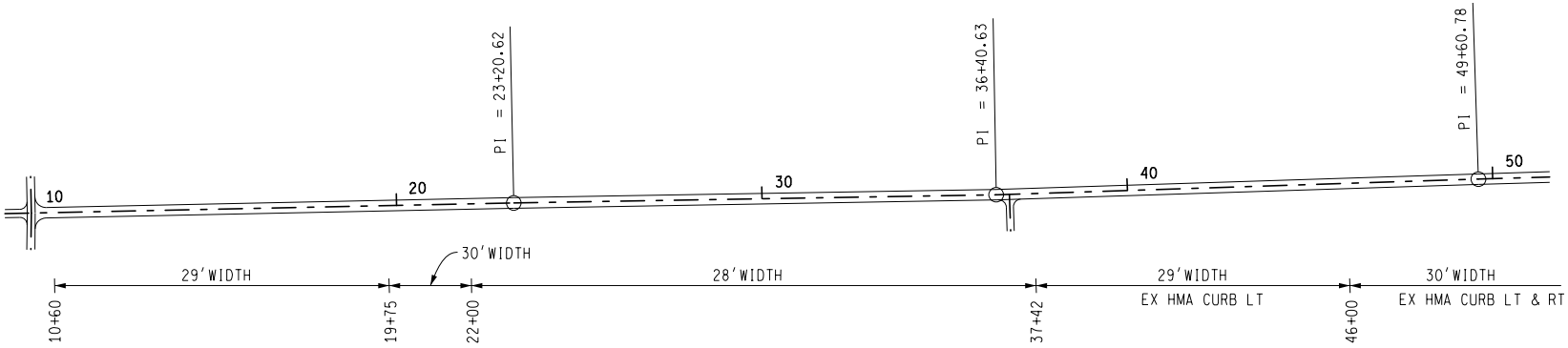
1/4/2019 10:06:39 AM

KERRY RD
STA 10+00

STA 10+60 TO STA 62+64
CHIP SEAL & FOG SEAL
VAR 28' TO 31' WIDTH

N

POB STA 10+60
COLLINS ROAD



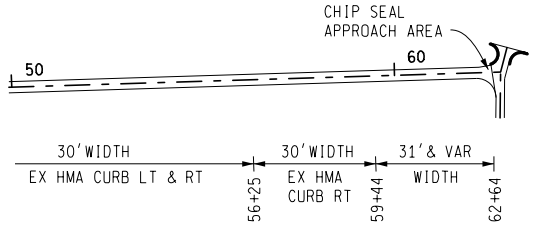

KERRY RD
STA 10+00

FELDHAK RD
STA 36+77

LYMAN RD
STA 62+85

POE STA 62+64
COLLINS ROAD

N




LYMAN RD
STA 62+85

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

LOCATION # 2

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

COLLINS ROAD
POB STA 10+60 TO POE STA 62+64
BROWN TWP

DATE: 1/4/2019

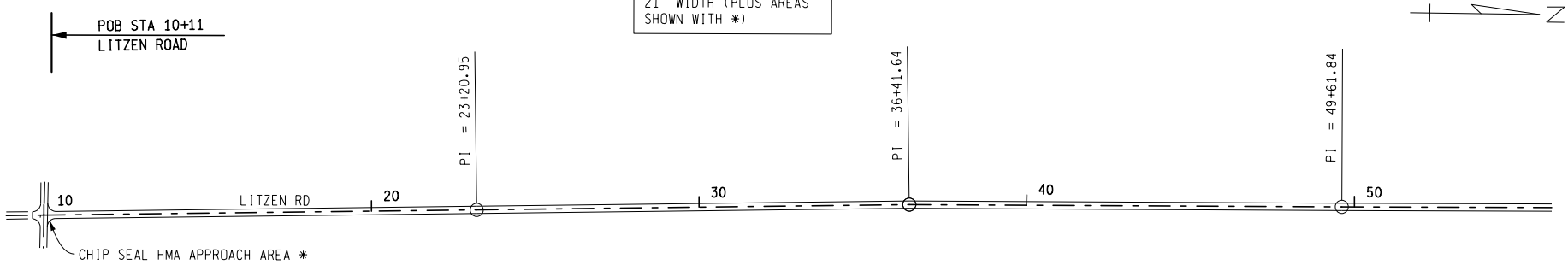
MANISTEE COUNTY ROAD COMMISSION
8946 CHIPPEWA HWY
BEAR LAKE, MI 49614

| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 26 |

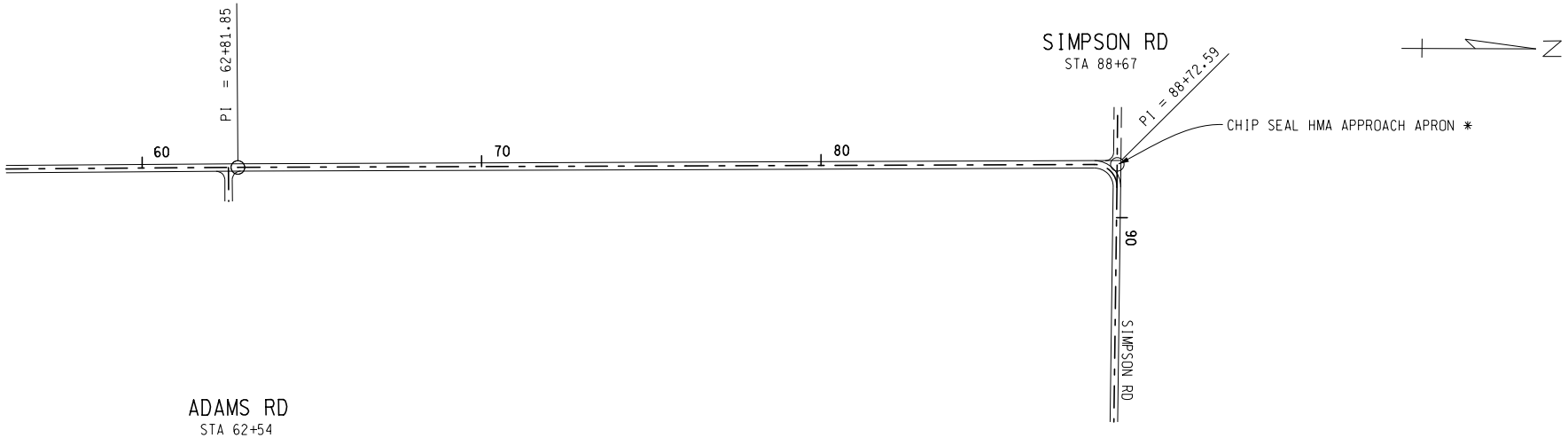
1/4/2019 10:06:42 AM

FAYLOR RD
STA 10+00

STA 10+11 TO STA 95+00
CHIP SEAL & FOG SEAL
21' WIDTH (PLUS AREAS SHOWN WITH ✳)




FAYLOR RD
STA 10+00




ADAMS RD
STA 62+54

HMA 1/4 CROWN WEDGE
THIS SHEET

STA 13+27 TO STA 95+00 RT
STA 15+11 TO STA 88+25 LT
STA 89+00 TO STA 95+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 # 3

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

NO SCALE

KPM ENGINEERING

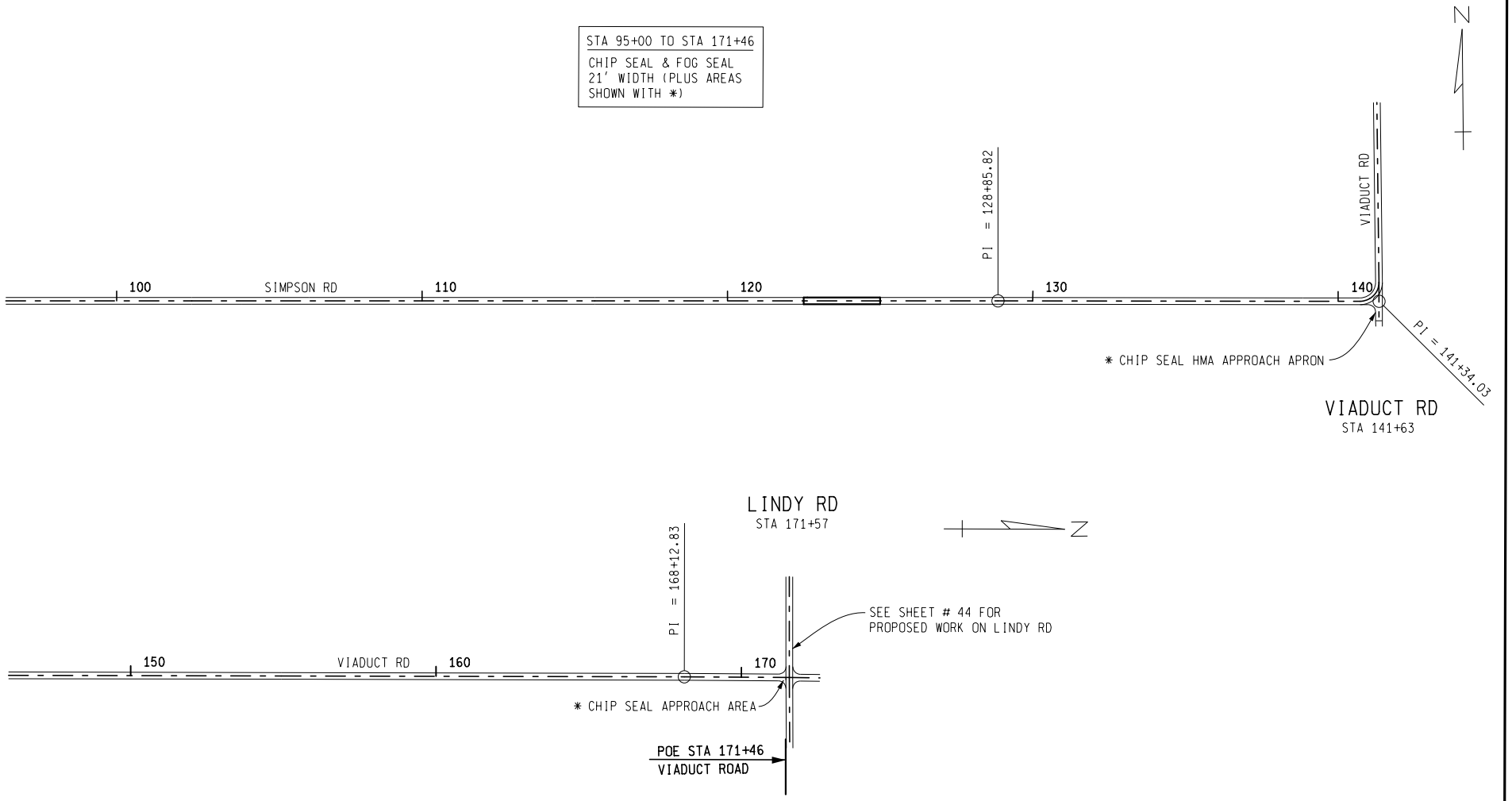
LITZEN/SIMPSON ROAD
POB STA 10+11 TO STA 95+00
CLEON TWP

DATE: 1/4/2019

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

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

1/4/2019 10:06:45 AM




FULL WIDTH HMA SKIP PATCH
THIS SHEET (SHOWN ▭)

STA 122+50 TO STA 125+00

HMA 1/4 CROWN WEDGE
THIS SHEET

STA 95+00 TO STA 103+00 LT
STA 109+00 TO STA 122+50 LT
STA 132+50 TO STA 146+50 LT
STA 155+00 TO STA 157+00 LT
STA 163+00 TO STA 171+46 LT

STA 95+00 TO STA 122+50 RT
STA 125+00 TO STA 171+46 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

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM Engineering

SIMPSON/VIADUCT ROAD
STA 95+00 TO POE STA 171+46
CLEON TWP

DATE: 1/7/2019

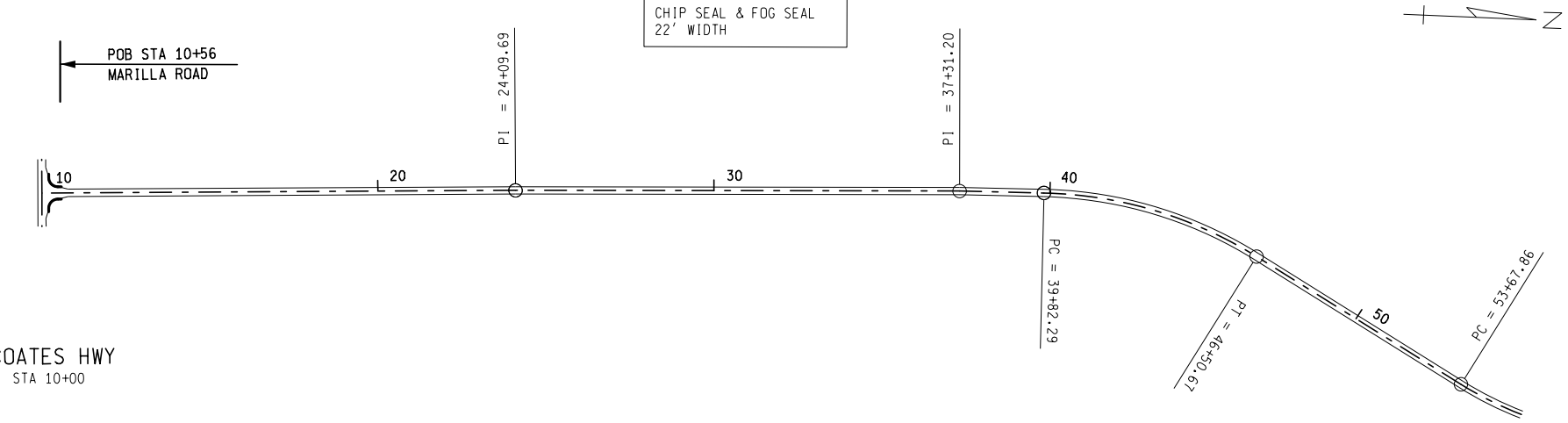
MANISTEE COUNTY ROAD COMMISSION
8946 CHIPPEWA HWY
BEAR LAKE, MI 49614

| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 28 |

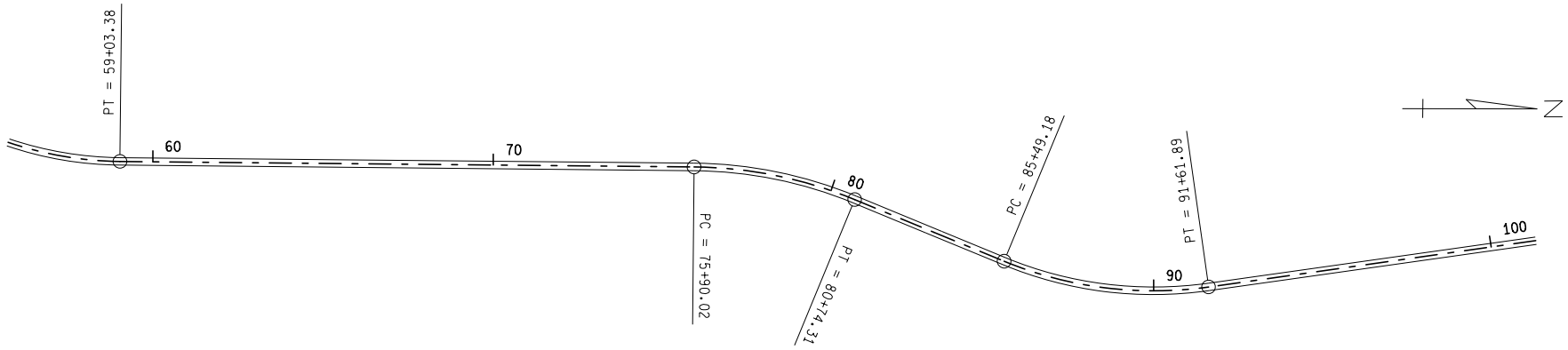
1/7/2019 6:03:45 PM

COATES HWY
STA 10+00

STA 10+56 TO STA 100+00
CHIP SEAL & FOG SEAL
22' WIDTH




COATES HWY
STA 10+00




HMA CENTERLINE WEDGE
THIS SHEET

STA 13+00 TO STA 35+00
STA 81+50 TO STA 84+00

HMA 1/4 CROWN WEDGE
THIS SHEET

STA 10+56 TO STA 13+00 LT & RT
STA 46+50 TO STA 54+00 LT
STA 61+00 TO STA 65+00 LT
STA 94+00 TO STA 101+00 RT

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

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LOCATION # 4

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

MARILLA ROAD
POB STA 10+56 TO STA 100+00
DICKSON TWP

DATE: 1/4/2019

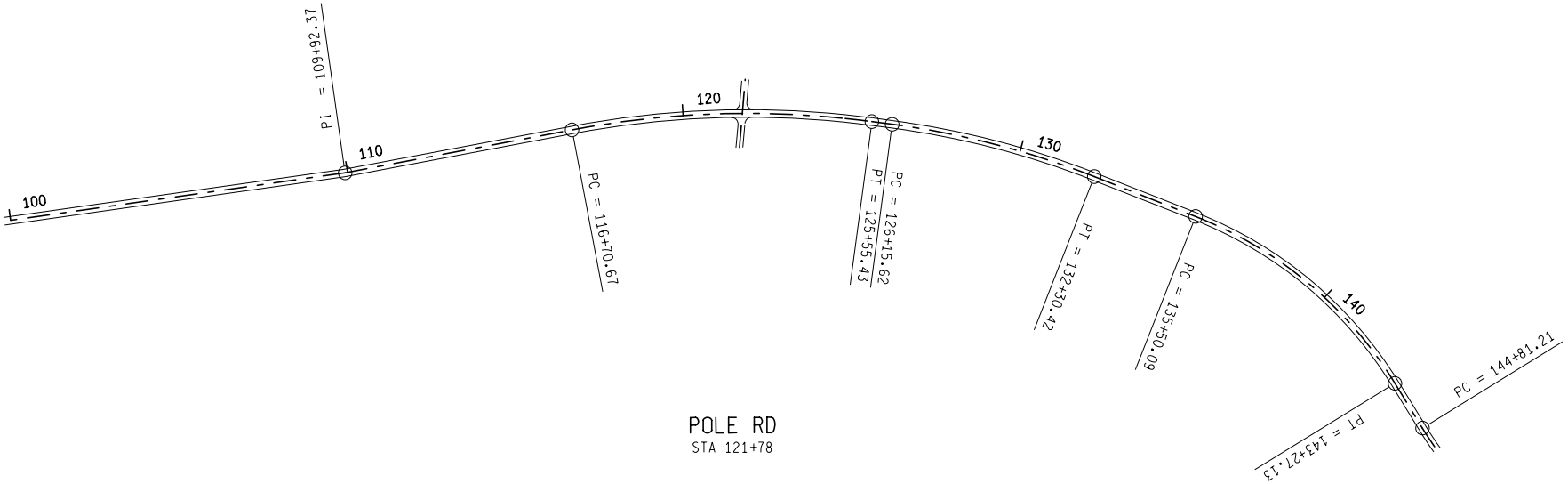
MANISTEE COUNTY ROAD COMMISSION
8946 CHIPPEWA HWY
BEAR LAKE, MI 49614

| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 29 |

1/4/2019 10:06:52 AM

POLE RD
STA 121+78

| STA 100+00 TO STA 145+00 |
| --- |
| CHIP SEAL & FOG SEAL<br>22' WIDTH |




POLE RD
STA 121+78

HMA 1/4 CROWN WEDGE
THIS SHEET

STA 107+00 TO STA 110+00 LT
STA 114+00 TO STA 118+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 # 4

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

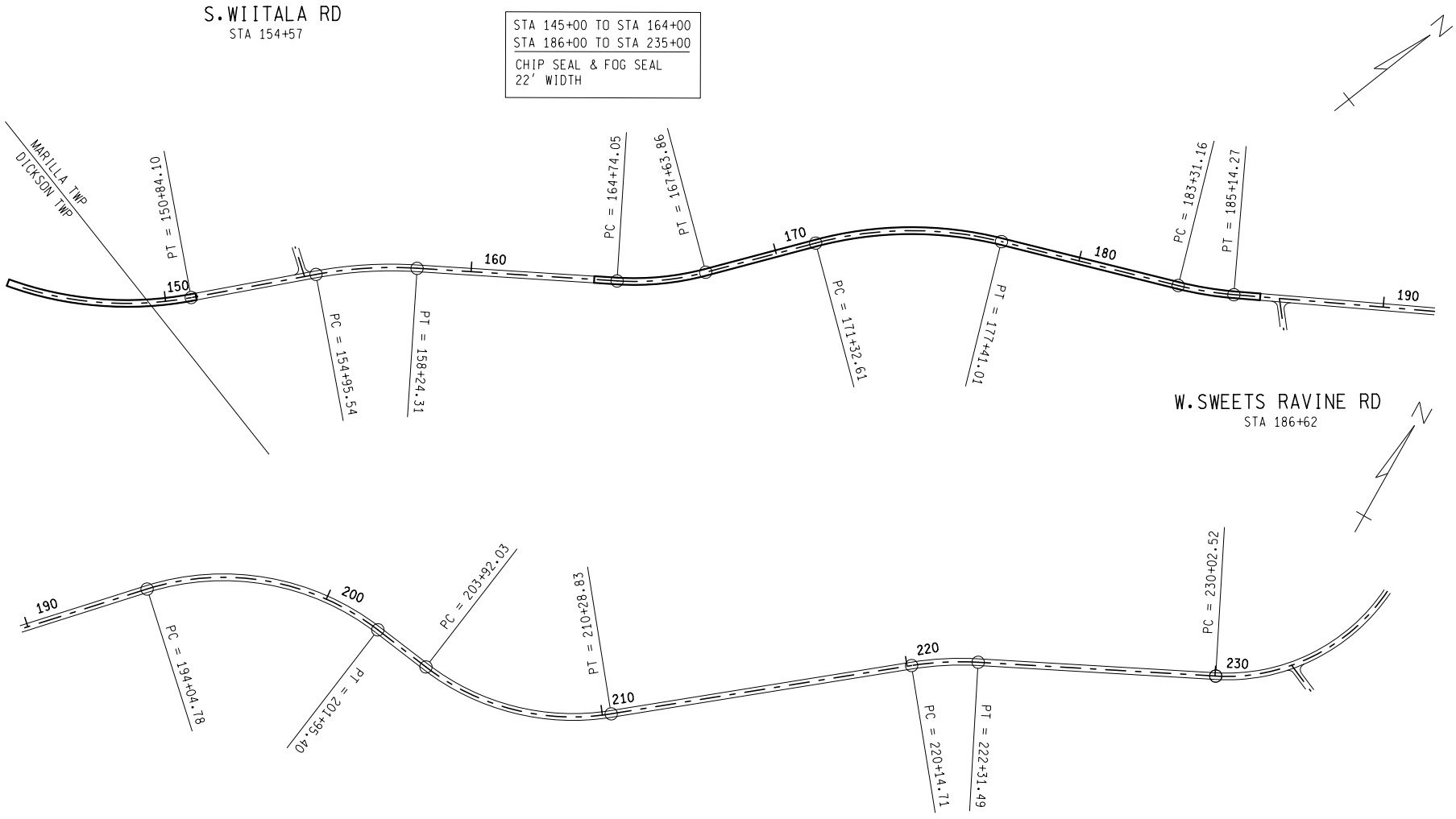
MARILLA ROAD
STA 100+00 TO STA 145+00
DICKSON TWP

DATE: 1/4/2019

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

| DRAWN BY | SHEET NO. |
| --- | --- |
| GLK | 30 |

1/4/2019 10:06:55 AM




| FULL WIDTH HMA SKIP PATCH THIS SHEET (SHOWN ▭) | HMA CENTERLINE WEDGE THIS SHEET | HMA 1/4 CROWN WEDGE THIS SHEET |
|---|---|---|
| STA 144+00 TO STA 151+00<br>STA 164+00 TO STA 186+00 | STA 159+00 TO STA 164+00<br>STA 214+00 TO STA 218+00 | STA 197+50 TO STA 199+00 RT |

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

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LOCATION # 4

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

MARILLA ROAD
STA 145+00 TO STA 235+00
DICKSON & MARILLA TWPS

DATE: 1/4/2019

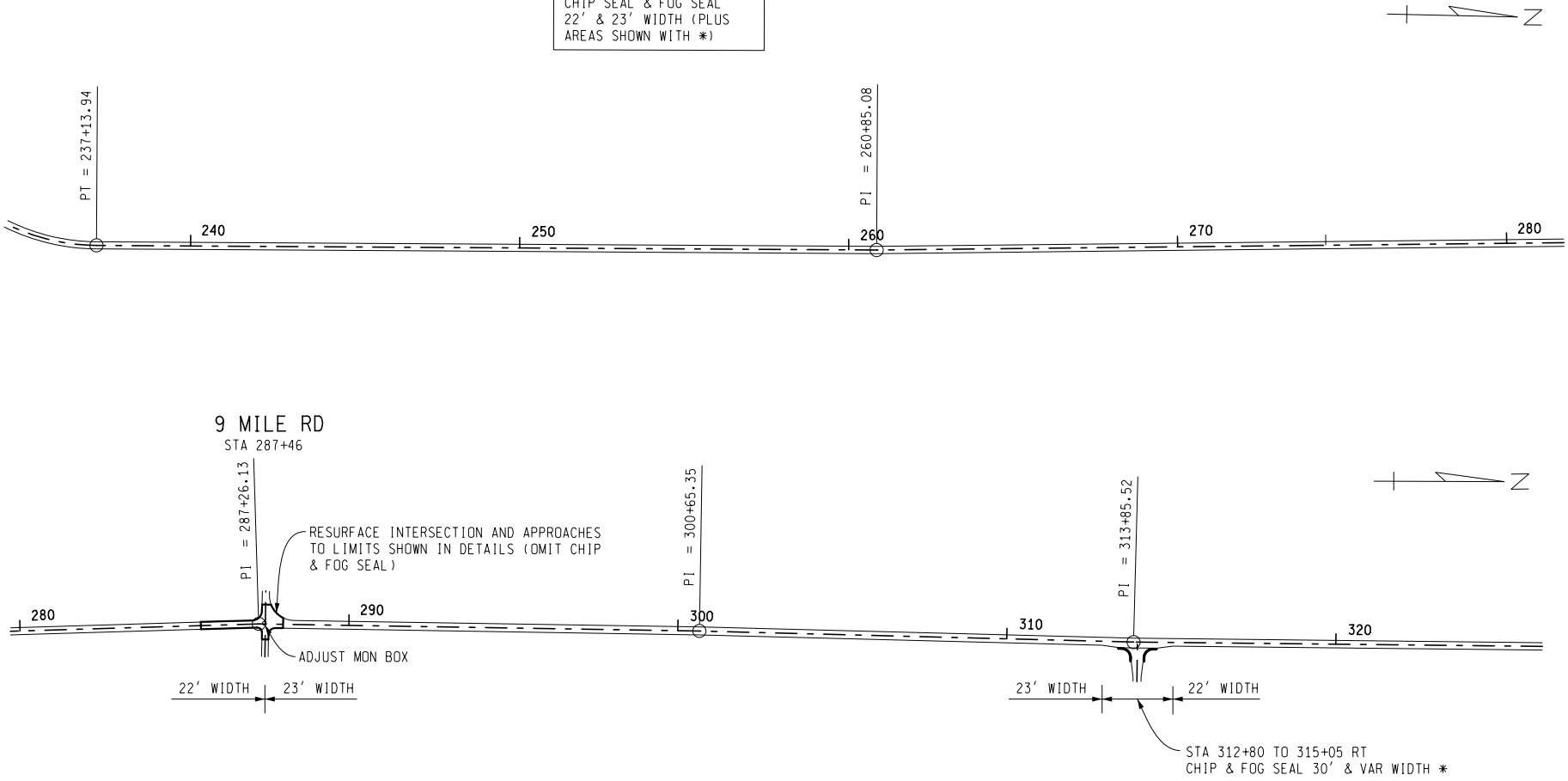
MANISTEE COUNTY ROAD COMMISSION
8946 CHIPPEWA HWY
BEAR LAKE, MI 49614

| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 31 |

1/4/2019 10:06:58 AM

STA 235+00 TO STA 285+50
STA 288+00 TO STA 325+00

CHIP SEAL & FOG SEAL
22' & 23' WIDTH (PLUS
AREAS SHOWN WITH *)




9 MILE RD
STA 287+46

BEERS RD
STA 313+97

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

FULL WIDTH HMA SKIP PATCH
THIS SHEET (SHOWN ▭)

STA 285+50 TO STA 288+00

HMA 1/4 CROWN WEDGE
THIS SHEET

STA 288+00 TO STA 294+00 LT
STA 288+00 TO STA 313+00 RT
STA 304+00 TO STA 311+00 LT

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LOCATION # 4

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

MARILLA ROAD
STA 235+00 TO STA 325+00
MARILLA TWP

DATE: 1/4/2019

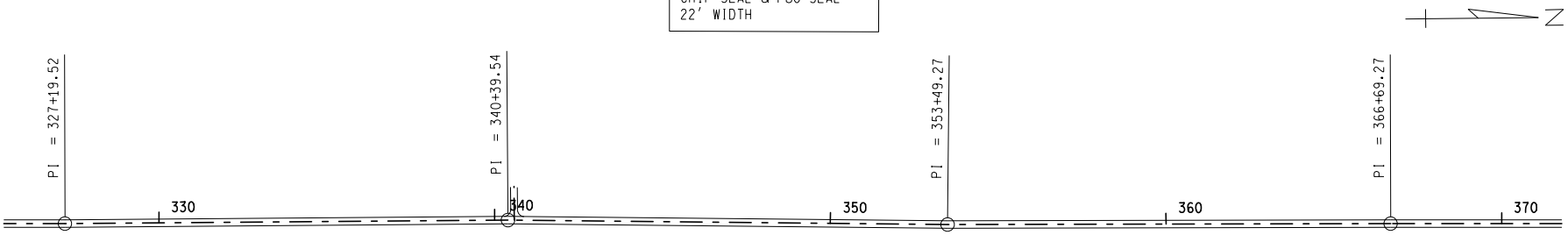
MANISTEE COUNTY ROAD COMMISSION
8946 CHIPPEWA HWY
BEAR LAKE, MI 49614

| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 32 |

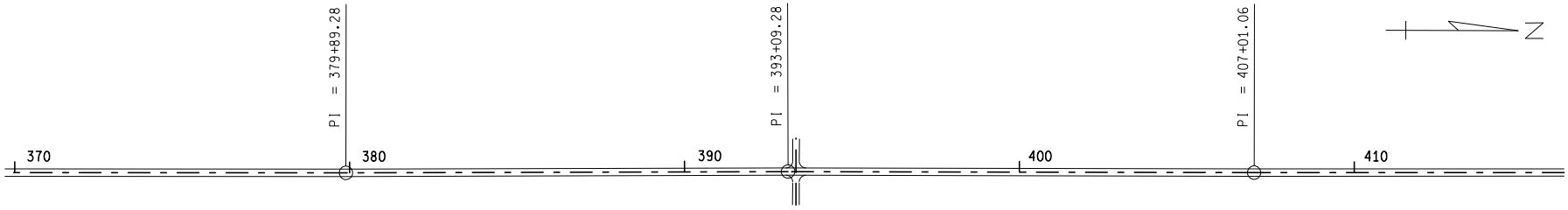
1/4/2019 10:07:01 AM

BIGGE RD
STA 340+58

STA 325+00 TO STA 415+00
CHIP SEAL & FOG SEAL
22' WIDTH




HULLS RD
STA 393+33




HULLS RD
STA 393+33

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

LOCATION # 4

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

MARILLA ROAD
STA 325+00 TO STA 415+00
MARILLA TWP

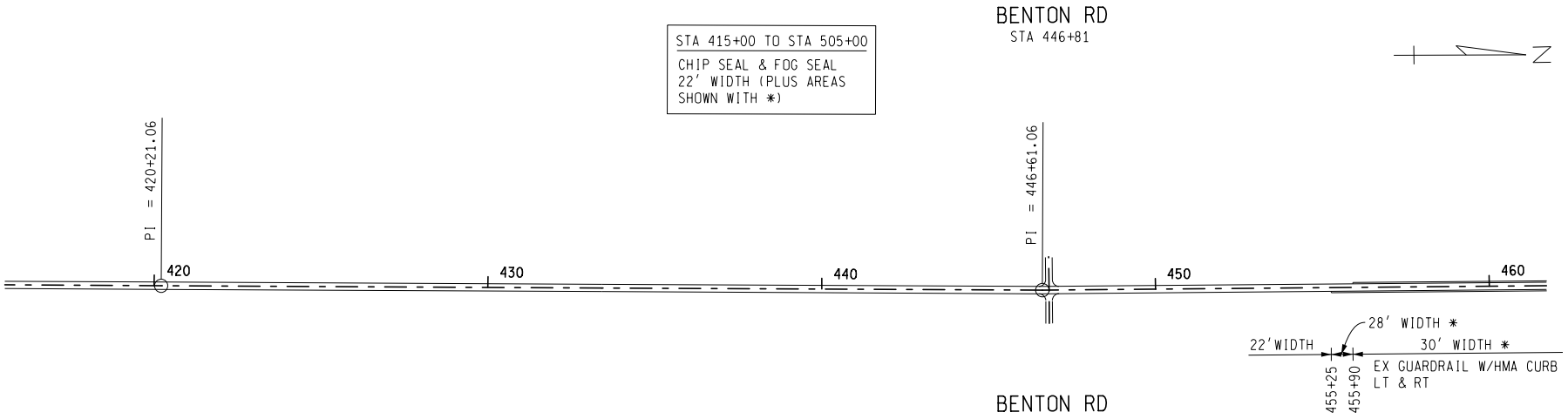
DATE: 1/4/2019

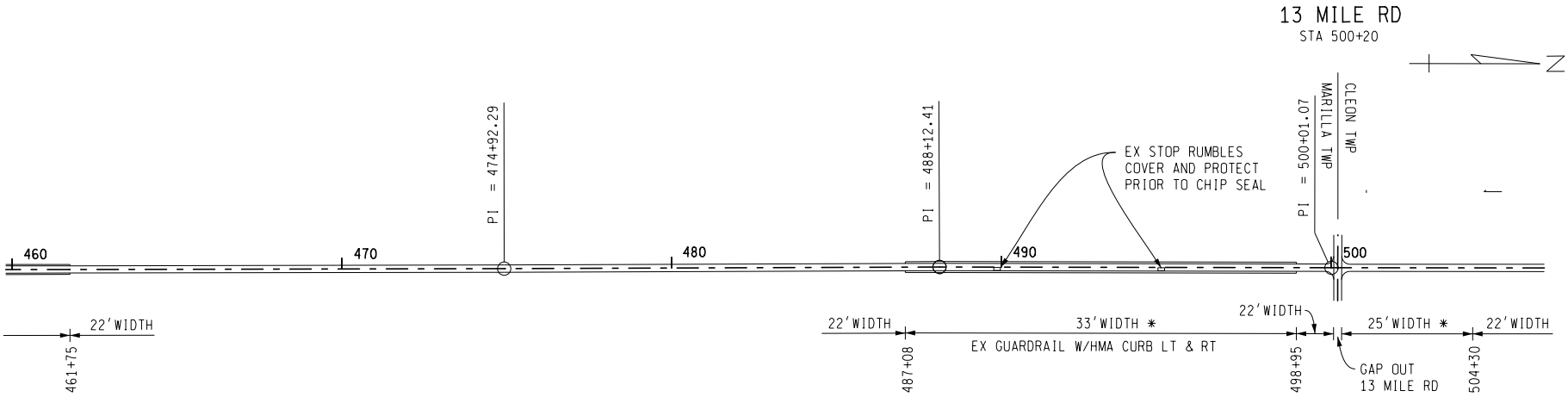
MANISTEE COUNTY ROAD COMMISSION
8946 CHIPPEWA HWY
BEAR LAKE, MI 49614

| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 33 |

1/4/2019 10:07:04 AM

STA 415+00 TO STA 505+00
CHIP SEAL & FOG SEAL
22' WIDTH (PLUS AREAS SHOWN WITH *)





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

LOCATION # 4

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

MARILLA ROAD
STA 415+00 TO STA 505+00
MARILLA & CLEON TWPS

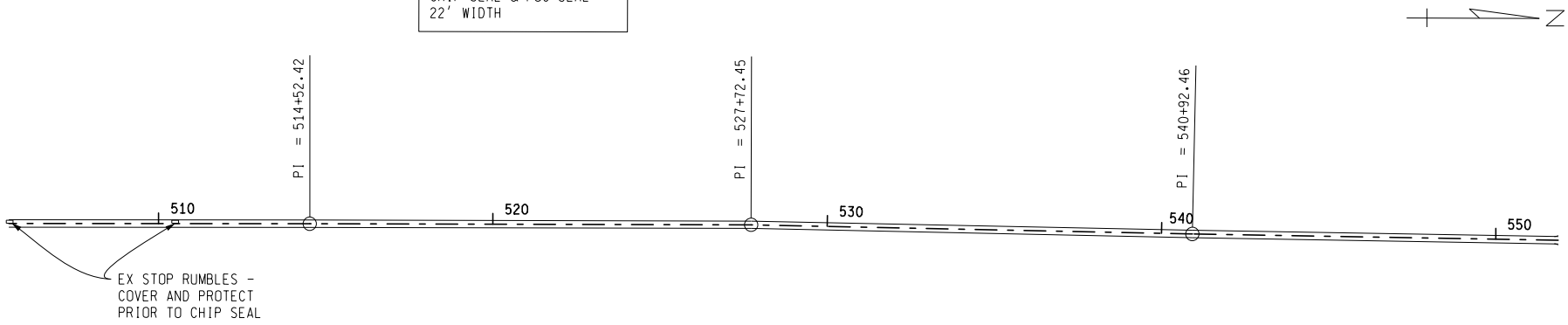
DATE: 1/4/2019

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

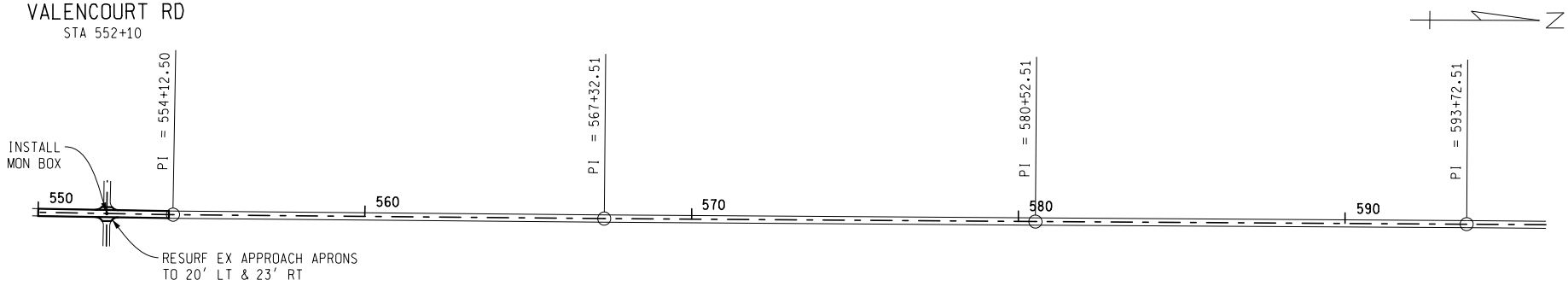
| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 34 |

1/4/2019 10:07:08 AM

STA 505+00 TO STA 595+00
CHIP SEAL & FOG SEAL
22' WIDTH




VALENCOURT RD
STA 552+10




VALENCOURT RD
STA 552+10

FULL WIDTH HMA SKIP PATCH
THIS SHEET (SHOWN ▭)

STA 550+00 TO STA 554+00

HMA 1/4 CROWN WEDGE
THIS SHEET

STA 504+30 TO STA 520+00 LT
STA 542+00 TO STA 546+00 LT
STA 554+00 TO STA 559+00 LT
STA 589+00 TO STA 595+00 LT

STA 507+00 TO STA 522+00 RT
STA 531+00 TO STA 534+00 RT
STA 557+00 TO STA 559+00 RT

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

LOCATION # 4

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

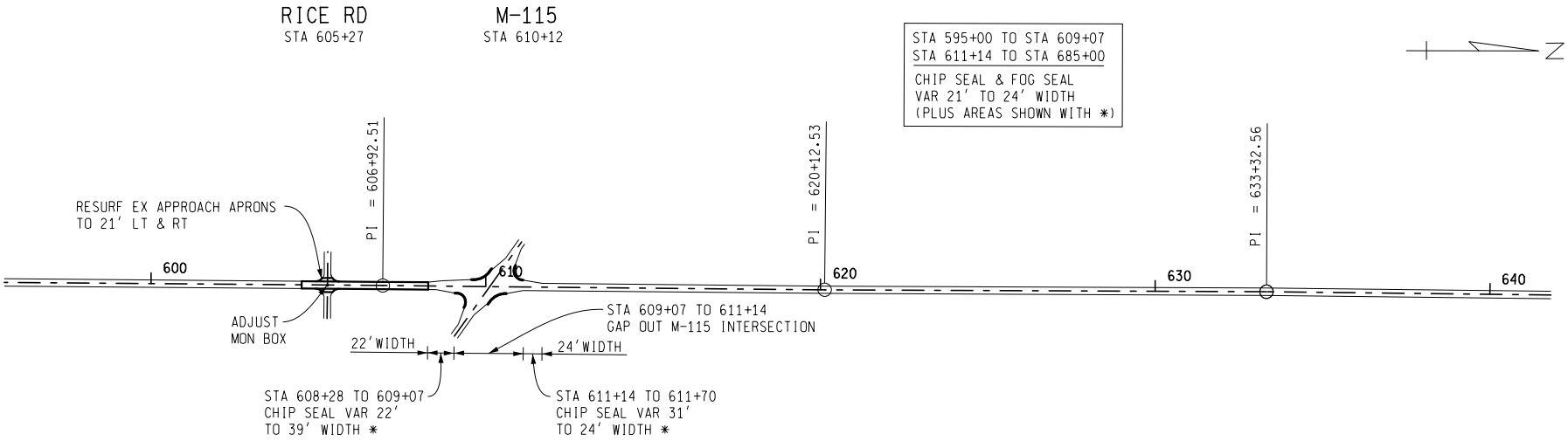
MARILLA ROAD
STA 505+00 TO STA 595+00
CLEON TWP

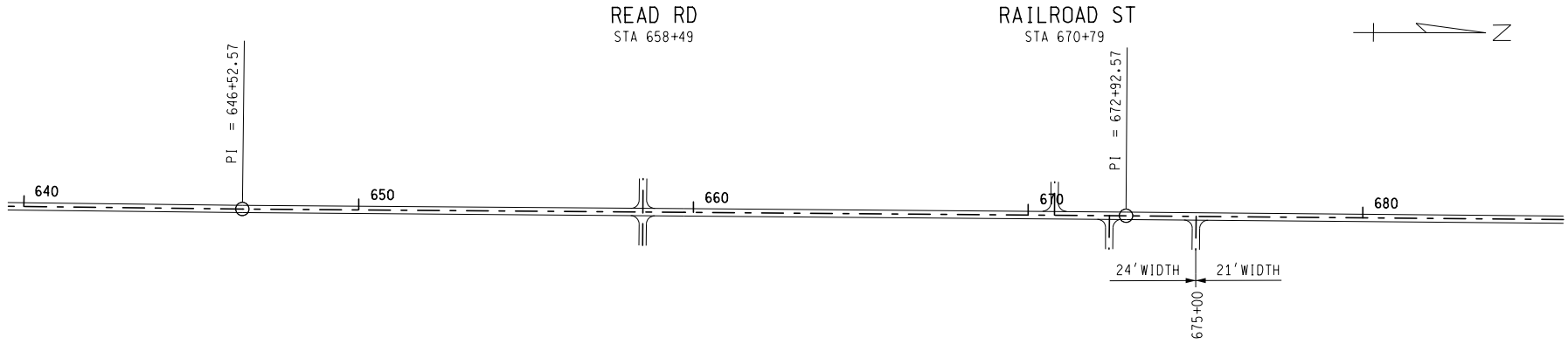
DATE: 1/4/2019

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

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

1/4/2019 10:07:11 AM




RAILROAD ST STA 672+43

DOUGHERTY ST STA 675+02

READ RD STA 658+49

FULL WIDTH HMA SKIP PATCH THIS SHEET (SHOWN ▭)

STA 604+50 TO STA 608+28

HMA 1/4 CROWN WEDGE THIS SHEET

STA 659+00 TO STA 661+00 LT
STA 679+00 TO STA 682+00 LT
STA 679+00 TO STA 685+00 RT

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LOCATION # 4

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

MARILLA ROAD
STA 595+00 TO STA 685+00
CLEON TWP

DATE: 1/4/2019

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

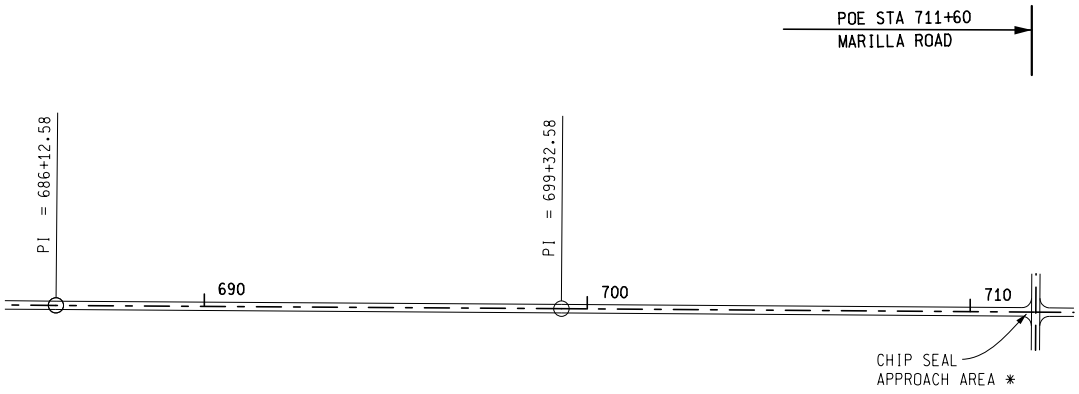
| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 36 |

1/4/2019 10:07:14 AM

FAYLOR RD
STA 711+71

N

STA 685+00 TO STA 711+60
CHIP SEAL & FOG SEAL
21' WIDTH (PLUS AREAS
SHOWN WITH *)




FAYLOR RD
STA 711+71

HMA 1/4 CROWN WEDGE
THIS SHEET

STA 685+00 TO STA 687+00 LT
STA 685+00 TO STA 689+00 RT
STA 692+00 TO STA 697+00 RT
STA 701+00 TO STA 707+00 LT

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

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LOCATION # 4

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

NO SCALE

KPM ENGINEERING

MARILLA ROAD
STA 685+00 TO POE STA 711+60
CLEON TWP

DATE: 1/4/2019

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

| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 37 |

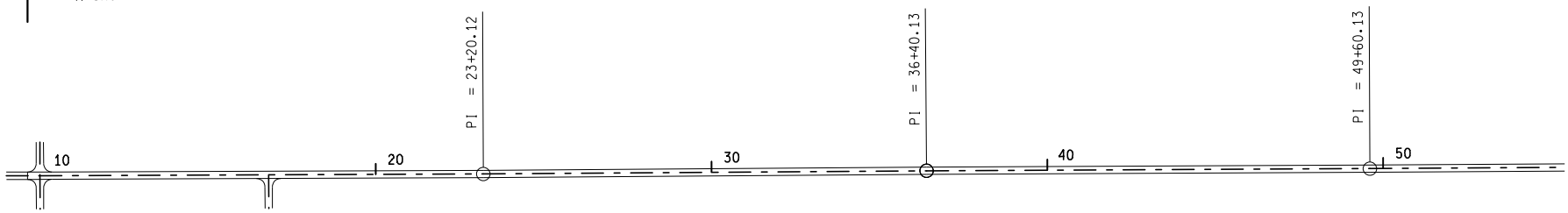
1/4/2019 10:07:17 AM

PINE CREEK RD
STA 10+00

STA 9+63 TO STA 100+00
CHIP SEAL & FOG SEAL
21' WIDTH

N

POB STA 9+63
N SKOCELAS ROAD



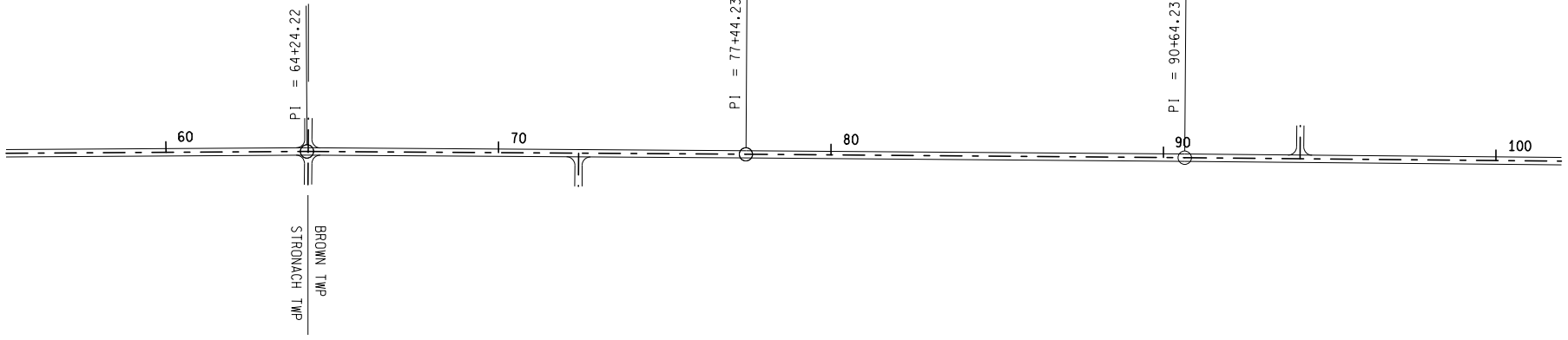

PINE CREEK RD
STA 10+00

HILLARY LN
STA 16+81

GUENTHARDT RD
STA 64+28

FFR 8308
STA 94+11

N




GUENTHARDT RD
STA 64+28

FFR 8333
STA 72+41

HMA 1/4 CROWN WEDGE
THIS SHEET

STA 10+50 TO STA 15+00 LT & RT
STA 44+00 TO STA 55+00 RT
STA 59+00 TO STA 70+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 # 5

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

N.SKOCELAS ROAD
POB STA 9+63 TO STA 100+00
STRONACH & BROWN TWPS

DATE: 1/4/2019

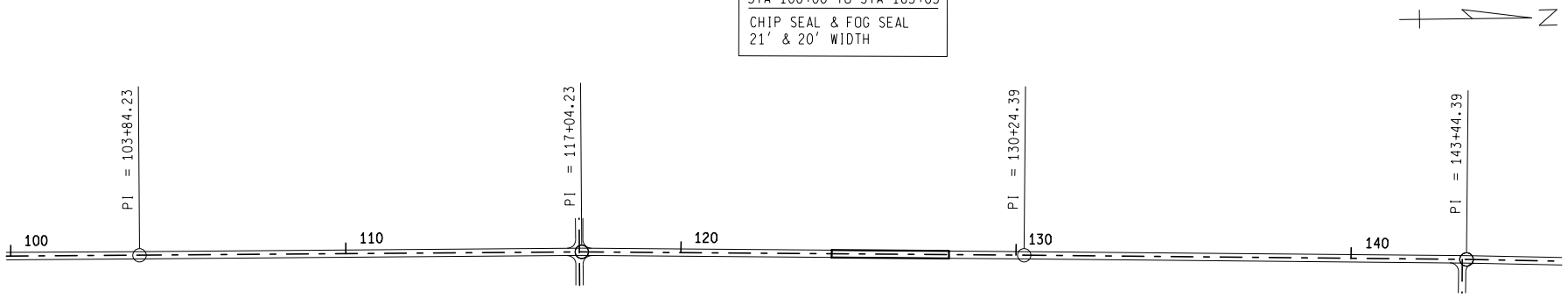
MANISTEE COUNTY ROAD COMMISSION
8946 CHIPPEWA HWY
BEAR LAKE, MI 49614

| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 38 |

1/4/2019 10:07:24 AM

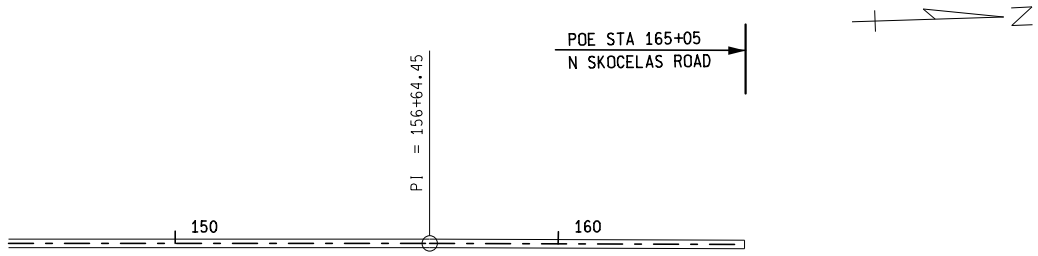
BECKER RD
STA 116+97

STA 100+00 TO STA 165+05
CHIP SEAL & FOG SEAL
21' & 20' WIDTH




BECKER RD
STA 116+97

SANOCKI RD
STA 143+32




FULL WIDTH HMA SKIP PATCH
THIS SHEET (SHOWN ▭)

STA 124+50 TO STA 128+00

HMA 1/4 CROWN WEDGE
THIS SHEET

STA 115+00 TO STA 118+00 RT
STA 144+00 TO STA 164+50 LT
STA 147+00 TO STA 164+50 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.

LOCATION # 5

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

N.SKOCELAS ROAD
STA 100+00 TO POE STA 165+05
BROWN TWP

DATE: 1/4/2019

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

| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 39 |

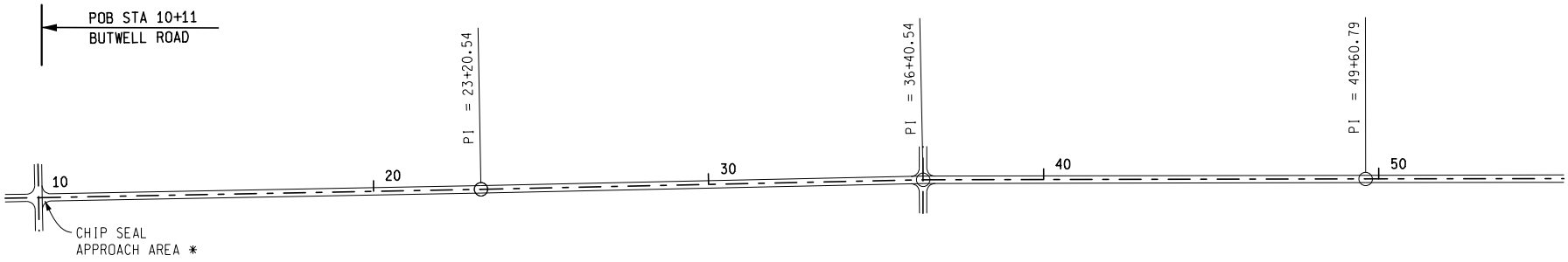
1/4/2019 10:07:27 AM

NORCONK RD
STA 10+00

STA 10+11 TO STA 100+00
CHIP SEAL & FOG SEAL
22' WIDTH (PLUS AREAS SHOWN WITH *)

ALKIRE RD
STA 36+40

N

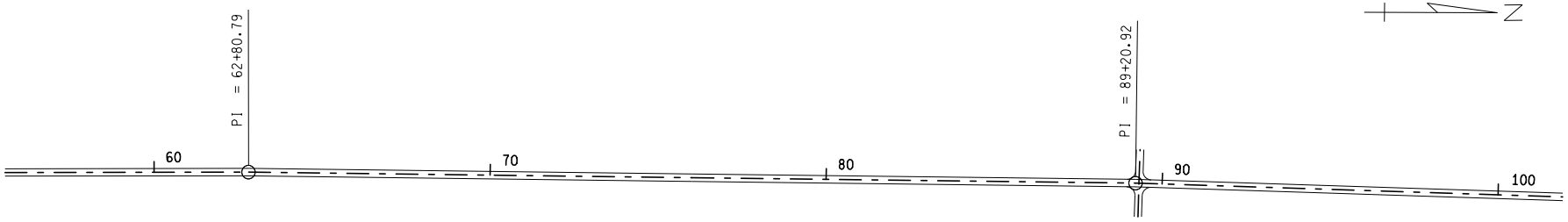



NORCONK RD
STA 10+00

ALKIRE RD
STA 36+40

LUMLEY RD
STA 89+31

N




LUMLEY RD
STA 89+31

HMA 1/4 CROWN WEDGE
THIS SHEET

STA 64+50 TO STA 65+50 RT
STA 76+00 TO STA 89+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 # 6

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

BUTWELL ROAD
POB STA 10+11 TO STA 100+00
PLEASONTON TWP

DATE: 1/4/2019

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

| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 40 |

1/4/2019 10:07:31 AM

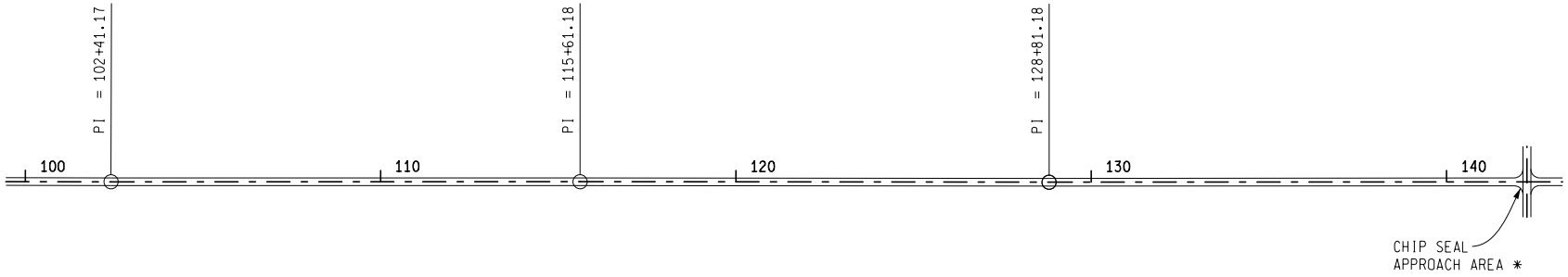
STA 100+00 TO STA 142+15

CHIP SEAL & FOG SEAL
22' WIDTH (PLUS AREAS
SHOWN WITH *)

GLOVERS LAKE RD
STA 142+26

N

POE STA 142+15
BUTWELL ROAD




GLOVERS LAKE RD
STA 142+26

HMA 1/4 CROWN WEDGE
THIS SHEET

STA 134+00 TO STA 141+00 LT

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 # 6

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

BUTWELL ROAD
STA 100+00 TO POE STA 142+15
PLEASONTON TWP

DATE: 1/4/2019

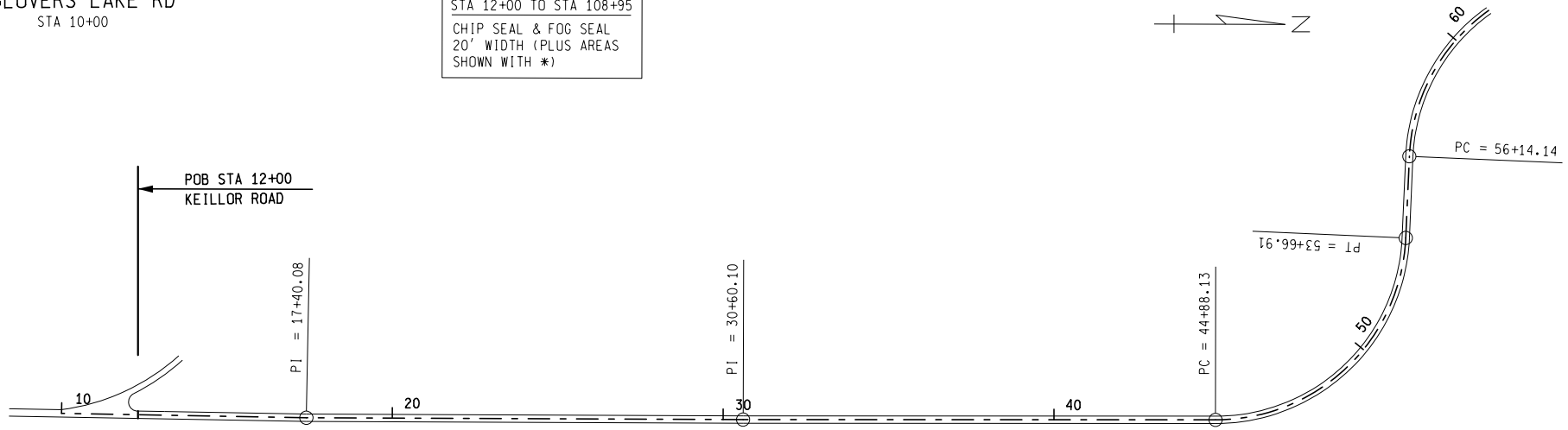
MANISTEE COUNTY ROAD COMMISSION
8946 CHIPPEWA HWY
BEAR LAKE, MI 49614

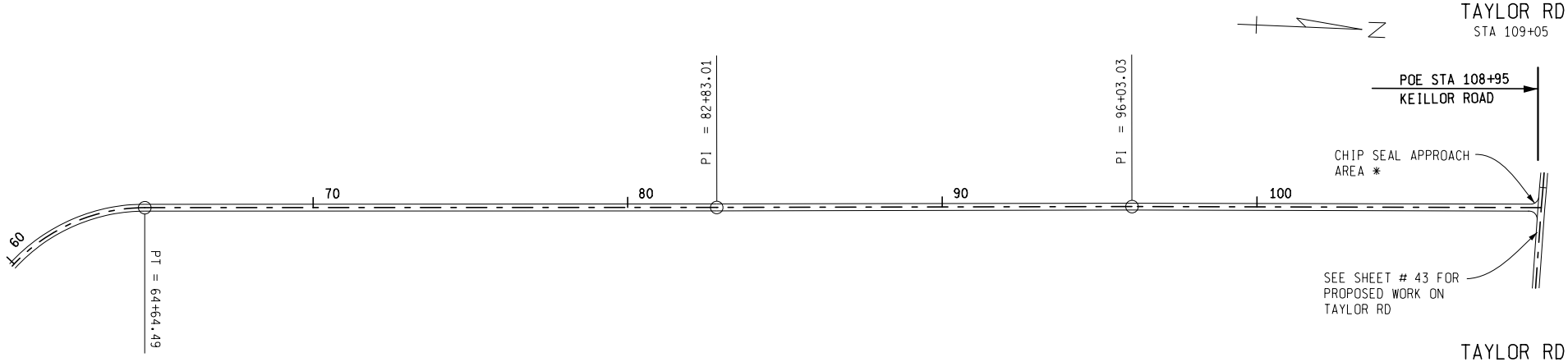
| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 41 |

1/4/2019 10:07:34 AM

GLOVERS LAKE RD
STA 10+00

STA 12+00 TO STA 108+95
CHIP SEAL & FOG SEAL
20' WIDTH (PLUS AREAS SHOWN WITH ✳)




TAYLOR RD
STA 109+05

HMA 1/4 CROWN WEDGE
THIS SHEET

STA 22+00 TO STA 24+00 LT
STA 67+00 TO STA 71+00 LT
STA 74+00 TO STA 77+00 LT
STA 22+00 TO STA 24+00 RT
STA 68+00 TO STA 103+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 # 7

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

KEILLOR ROAD
POB STA 12+00 TO POE STA 108+95
PLEASONTON TWP

DATE: 1/4/2019

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

| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 42 |

1/4/2019 10:07:36 AM

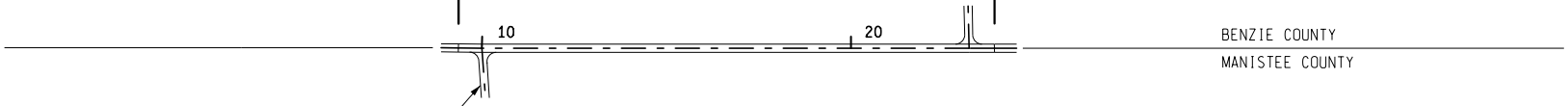
STA 9+36 TO STA 23+92
CHIP SEAL & FOG SEAL
21' WIDTH

PUTNEY RD
STA 23+23

N

POB STA 9+36
TAYLOR ROAD

POE STA 23+92
TAYLOR ROAD




SEE SHEET # 42 FOR
PROPOSED WORK ON
KEILLOR RD

KEILLOR RD
STA 10+00

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

HMA 1/4 CROWN WEDGE
THIS SHEET

LOCATIONS TO BE DETERMINED BY MCRC
PRIOR TO CONSTRUCTION

LOCATION # 8

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

TAYLOR ROAD
POB STA 9+36 TO POE STA 23+92
PLEASONTON TWP

DATE: 1/4/2019

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

| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 43 |

1/4/2019 10:07:39 AM

STA 5+82 TO STA 102+63
CHIP SEAL & FOG SEAL
22' WIDTH

POB STA 5+82
LINDY ROAD

DINGER RD
STA 50+00

N

PI = 20+14.93

PI = 50+00.72

10 BENZIE COUNTY 20 30 40 50

MANISTEE COUNTY

SEE SHEET # 28 FOR
PROPOSED WORK ON VIADUCT RD

VIADUCT RD
STA 50+00

N

TRAVERSE RD
STA 102+97

POE STA 102+63
LINDY ROAD

PI = 63+20.73

PI = 76+40.79

PI = 89+60.82

60 70 80 90 100

BENZIE COUNTY | GRAND TRAVERSE COUNTY

MANISTEE COUNTY | WEXFORD COUNTY

NO. 1 RD
STA 102+97

HMA 1/4 CROWN WEDGE
THIS SHEET

LOCATIONS TO BE DETERMINED BY MCRC
PRIOR TO CONSTRUCTION

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

LOCATION # 9

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM Engineering

LINDY ROAD
STA 5+82 TO POE STA 102+63
CLEON TWP

DATE: 1/7/2019

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

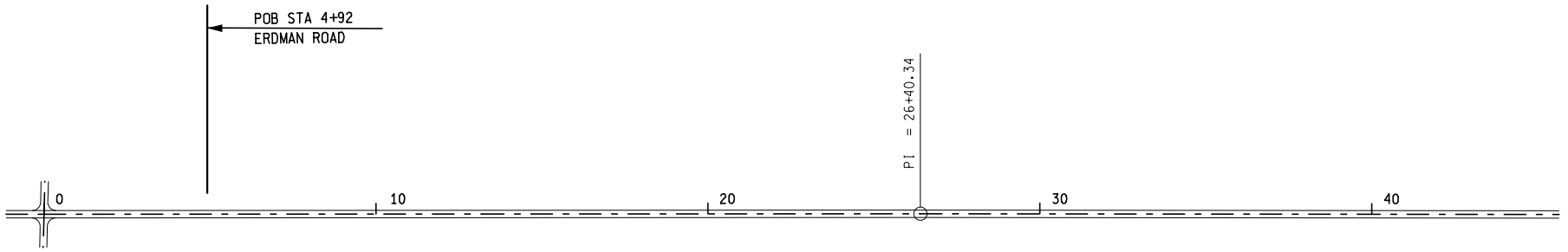
| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 44 |

1/7/2019 6:06:49 PM

11 MILE RD
STA 0+00

STA 4+92 TO STA 90+00
CHIP SEAL & FOG SEAL
21' WIDTH

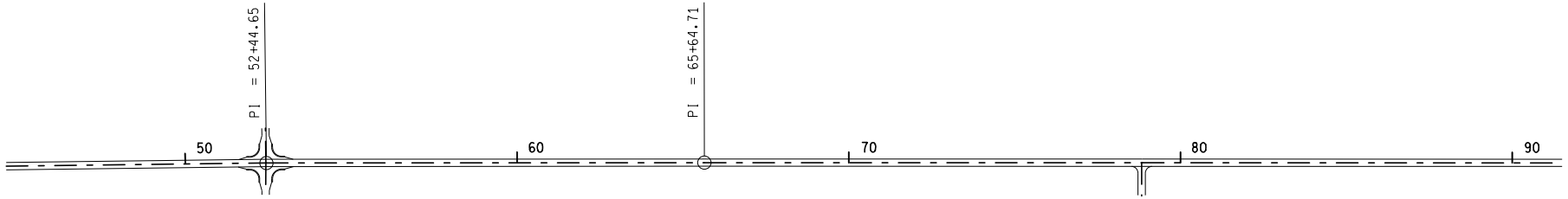
N




11 MILE RD
STA 0+00

POTTER RD
STA 52+43

N




POTTER RD
STA 52+43

HMA 1/4 CROWN WEDGE
THIS SHEET

STA 5+30 TO STA 17+00 LT
STA 20+80 TO STA 21+60 LT
STA 28+00 TO STA 35+65 LT
STA 48+70 TO STA 49+50 LT
STA 72+30 TO STA 74+80 LT

STA 5+82 TO STA 25+50 RT
STA 35+65 TO STA 40+30 RT
STA 44+50 TO STA 51+50 RT
STA 53+40 TO STA 90+00 RT

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

ERICKSON RD
STA 78+83

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

LOCATION # 10

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

ERDMAN ROAD
POB STA 4+92 TO STA 90+00
ONEKAMA TWP

DATE: 1/4/2019

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

| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 45 |

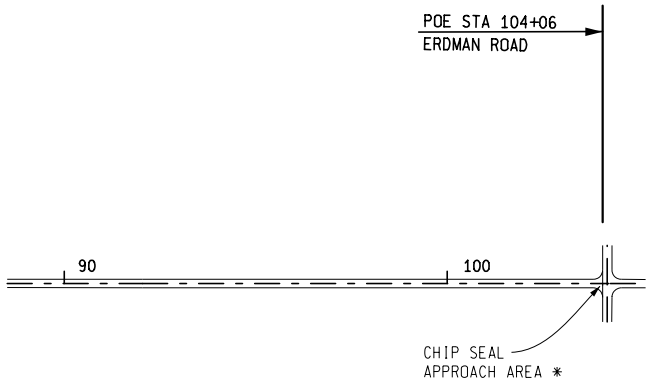
1/4/2019 10:07:58 AM

STA 90+00 TO STA 104+06

CHIP SEAL & FOG SEAL
21' WIDTH (PLUS AREAS
SHOWN WITH *)

13 MILE RD
STA 104+18

N




13 MILE RD
STA 104+18

HMA 1/4 CROWN WEDGE
THIS SHEET

STA 90+60 TO STA 91+70 LT
STA 94+00 TO STA 96+10 LT
STA 101+50 TO STA 103+80 LT
STA 90+00 TO STA 91+60 RT
STA 93+50 TO STA 103+98 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 # 10

NO SCALE

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

KPM ENGINEERING

ERDMAN ROAD
STA 90+00 TO POE STA 104+06
ONEKAMA TWP

DATE: 1/4/2019

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

| DRAWN BY | SHEET NO. |
|---|---|
| GLK | 46 |

1/4/2019 10:08:01 AM

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



## 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 Bear Lake, Brown, Cleon, Dickson, Marilla, Stronach, Pleasanton & Onekama Townships in Manistee County:

Chief Road, from Coates Highway to 11 Mile Road
Collins Road, from Kerry Road to Lyman Road
Litzen/Simpson/Viaduct Roads, from Faylor Road to Lindy Road
Marilla Road, from Coates Highway to Faylor Road
North Skocelas Road, from Pine Creek Road to north end of roadway
Butwell Road, from Norconk Road to Glovers Lake Road
Keillor Road, from Glovers Lake Road to Taylor Road (North County Line)
Taylor Road, from Keillor Road to Putney Road
Lindy Road, from 0.837 miles west of Viaduct Road to No. 1 Road
Erdman Road, from 11 Mile Road to 13 Mile 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 special events unless approved by the MCRC due to special circumstances.

Holiday periods are defined as:

Memorial Day – 5:00 pm, Friday 05/24/19 to 6:00 am, Tuesday, 05/28/19
Independence Day – 5:00 pm Wednesday, 07/03/19 to 6:00 am, Monday, 07/08/19
Labor Day - 5:00 pm, Friday 08/30/19 to 6:00 am, Tuesday, 09/03/19

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 Typicals M0020a and M0150a. 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.

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 M0150a, plus ten (10) W20-1 “Road Work Ahead” signs to be placed on intersecting roads.

**Temporary Pavement Markings**

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).

| Contract Item | Pay Unit |
|---|---|
| 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 ..... 694 Square Foot
Sign, Type B, Temp, Prismatic Oper..... 694 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 | POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FEET | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | |
| 1 | 10 | 15 | 20 | 27 | 45 | 50 | 55 | 60 | 65 | 70 | TAPER LENGTH "L" IN FEET |
| 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 | |

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 | TAPER LENGTH |
|---|---|
| UPSTREAM TAPERS | |
| MERGING TAPER | L - MINIMUM |
| SHIFTING TAPER | 1/2 L - MINIMUM |
| SHOULDER TAPER | 1/3 L - MINIMUM |
| TWO-WAY TRAFFIC TAPER | 100 ' - MAXIMUM |
| DOWNSTREAM TAPERS (USE IS OPTIONAL) | 100 ' - MINIMUM (PER LANE) |

MDOT Michigan Department of Transportation
TRAFFIC AND SAFETY
MAINTAINING TRAFFIC TYPICAL

TABLES FOR "L", "D" AND "B" VALUES

| | | | |
|---|---|---|---|
| DRAWN BY: CON:AE:djf | JUNE 2006 PLAN DATE: | M0020a | SHEET 1 OF 2 |
| CHECKED BY: BMM | | | |
| 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.

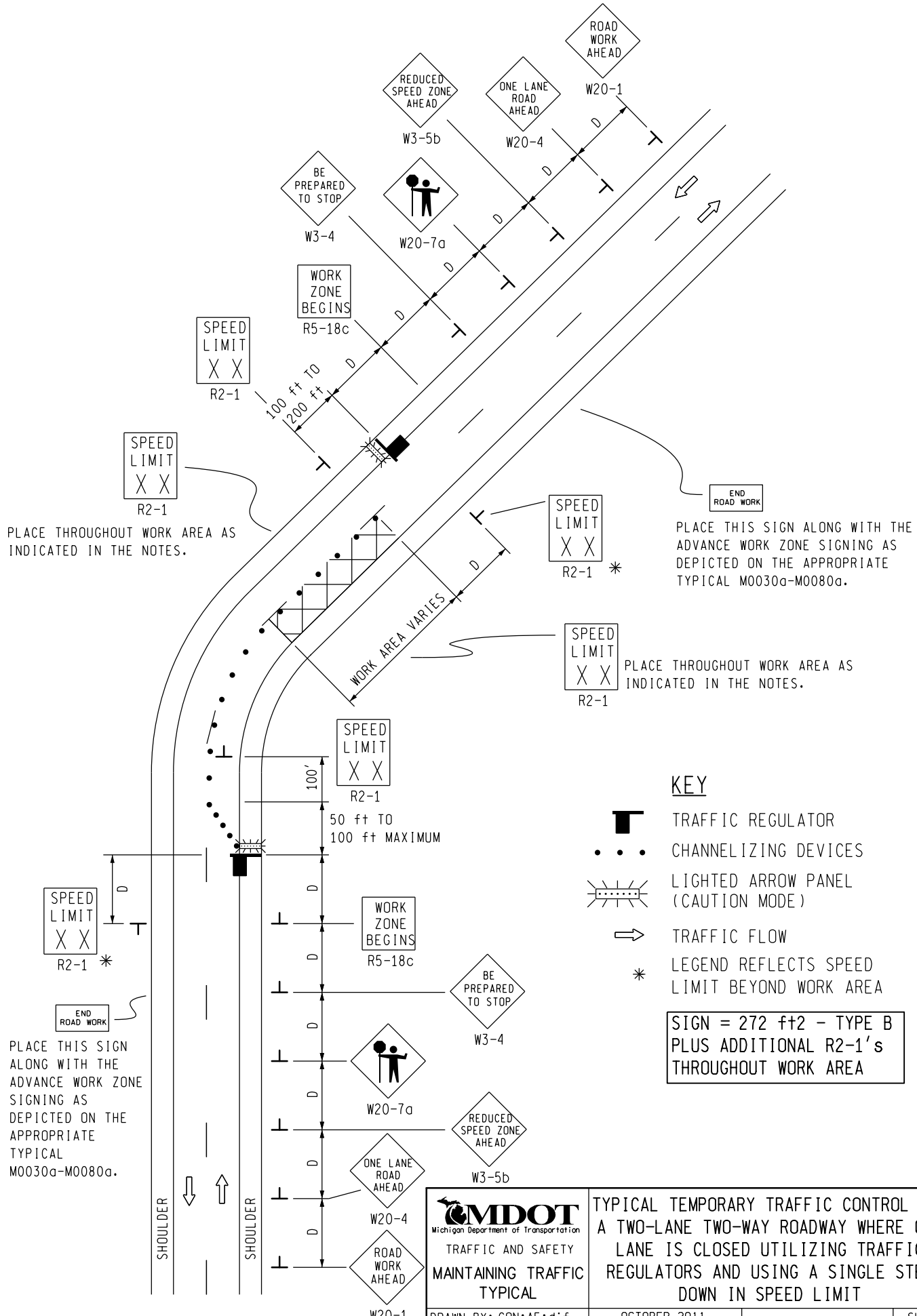
MDOT Michigan Department of Transportation

TRAFFIC AND SAFETY

MAINTAINING TRAFFIC TYPICAL

TABLES FOR "L", "D" AND "B" VALUES

| | | | |
|---|---|---|---|
| DRAWN BY: CON:AE:djf | JUNE 2006 | M0020a | SHEET 2 OF 2 |
| CHECKED BY: BMM | PLAN DATE: | | |
| FILE: K:/DGN/TSR/STDS/ENGLISH/MNTTRF/M0020a.dgn | REV. 08/21/2006 | | |




MDOT 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 AND USING A SINGLE STEP DOWN IN SPEED LIMIT

| | | | |
|---|---|---|---|
| DRAWN BY: CON:AE:djf | OCTOBER 2011 | M0150a | SHEET 1 OF 2 |
| CHECKED BY: BMM:CRB | PLAN DATE: | | |
| FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0150a.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.

16A. ADDITIONAL SPEED LIMIT SIGNS REFLECTING THE REDUCED SPEED SHALL BE PLACED AFTER EACH MAJOR CROSSROAD THAT INTERSECTS THE WORK AREA WHERE THE REDUCED SPEED IS IN EFFECT, AND AT INTERVALS ALONG THE ROADWAY SUCH THAT NO SPEED LIMIT SIGNS REFLECTING THE REDUCED SPEED ARE MORE THAN TWO MILES APART.

16B. WHEN REDUCED SPEED LIMITS ARE UTILIZED IN THE WORK AREA, ADDITIONAL SPEED LIMIT SIGNS RETURNING TRAFFIC TO ITS NORMAL SPEED SHALL BE PLACED BEYOND THE LIMITS OF THE REDUCED SPEED AS INDICATED.

16E. WHEN EXISTING SPEED LIMITS ARE REDUCED MORE THAN 10 MPH, THE SPEED LIMIT SHALL BE STEPPED DOWN IN NO MORE THAN 10 MPH INCREMENTS.

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" |
| RECTANGULAR REGULATORY | - 48" x 60" |
| R5-18c REGULATORY | - 48" x 48" |

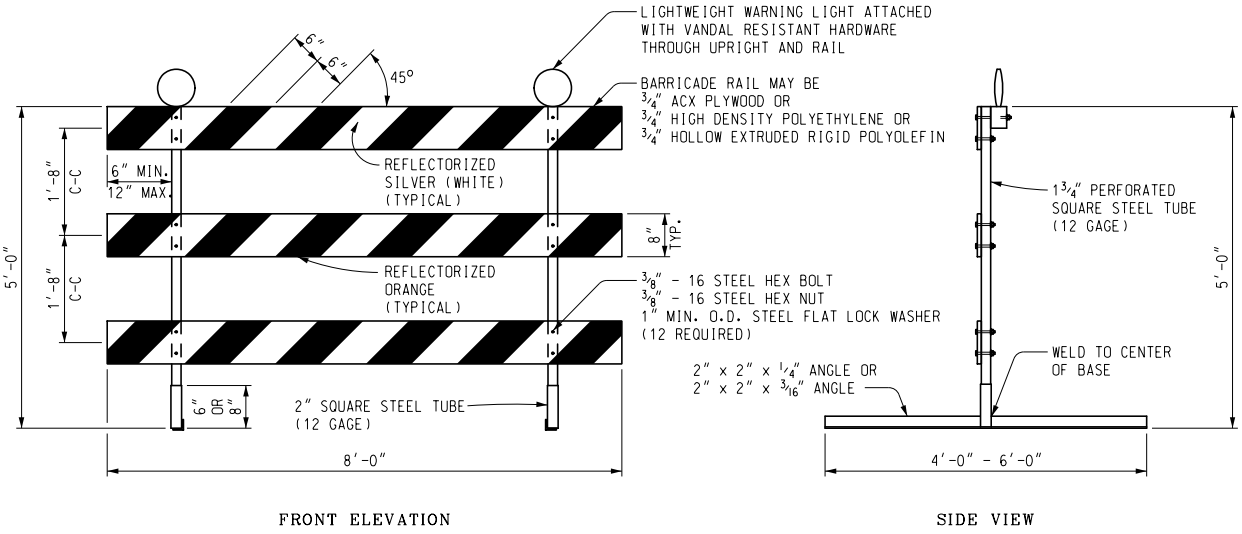
NOT TO SCALE

MDOT 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 AND USING A SINGLE STEP DOWN IN SPEED LIMIT

| | | | |
|---|---|---|---|
| DRAWN BY: CON:AE:djf | OCTOBER 2011 | M0150a | SHEET 2 OF 2 |
| CHECKED BY: BMM:CRB | PLAN DATE: | | |

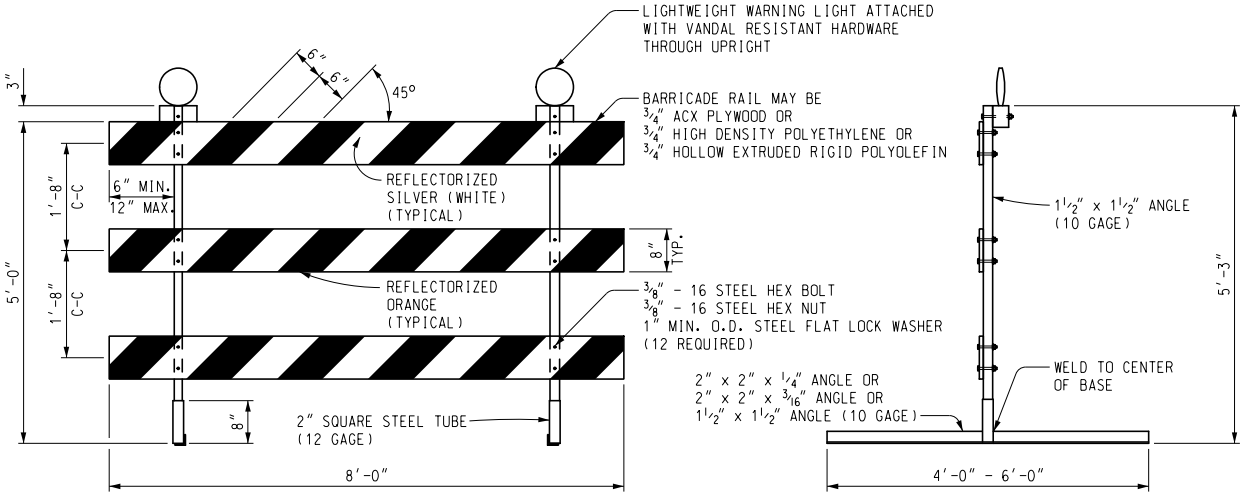
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0150a.dgn REV. 10/04/2011




FRONT ELEVATION

SIDE VIEW

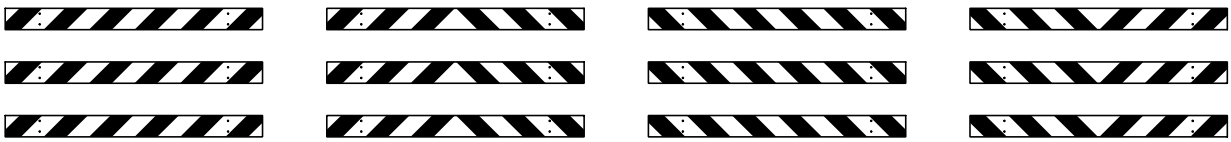
## PERFORATED SQUARE STEEL TUBE OPTION




FRONT ELEVATION

SIDE VIEW

## ANGLE IRON OPTION



LEFT DIRECTIONAL

BI-DIRECTIONAL

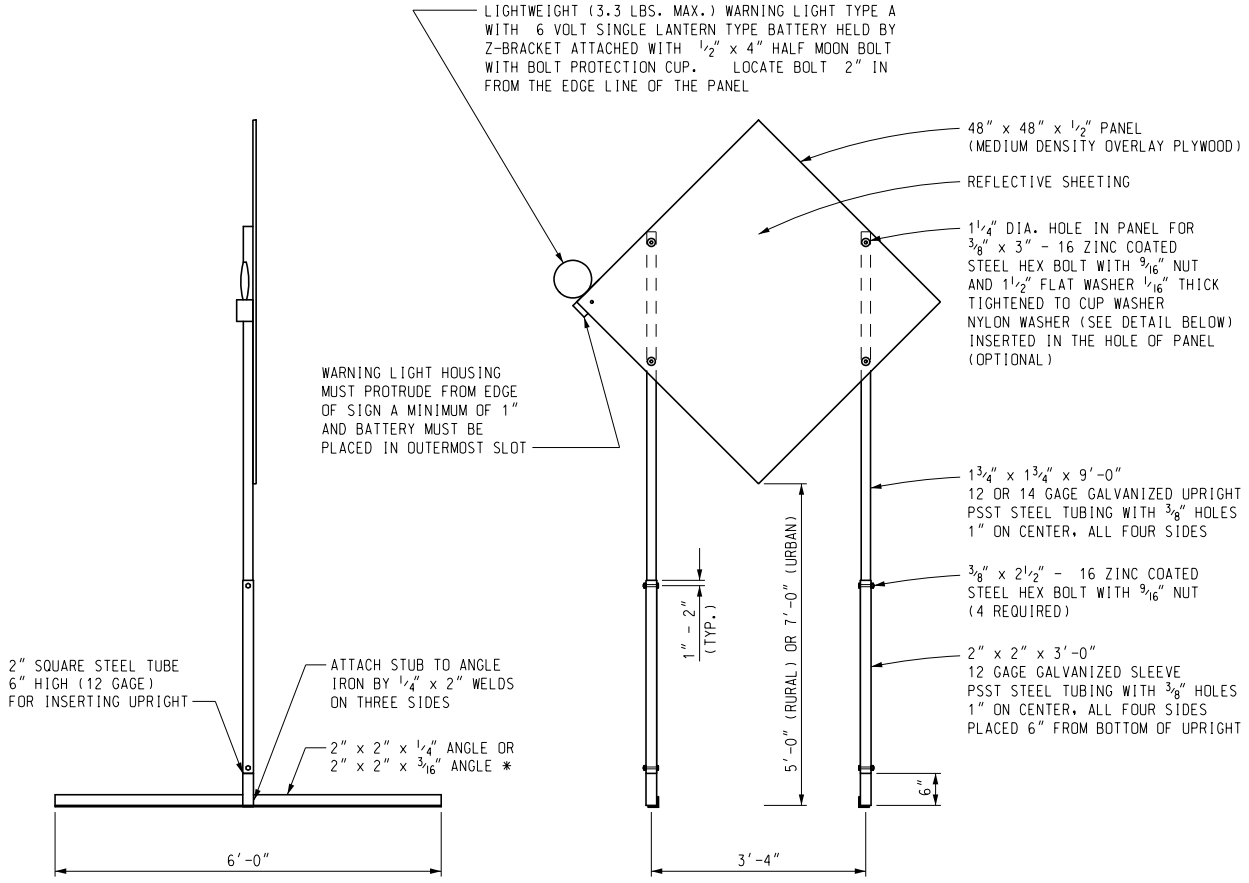
RIGHT DIRECTIONAL

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

| | | |
|---|---|---|
| MDOT Michigan Department of Transportation<br>PREPARED BY DESIGN DIVISION<br>DRAWN BY: ECH<br>CHECKED BY: MWB | DEPARTMENT DIRECTOR<br>Kirk T. Steudle<br>APPROVED BY: _____<br>DIRECTOR, BUREAU OF FIELD SERVICES<br>ENGINEER OF DEVELOPMENT<br>APPROVED BY: (SPECIAL DETAIL)<br>DIRECTOR, BUREAU OF DEVELOPMENT | MICHIGAN DEPARTMENT OF TRANSPORTATION<br>BUREAU OF DEVELOPMENT STANDARD PLAN FOR<br>Temporary Traffic Control Devices<br>F.H.W.A. APPROVAL \| 1/18/11 PLAN DATE \| WZD-125-E \| SHEET 1 OF 3 |




SIDE VIEW

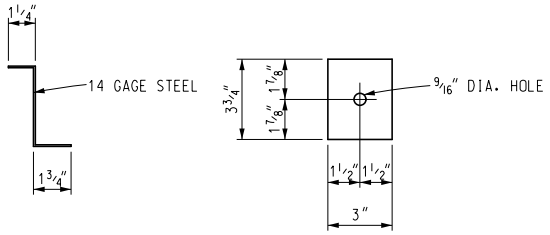
FRONT ELEVATION

## TEMPORARY SIGN SUPPORT

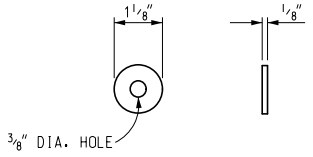
(WARNING LIGHT PLACED ON SIDE CLOSEST TO TRAFFIC)

* 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.




Z-BRACKET DETAIL




OPTIONAL NYLON WASHER

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

NOT TO SCALE

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

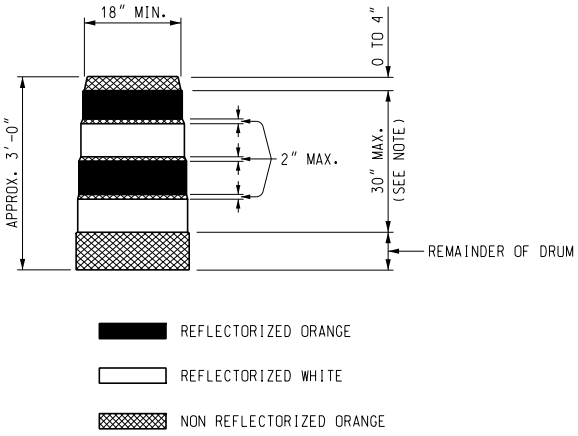
NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.

PLASTIC DRUM

PROPOSED TYPE III BARRICADE

EXISTING TYPE III BARRICADE

## SYMBOLS TO BE USED ON PLANS




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 BARICADE.

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 TEMORARY 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<br>BUREAU OF DEVELOPMENT STANDARD PLAN | (SPECIAL DETAIL)<br>F.H.W.A. APPROVAL | 1/18/11<br>PLAN DATE | WZD-125-E | SHEET<br>3 OF 3 |
|---|---|---|---|---|

MANISTEE COUNTY ROAD COMMISSION
**HMA APPLICATION ESTIMATE**

KPM:GLK 1 of 2 DATE: 10/02/18

**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.

The HMA, 4E1 for filling voids from Edge Trimming - Modified shall have a yield of 330 pounds per square yard.

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**



## 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:

| Pay Item | Pay Unit |
|---|---|
| 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**



## 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:

| Pay Item | Pay Unit |
|---|---|
| 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**



**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:

| Pay Item | Pay Unit |
|---|---|
| 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.

MANISTEE COUNTY ROAD COMMISSION

SPECIAL PROVISION
FOR
**EDGE TRIMMING - MODIFIED**

KPM/GLK 1 of 1 10-02-18

**a. Description.** Cut, remove, and dispose of HMA material according to this special provision and as shown on the plans.

**c. Construction.** Perform the work in accordance with section 501.03 of the 2012 Standard Specifications for Construction, with the exception that the removal of HMA pavement shall be no greater than 2 foot width.

**d. Measurement and Payment.** This work will be measured and paid for as specified in section 501 of the 2012 Standard Specifications using the following contract item (pay item).

| **Contract Item (Pay Item)** | **Pay Unit** |
|---|---|
| Edge Trimming - Modified | Foot |