

**Manistee County Road Commission
Plans and Specifications**

**Big Four Road and Moore Road 2018 HMA
Resurfacing**

**Glovers Lake Road to North County Line Road
Springdale Township
Manistee County, Michigan**

January 11, 2018

MANISTEE COUNTY ROAD COMMISSION

PLANS OF PROPOSED IMPROVEMENTS TO

MOORE ROAD & BIG FOUR ROAD

INDEX TO SHEETS

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JOB NO.

SPRINGDALE TWP
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.

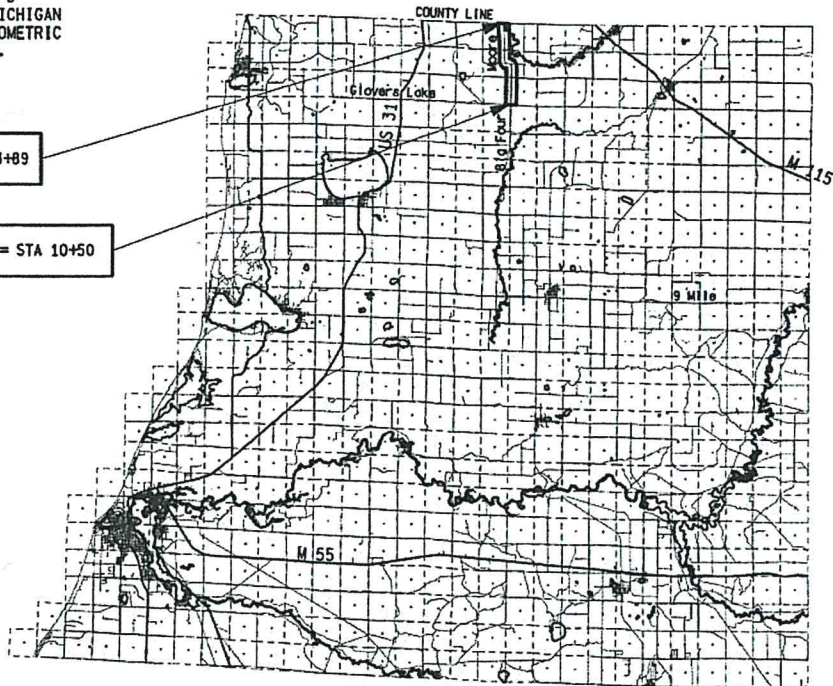
THE PROPOSED IMPROVEMENTS COVERED BY THESE PLANS ARE IN ACCORDANCE WITH SECTION D PREVENTIVE MAINTENANCE (PM) OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2014 GEOMETRIC GUIDELINES FOR LOCAL AGENCY PROGRAMS.

	MOORE RD	BIG FOUR RD
ADT (2018).....	350	475
% COMMERCIAL.....	3%	3%
ADT (2038).....	475	640
POSTED SPEED.....	55 MPH	55 MPH
DESIGN SPEED.....	55 MPH	55 MPH



POE = STA 173+89

POB = STA 10+50



PROJECT LENGTH: 3.09 MILES
CONTRACT FOR: HMA PAVING, GUARDRAIL & PAVEMENT MARKINGS.



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



PREPARED UNDER SUPERVISION OF

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

KPM Engineering
CIVIL ENGINEERING CONSULTANTS

COUNTY ROAD COMMISSION APPROVAL

Mark P. Sohl 1/15/18
MARK P. SOHLDEN, MCRC MANAGER DATE

SHEET NO.
1

71-01136 AM 1/17/2018

PROJECT LOG

BIG FOUR ROAD AND MOORE ROAD FROM GLOVERS LAKE ROAD TO NORTH COUNTY LINE ROAD SPRINGDALE TOWNSHIP, MANISTEE COUNTY

Project Location:

The project is on Big Four Road and Moore Road from 50' north of the centerline of Glovers Lake Road (POB = Station 10+50) northerly to 11' south of the centerline of North County Line Road (POE = Station 173+89). The project length is 3.09 miles.

Refer to the Project Title Sheet.

Description of Work:

The work at this location involves 3.09 miles of Hot Mix Asphalt (HMA) overlay, HMA quarter crown and centerline wedging, aggregate shoulders, approach paving, guardrail replacement, maintaining traffic, and pavement markings.

Specifications:

All work shall be performed in accordance with the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction, the project Special Provisions, plans, project log, and as directed by the Engineer.

Placement of temporary traffic control items within the project limits 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.

Items of Work:

Mainline

In accordance with the typical cross sections and details, place HMA quarter crown wedging and HMA centerline wedging for the entire project length. Exact locations will be as directed by the Engineer. Resurface the existing and wedged pavements in accordance with the typical cross sections, and place aggregate shoulders. Construct a butt joint at the POB and POE in accordance with the details.

HMA Surface, Rem	280 Syd
HMA, 4E1 (HMA Wedging)	1,887 Ton
HMA, 4E1 (for HMA Overlay)	3,600 Ton
Shoulder, CI II	2,723 Ton

PROJECT LOG

BIG FOUR ROAD AND MOORE ROAD FROM GLOVERS LAKE ROAD TO NORTH COUNTY LINE ROAD SPRINGDALE TOWNSHIP, MANISTEE COUNTY

Along existing and proposed guardrail locations, construct 4' wide paved shoulders in accordance with the details. Trench and place HMA shoulder leveling course. HMA top course for the shoulders is included in the above mainline quantities. Construct 25' tapers at each end of the proposed HMA shoulders.

Trenching	9 Sta
HMA, 4E1 (for HMA shoulder leveling course)	64 Ton

Springdale Road Approaches (Approach Treatment Type IIA & IIB)

In accordance with the Intersection Approach Details and as directed by the Engineer, resurface the approaches and place aggregate shoulders to meet the new pavement grade. Remove existing HMA surface (approximately 15' x 24') on the east leg and construct a butt joint to meet the existing intersecting paved road as shown on the details. Place Approach, CI II on the westerly leg to meet the existing aggregate road.

HMA Surface, Rem	40 Syd
HMA Approach	35 Ton
Approach, CI II	4 Ton
Shoulder, CI II	6 Ton

Mallard Road Approaches and Nurnberger Road Approach (Approach Treatment Type I)

In accordance with the Intersection Approach Type 1 Detail and as directed by the Engineer, perform excavation and construct aggregate base widenings and place HMA paving to construct an HMA apron and to meet the existing aggregate roadways.

Approach CI I (Estimated at 6 inch depth)	53 Ton
HMA Approach	18 Ton

Paved Driveway Approaches (HMA or Concrete)

Existing HMA paved drive approaches shall be sawcut and removed for a distance of 10' from the edge of mainline pavement. Place Approach, CI I material as directed by the Engineer and resurface with 2" of HMA material.

There is one concrete driveway at Station 145+89 Right. Sawcut and remove the concrete drive for a distance of 10' from the edge of mainline pavement. Place Approach, CI I material as directed by the Engineer and pave 6" concrete driveway.

PROJECT LOG

BIG FOUR ROAD AND MOORE ROAD FROM GLOVERS LAKE ROAD TO NORTH COUNTY LINE ROAD SPRINGDALE TOWNSHIP, MANISTEE COUNTY

HMA Surface, Rem (existing HMA drives)	124 Syd
Approach, CI I	14 Ton
HMA Approach	14 Ton
Pavt, Rem (existing concrete drives)	23 Syd
Driveway, Nonreinf Conc, 6 inch	29 Syd

The sawcutting and removal of the existing paved (concrete and HMA) approaches is included in payment for Pavt, Rem or HMA Surface, Rem. Any excavation or grading required is included in payment for Approach, CI I.

Un-paved (Gravel or Dirt) Driveway Approaches

Existing un-paved drive approaches shall be resurfaced with Approach, CI II material for a distance of 10' from the new edge of pavement or as directed by the Engineer as shown on the details. As previously noted, widen the proposed HMA surface by 2' at all existing un-paved drive approaches during the mainline HMA paving.

Approach, CI II	44 Ton
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Guardrail Replacement

There is existing guardrail from Station 87+55 to Station 92+00 Rt. Remove the existing guardrail and install new guardrail from Station 87+55 to Station 92+56 Rt. 8' guardrail posts shall be utilized on this project (excluding approach terminals). Place guardrail reflectors at 25' intervals.

Guardrail, Rem	456 Ft
Guardrail, Type B	413 Ft
Guardrail Approach Terminal, Type 2B	2 Ea
Guardrail Reflector	34 Ea

There is existing guardrail from Station 89+45 to Station 92+45 Lt. Remove 12.5' of guardrail on the southeast end. Place a Guardrail Approach Terminal, Type 2B.

Guardrail, Rem	13 Ft
Guardrail Approach Terminal, Type 2B	1 Ea

PROJECT LOG

BIG FOUR ROAD AND MOORE ROAD FROM GLOVERS LAKE ROAD TO NORTH COUNTY LINE ROAD SPRINGDALE TOWNSHIP, MANISTEE COUNTY

Maintaining Traffic Quantities

Maintain Traffic within the project limits in accordance with the Special Provision for Maintaining Traffic.

Traffic Control	1 LSUM
Temporary Pavement Markings	1 LSUM

Entire Project Quantities

There is a government corner located in the existing pavement at Sta 62+22 that will need to be preserved and adjusted. Entire project quantities are as follows:

Monument Box	2 Ea
Monument Preservation	2 Ea

A miscellaneous quantity of Hand Patching is provided for filling potholes and voids in the existing pavement prior to HMA paving. The Engineer shall determine the location of the work.

Hand Patching	10 Ton
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For use at guardrail endings if needed or other applications. The Engineer shall determine the locations of the work.

Embankment, LM	50 Cyds
Slope Restoration	100 Syd

Replace existing mail box posts where directed by the Engineer:

Post, Mailbox	5 Ea
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Entire project quantities for permanent pavement markings are as follows:

Pavt Mrkg, Waterborne, 4 inch White	32,678 Ft
Pavt Mrkg, Waterborne, 4 inch Yellow	12,054 Ft

PROJECT LOG

BIG FOUR ROAD AND MOORE ROAD FROM GLOVERS LAKE ROAD TO NORTH COUNTY LINE ROAD SPRINGDALE TOWNSHIP, MANISTEE COUNTY

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. 8' Guardrail Posts

Guardrail shall be constructed using 8' posts (excluding approach terminals). The additional post length will not be paid for separately, but shall be included in payment for the proposed guardrail.

5. Guardrail Post Holes

Posts located near existing utilities shall be hand dug. This work will not be paid for separately, but shall be included in payment for the proposed guardrail.

6. Aggregate Base

Aggregate Base used on this project shall be Aggregate 22A or Aggregate 21AA.

7. Mobilization

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

PROJECT LOG

BIG FOUR ROAD AND MOORE ROAD FROM GLOVERS LAKE ROAD TO NORTH COUNTY LINE ROAD SPRINGDALE TOWNSHIP, MANISTEE COUNTY

LOG OF EXISTING PAVEMENT MARKINGS

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

Sta 10+50 to Sta 74+00	Skip
Sta 74+00 to Sta 84+10	NB Solid, SB Skip
Sta 84+10 to Sta 102+10	Double Yellow
Sta 102+10 to Sta 112+00	NB Skip, SB Solid
Sta 112+00 to Sta 116+00	Skip
Sta 116+00 to Sta 118+70	NB Solid, SB Skip
Sta 118+70 to Sta 125+80	Skip
Sta 125+80 to Sta 128+60	NB Skip, SB Solid
Sta 128+60 to Sta 138+20	Skip
Sta 138+20 to Sta 148+50	NB Solid, SB Skip
Sta 148+50 to Sta 149+70	Double Yellow
Sta 149+70 to Sta 160+00	NB Skip, SB Solid
Sta 160+00 to Sta 173+89	Skip

PROJECT LOG

BIG FOUR ROAD AND MOORE ROAD FROM GLOVERS LAKE ROAD TO NORTH COUNTY LINE ROAD SPRINGDALE TOWNSHIP, MANISTEE COUNTY

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.

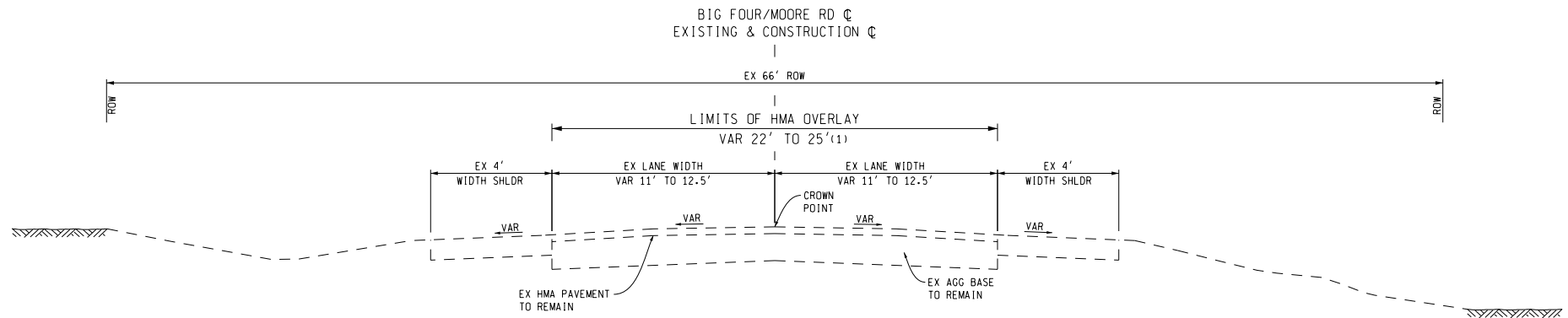
MONUMENT BOXES	R-11-E
GUARDRAIL TYPES A, B, BD, T, TD, MGS-8 & MGS-8D	R-60-J (S.D.)
GUARDRAIL APPROACH TERMINAL TYPES 2B & 2T	R-62-H (S.D.)

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

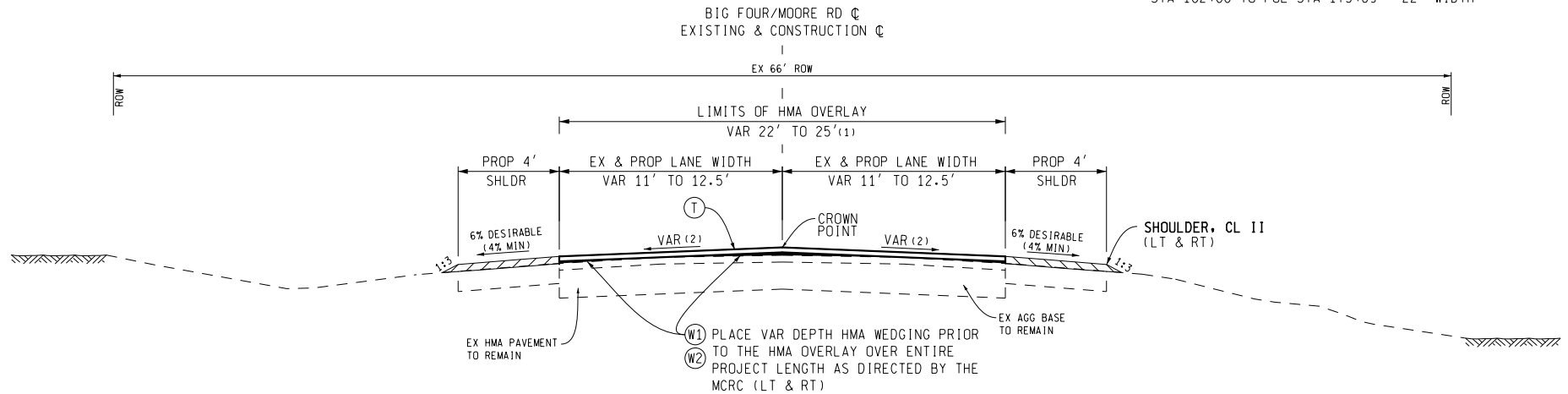
Note: Road Standard Plans, Road Special Details, and Traffic & Safety Standard Plans are not included in the Bid Documents. All bidders are required to obtain them from the MDOT website and utilize them if they are the selected contractor for the project.



EXISTING NORMAL CROWN SECTION

SECTION APPLIES:
POB STA 10+50 TO STA POE 173+89

(1) EX & PROP PAVT WIDTHS
POB STA 10+50 TO STA 93+00 - 23' WIDTH
STA 93+00 TO STA 102+00 - 25' WIDTH
STA 102+00 TO POE STA 173+89 - 22' WIDTH



PROPOSED NORMAL CROWN OVERLAY SECTION

SECTION APPLIES:
POB STA 10+50 TO POE STA 173+89

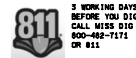
(2) VARY SLOPE 1.5% TO 3.0% (2% DESIRABLE)
AS DIRECTED BY THE MCRC. MATCH EX
SUPERELEVATION IN SUPERELEVATED
SECTIONS.

HMA APPLICATION ESTIMATE

IDENT NO.	ITEM	RATE PER SYD	PERFORMANCE GRADE	REMARKS
(T)	HMA, 4E1	165# (AVG)	PG 58-28	HMA OVERLAY, 1 COURSE AWI = 220
(L)	HMA, 4E1	330#	PG 58-28	HMA SHLDR LEVELING COURSE
(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
(A1)	HMA APPROACH	220#	PG 58-28	HMA, 4E1 FOR APPROACH ROADS
(A2)	HMA APPROACH	220#	PG 58-28	HMA, 4E1 FOR HMA DRIVES
*** BOND COAT		0.05-0.15 GAL/SYD		

*** FOR INFORMATION ONLY

NO SCALE



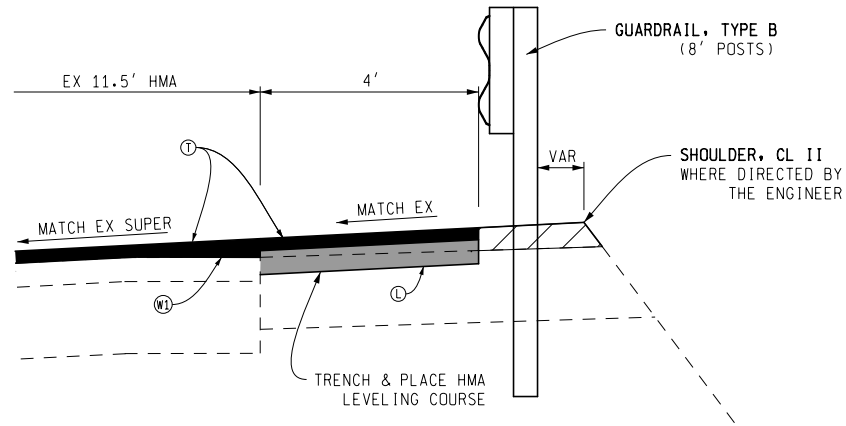
BIG FOUR RD/MOORE RD
TYPICAL SHEET

DATE: 1/11/2018

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

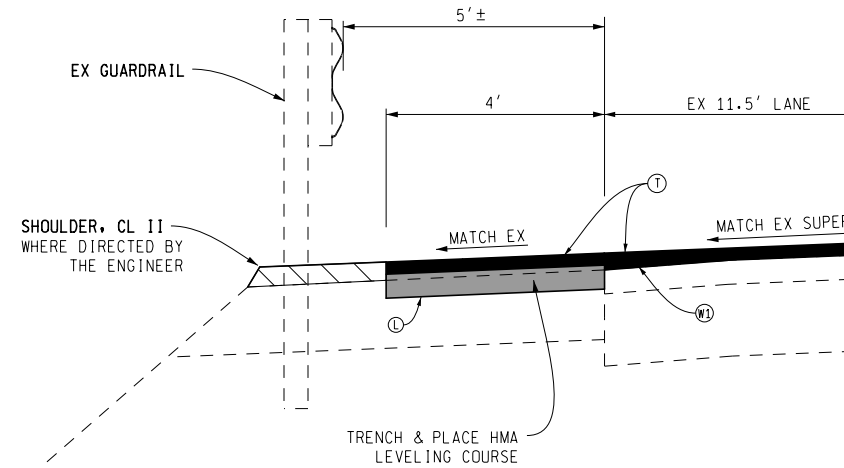
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GLK	9

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PROPOSED GUARDRAIL (W/PROP PAVED SHLDR) SECTION

SECTION APPLIES:
STA 87+55 TO 92+00 RT



EXISTING GUARDRAIL (W/PROP PAVED SHLDR) SECTION

SECTION APPLIES:
STA 89+08 TO 92+45 LT

CONSTRUCT 25' TAPERS AT EACH END OF PROPOSED PAVED SHOULDERS FOR TRANSITIONING TO EX PAVT EDGE.

NO SCALE

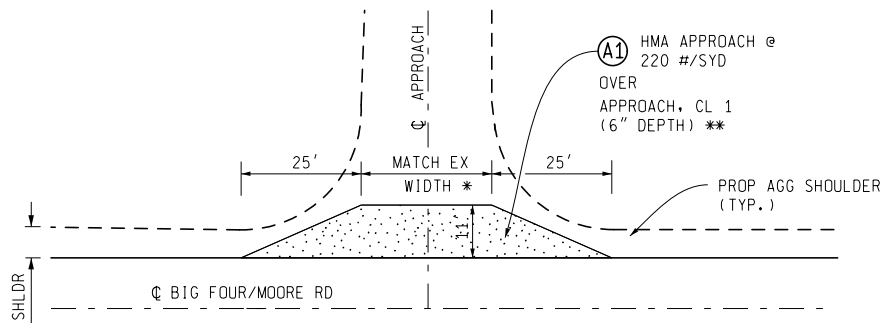


GUARDRAIL AND PROP PAVED SHOULDER
DETAIL SHEET

DATE: 1/11/2018

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

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GLK	10

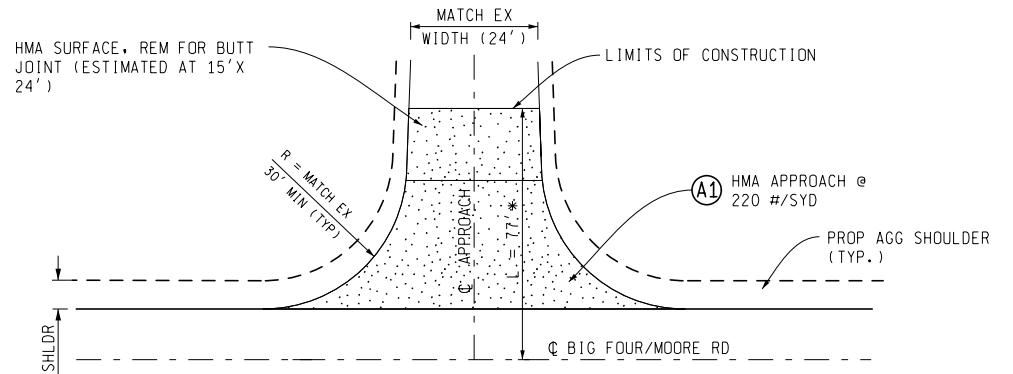


APPROACH TREATMENT TYPE I (EX AGG)

TO APPLY:
MALLARD ROAD (LT & RT)
NURNBERGER RD (LT)

* OR AS DIRECTED BY THE MCRC

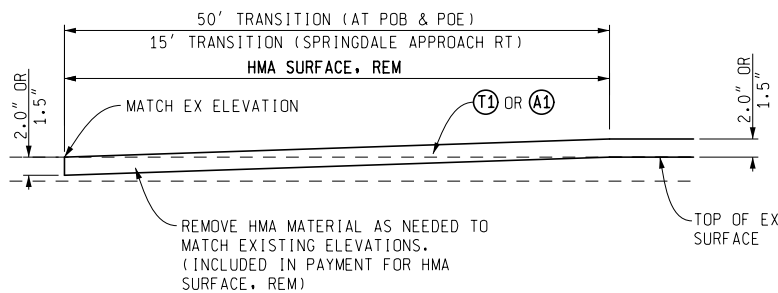
** EXCAVATION AND APPROACH, CL 1 SHALL EXTEND TO 1' BEYOND PROP HMA APPROACH LIMITS. EXCAVATION FOR PLACEMENT OF THE AGGREGATE BASE IS INCLUDED IN PAYMENT FOR APPROACH, CL 1.



APPROACH TREATMENT TYPE IIA (EX HMA)

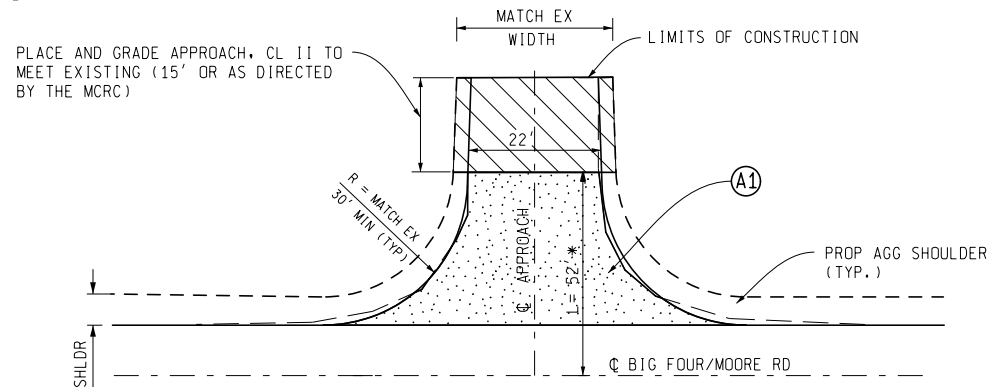
TO APPLY:
SPRINGDALE ROAD (RT)

* OR AS DIRECTED BY THE MCRC



BUTT JOINT DETAIL

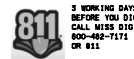
TO APPLY:
POB STA 10+50
POE STA 173+89
SPRINGDALE RD APPROACH RT



APPROACH TREATMENT TYPE IIB (EX AGG)

TO APPLY:
SPRINGDALE ROAD (LT)

NO SCALE



INTERSECTION APPROACH
DETAIL SHEET

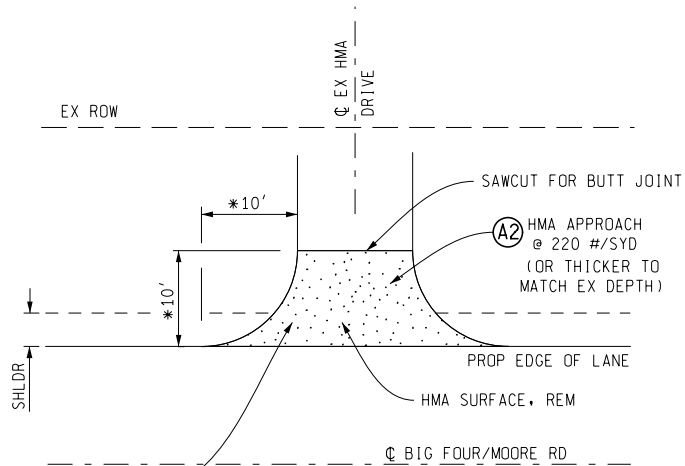
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MANISTEE COUNTY
ROAD COMMISSION
8946 CHIPPEWA HWY
BEAR LAKE, MI 49614

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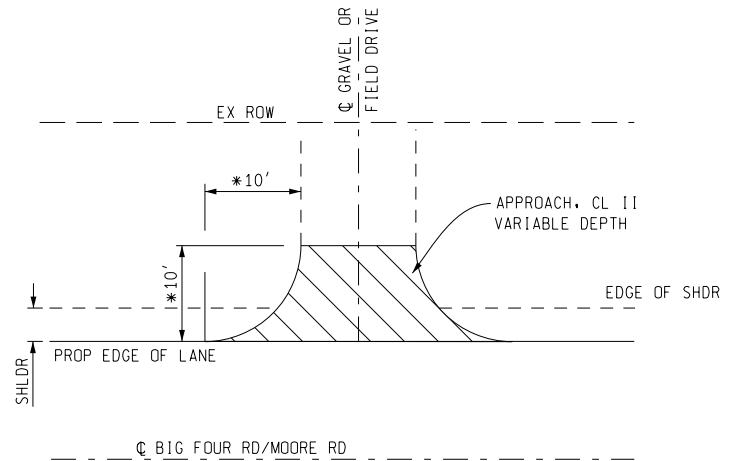
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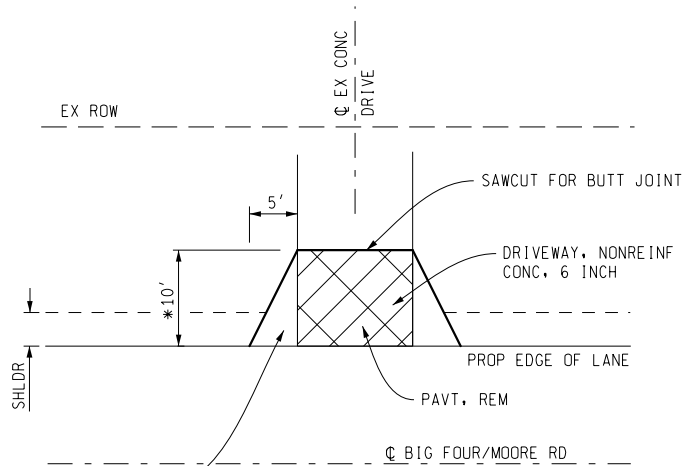
FOLLOWING REMOVAL OF EX HMA, PLACE APPROACH, CL I AS NEEDED TO MATCH PROPOSED GRADE. GRADING, SHAPING & COMPACTING THE APPROACH IS INCLUDED IN PAYMENT FOR APPROACH, CL I.

HMA PAVED DRIVEWAY DETAIL



UN-PAVED DRIVEWAY DETAIL

* OR AS DIRECTED BY THE MCRC



FOLLOWING REMOVAL OF EX PAVT, PLACE APPROACH, CL I AS NEEDED TO MATCH PROPOSED GRADE. GRADING, SHAPING & COMPACTING THE APPROACH IS INCLUDED IN PAYMENT FOR APPROACH, CL I.

CONCRETE PAVED DRIVEWAY DETAIL

NO SCALE



KPM Engineering

DRIVEWAY DETAIL SHEET

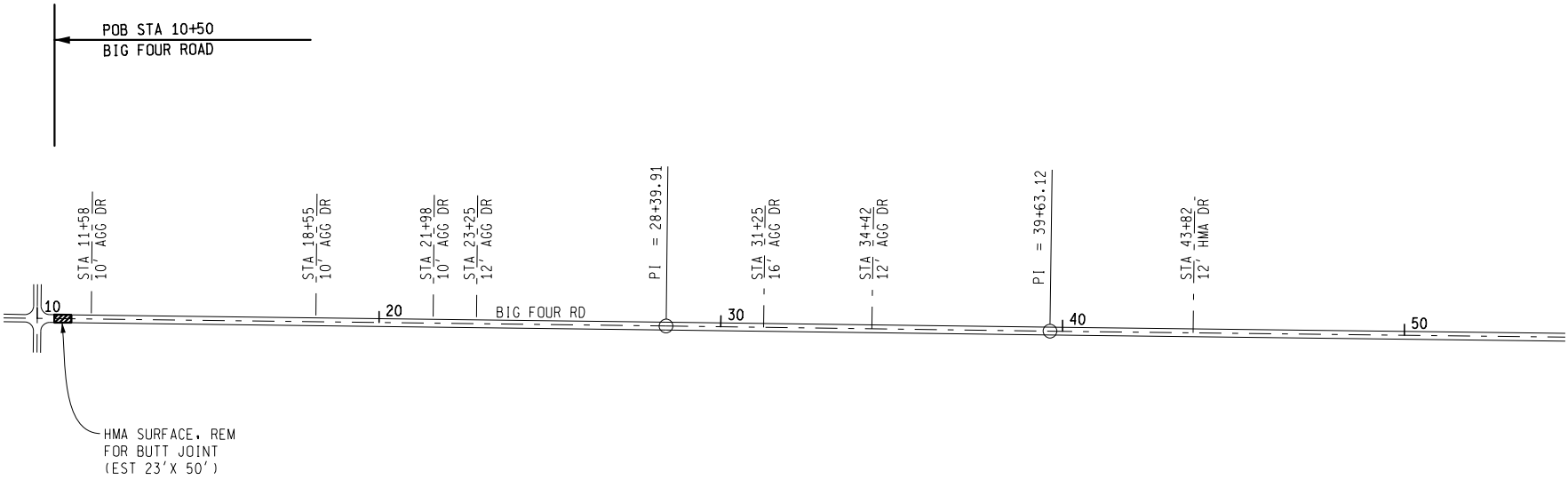
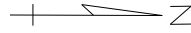
DATE: 1/11/2018

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

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GLK	12

GLOVERS LAKE RD ☐
STA 10+00

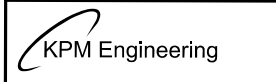
STA 10+50 TO STA 55+00
PLACE HMA WEDGING AND HMA OVERLAY
23' WIDTH



NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM
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GLOVERS LAKE RD ☐
STA 10+00

NO SCALE



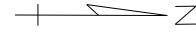
BIG FOUR ROAD
POB STA 10+50 TO STA 55+00
SPRINGDALE TWP
DATE: 1/11/2018

MANISTEE COUNTY
ROAD COMMISSION
8946 CHIPPEWA HWY
BEAR LAKE, MI 49614
DRAWN BY: GLK
SHEET NO.: 13

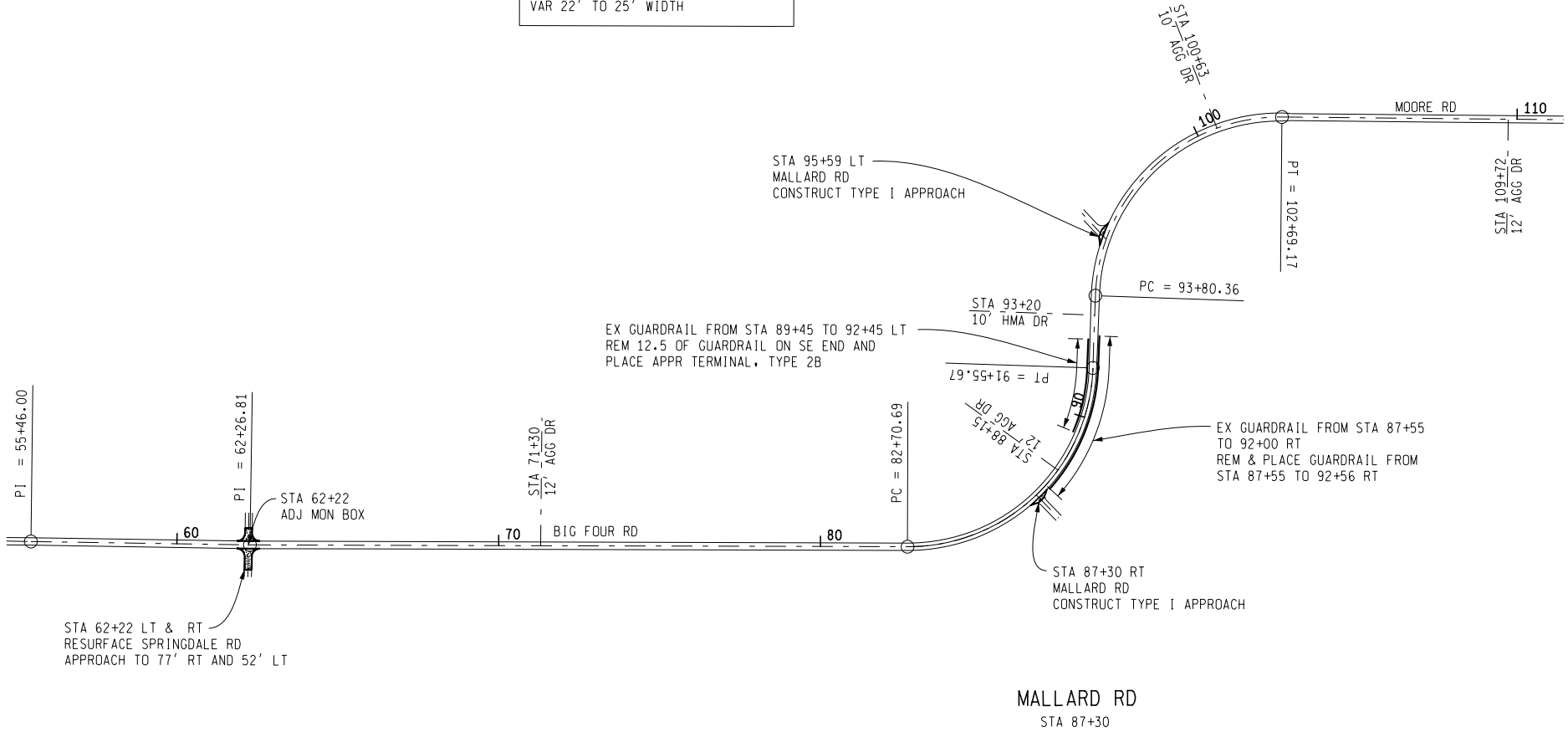
1/11/2018 8:05:34 AM

SPRINGDALE RD
STA 62+22

MALLARD RD
STA 95+59



STA 55+00 TO STA 110+00
PLACE HMA WEDGING AND HMA OVERLAY
VAR 22' TO 25' WIDTH

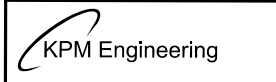


NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM
AERIAL PHOTOGRAPHY AND IS FOR INFORMATION ONLY.

SPRINGDALE RD
STA 62+22

MALLARD RD
STA 87+30

NO SCALE



BIG FOUR RD/MOORE RD
STA 55+00 TO STA 110+00
SPRINGDALE TWP

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

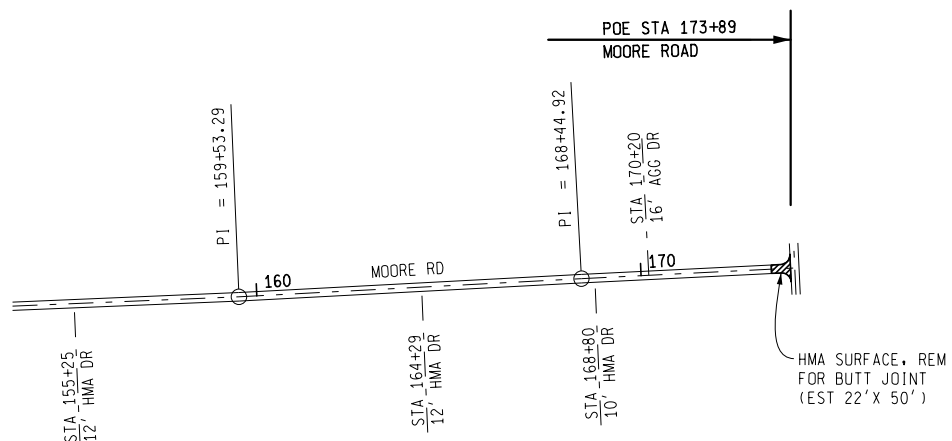
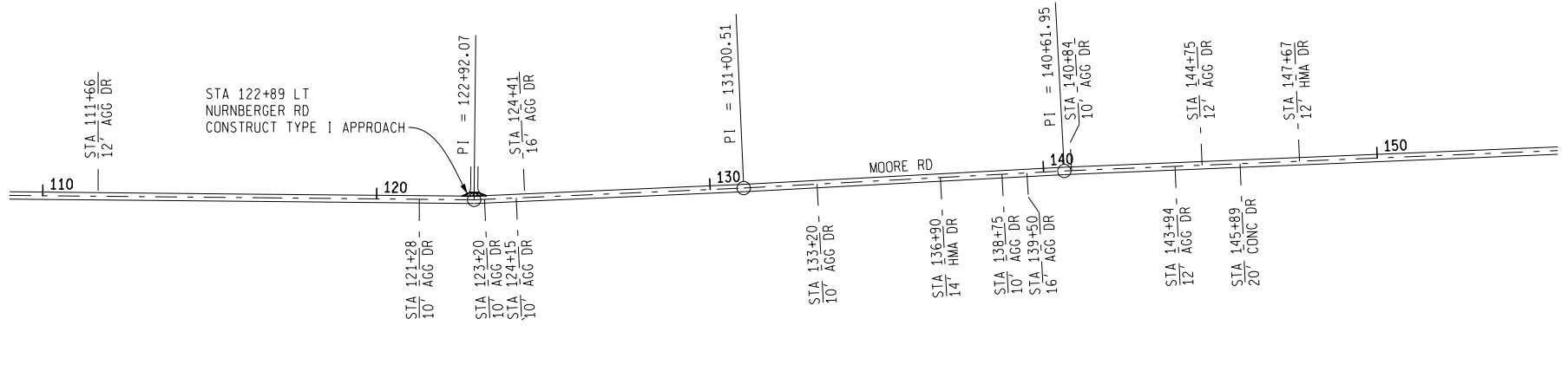
DATE: 1/11/2018

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SHEET NO.: 14

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NURNBERGER RD
STA 122+89

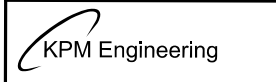
STA 110+00 TO STA 173+89
PLACE HMA WEDGING AND HMA OVERLAY
VAR 22' WIDTH



N COUNTY LINE RD
STA 174+00

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

NO SCALE



MOORE RD STA 110+00 TO POE STA 173+89 SPRINGDALE TWP		MANISTEE COUNTY ROAD COMMISSION 8946 CHIPPEWA HWY BEAR LAKE, MI 49614	
DATE: 1/11/2018		DRAWN BY GLK	SHEET NO. 15

Manistee County Road Commission
Special Provision
For
Maintaining Traffic

KPM:GLK

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01/08/18

General

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

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

Construction Influence Area (CIA)

The CIA limits shall include the area within the right-of-ways for Big Four Road and Moore Road from Glovers Lake Road to North County Line Road in Springdale Township, plus a distance in advance as required for the advance construction signing and traffic control devices. The CIA shall also 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 05/25/18 to 6:00 am, Tuesday, 05/29/18

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

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

A minimum of one lane of traffic shall be maintained at all times. All lanes shall be opened for traffic at night. Work shall only be allowed on one side of the road at a time.

Manistee County Road Commission
Special Provision
For
Maintaining Traffic

KPM:GLK

Page 2 of 3

01/08/18

Traffic shall be maintained with traffic regulator control in accordance with the attached Maintaining Traffic Typical M0020a and M0140a.

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

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

Traffic Control Devices

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

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

All construction signs left in place for a duration exceeding 14 days will be on driven posts as per the MDOT Work Zone Device Special Detail WZD-100-A which is available on the MDOT website or available from the MCRC (upon request).

Quantities for traffic control devices have been estimated based on two (2) sequences of Maintaining Traffic Typical M0140a (one sequence for the main roadway and one sequence for one of the main intersecting roads if needed), plus nine (9) W20-1 "Road Work Ahead" signs to be placed on the intersecting roads a minimum of 550' in each direction from the centerline of Big Four Road and Moore Road or as directed by the Engineer.

Temporary Pavement Markings

Temporary centerline pavement markings shall be Pavt Mrkg, Type NR tape, 4 inch, Yellow, Temp and shall be placed daily on the HMA top course in accordance with the MDOT 2012 Standard Specifications for Construction. The temporary markings shall be placed in a single line of 4' strips spaced 50' center-to-center for passing zones and a double line of 4' strips spaced 50' center-to-center for each course of HMA paving for no-passing zones.

Measurement and Payment

The completed work for Maintaining Traffic and for Temporary Pavement Markings, including furnishing and placement of all materials, labor, and

Big Four and Moore Roads
2018 HMA Resurfacing

Manistee County Road Commission
Special Provision
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equipment, will be measured and paid for at the contract unit price for the following contract items (pay items).

<u>Contract Item</u>	<u>Pay Unit</u>
Traffic Control.....	Lump Sum
Temporary Pavement Markings.....	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	464 Square Foot
Sign, Type B, Temp, Prismatic Oper.....	464 Square Foot
Traf Regulator Control (with Intermediate Flaggers)	1 Lump Sum
Minor Traf Devices	1 Lump Sum

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

MINIMUM MERGING TAPER LENGTH "L" (FEET)

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

TAPER LENGTH "L" IN FEET

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

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

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

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

TYPES OF TAPERS


UPSTREAM TAPERS

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

DOWNSTREAM TAPERS (USE IS OPTIONAL)

TAPER LENGTH

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

 TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL	TABLES FOR "L", "D" AND "B" VALUES		
	DRAWN BY: CON:AE:djf CHECKED BY: BMM	JUNE 2006 PLAN DATE:	M0020a
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.

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






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

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

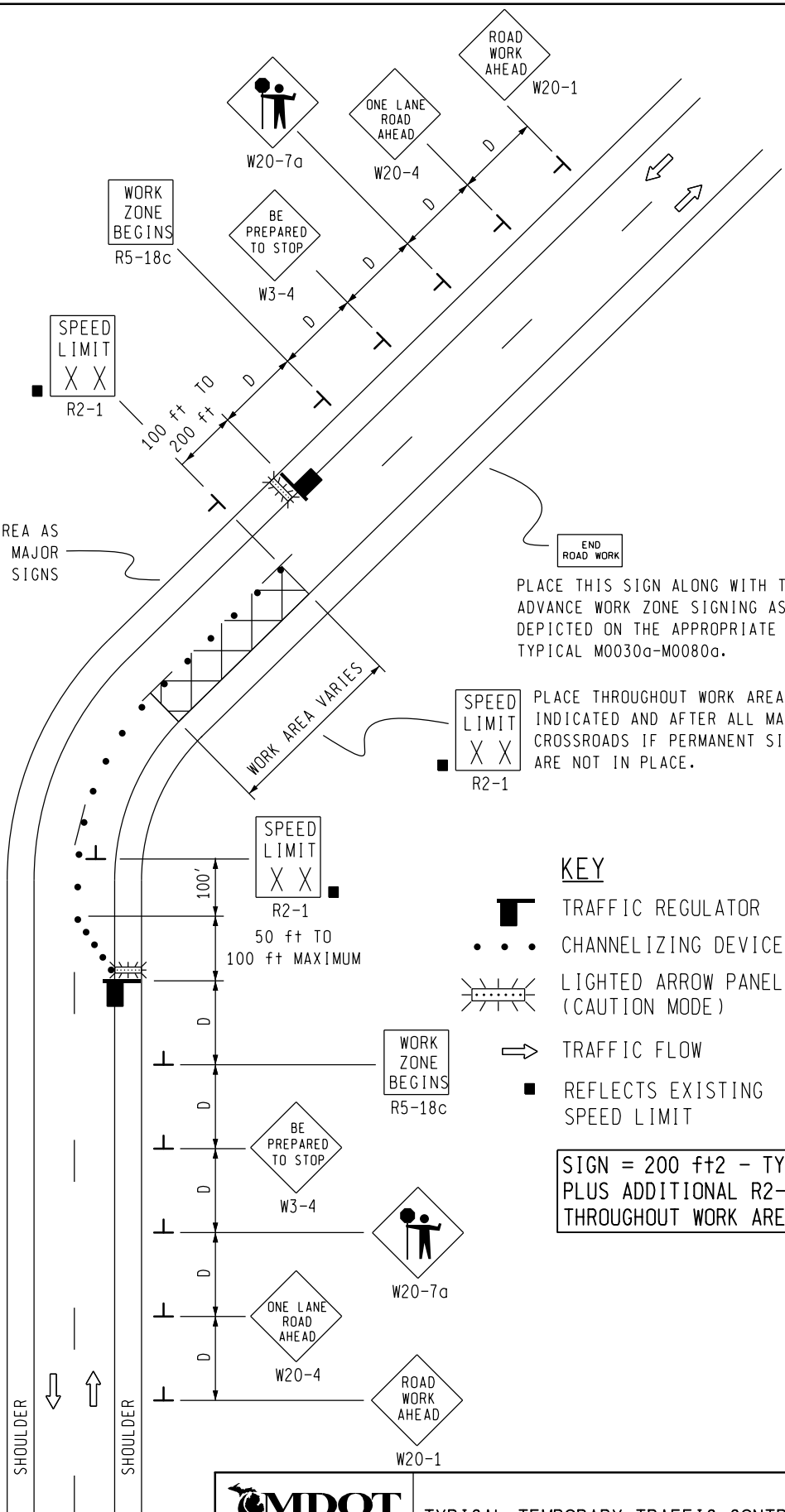
PLACE THROUGHOUT WORK AREA AS INDICATED AND AFTER ALL MAJOR CROSSROADS IF PERMANENT SIGNS ARE NOT IN PLACE.

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

KEY

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

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



MDOT
Michigan Department of Transportation
TRAFFIC AND SAFETY
MAINTAINING TRAFFIC
TYPICAL

DRAWN BY: CON:AE:djf
CHECKED BY: BMM:CRB

TYPICAL TEMPORARY TRAFFIC CONTROL FOR A TWO-LANE TWO-WAY ROADWAY WHERE ONE LANE IS CLOSED UTILIZING TRAFFIC REGULATORS, NO SPEED REDUCTION

OCTOBER 2011
PLAN DATE:

M0140a

SHEET
1 OF 2

NOT TO SCALE


NOTES

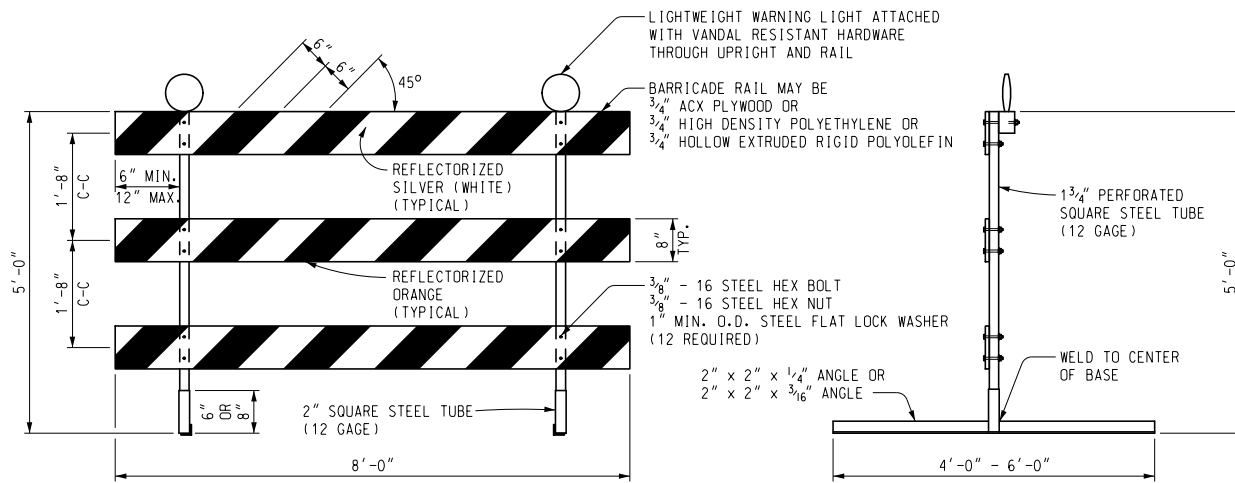
- 1H. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES AND LENGTH OF LONGITUDINAL BUFFERS
SEE **M0020a** FOR "D" VALUES.
2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.
3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE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

SIGN SIZES

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

NOT TO SCALE

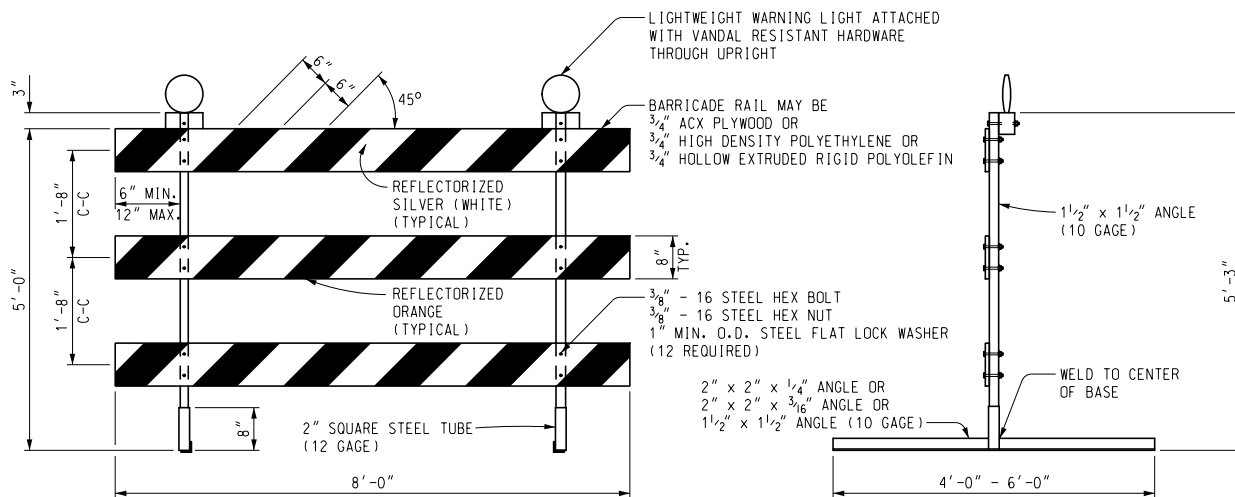
 TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL	TYPICAL TEMPORARY TRAFFIC CONTROL FOR A TWO-LANE TWO-WAY ROADWAY WHERE ONE LANE IS CLOSED UTILIZING TRAFFIC REGULATORS, NO SPEED REDUCTION		
DRAWN BY: CON:AE:djf	OCTOBER 2011	M0140a	SHEET
CHECKED BY: BMM:CRB	PLAN DATE:		2 OF 2
FILE: PW RD/TS/Typicals/Signs/MT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



FRONT ELEVATION

SIDE VIEW

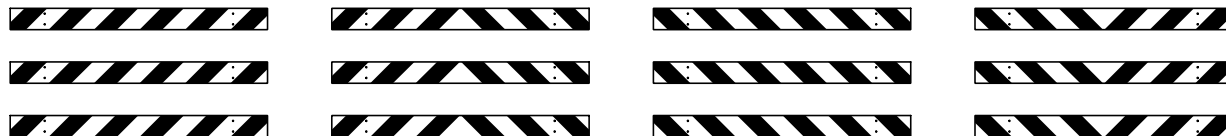
PERFORATED SQUARE STEEL TUBE OPTION



FRONT ELEVATION

SIDE VIEW

ANGLE IRON OPTION



LEFT DIRECTIONAL

BI-DIRECTIONAL

RIGHT DIRECTIONAL

CLOSURES

BARRICADE RAIL SHEETING OPTIONS
TYPE III BARRICADES

Other Type III Barricades meeting current NCHRP crash worthy criteria can be found on the FHWA Safety website at http://safety.fhwa.dot.gov/roadway_dept/road_hardware/wzd.htm



PREPARED BY
DESIGN DIVISION

DRAWN BY: ECH

CHECKED BY: MWB

DEPARTMENT DIRECTOR
Kirk T. Steudle

APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES
ENGINEER OF DEVELOPMENT

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

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

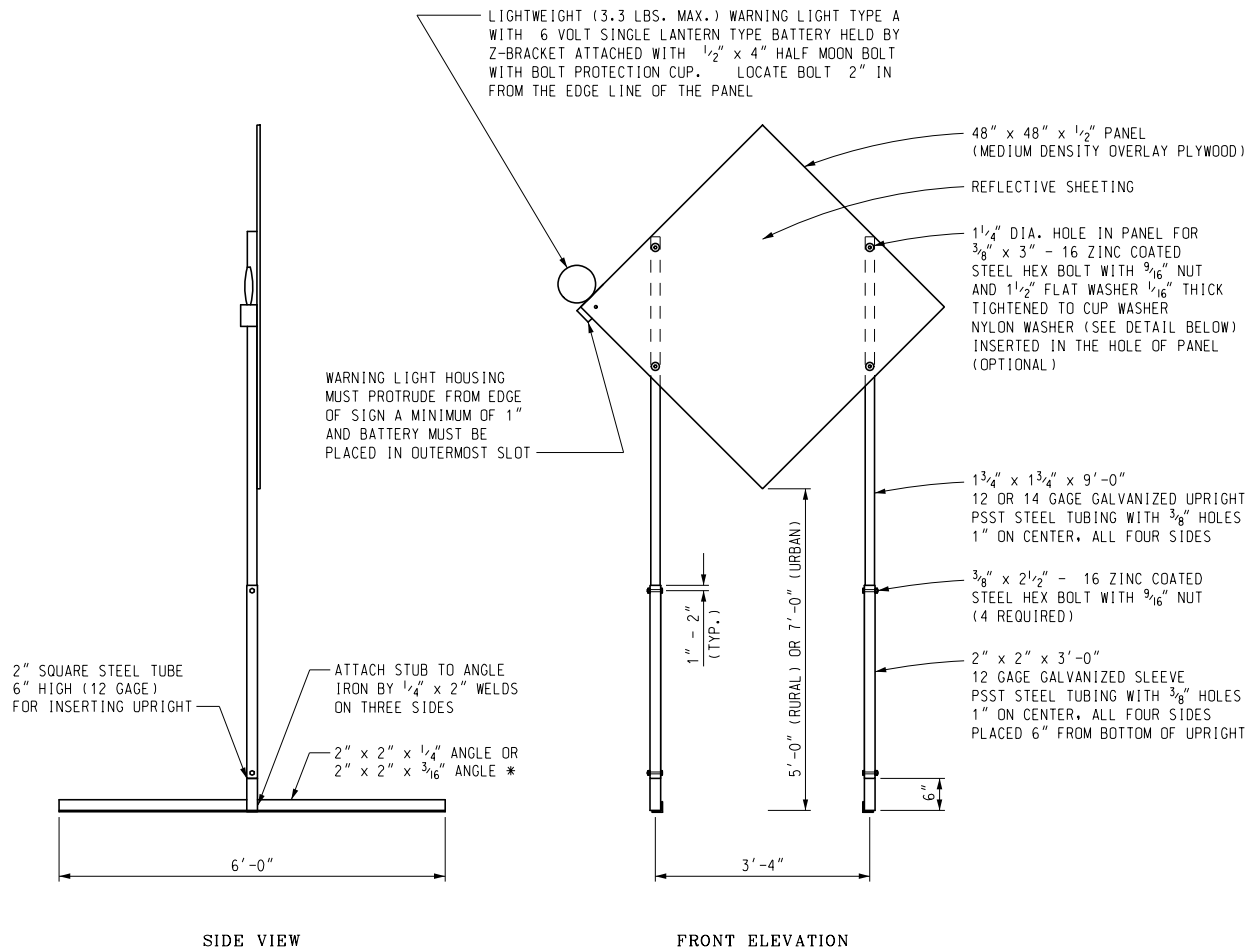
Temporary
Traffic Control Devices

F.H.W.A. APPROVAL

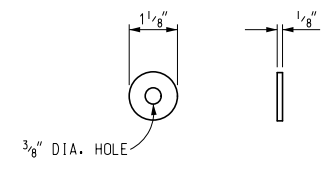
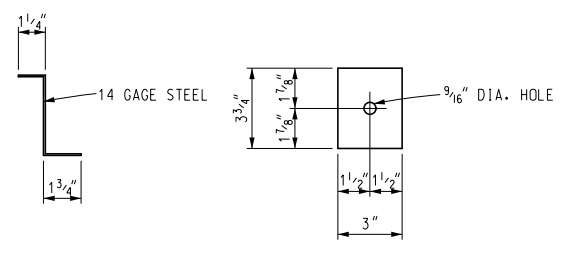
1/18/11
PLAN DATE

WZD-125-E

SHEET
1 OF 3



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



Other temporary sign supports meeting current NCHRP crash worthy criteria can be found on the FHWA Safety website at http://safety.fhwa.dot.gov/roadway_dept/road_hardware/wzd.htm

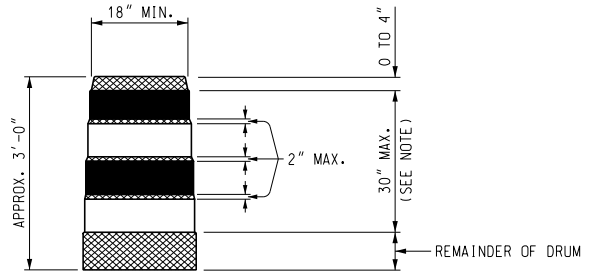
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	SPECIAL DETAIL F.H.W.A. APPROVAL	1/18/11 PLAN DATE	WZD-125-E	SHEET 2 OF 3
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NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.

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

SYMBOLS TO BE USED ON PLANS



- REFLECTORIZED ORANGE
- REFLECTORIZED WHITE
- NON REFLECTORIZED ORANGE

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

PLASTIC DRUM

NOTES:

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

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

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

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

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

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
 BUREAU OF DEVELOPMENT STANDARD PLAN

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

1/18/11
 PLAN DATE

WZD-125-E

SHEET
 3 OF 3

**MANISTEE COUNTY ROAD COMMISSION
HMA APPLICATION ESTIMATE**

KPM:GLK

1 of 2

DATE: 01/08/18

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 wedging courses to correct existing distorted and damaged pavement areas shall have a variable yield per square yard.

The HMA, 4E1 top course for the HMA overlay shall have a yield of 165 pounds per square yard and shall be placed after the HMA wedging. Increase the HMA application rate as needed for the butt joints at the project POB and POE.

The HMA, 4E1 leveling course for the proposed HMA shoulders shall have a yield of 330 pounds per square yard and shall be placed after the mainline HMA wedging.

MANISTEE COUNTY ROAD COMMISSION
HMA APPLICATION ESTIMATE

KPM:GLK

2 of 2

DATE: 01/08/18

The HMA Approach for paving driveways and approach roads will consist of HMA, 4E1 and shall have a yield of 220 pounds per square yard. The yield shall increase where needed to match existing HMA thickness.

The Performance Grade asphalt binder grades for the HMA top course and leveling course for HMA, 4E1 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 HMA, 4E1, and HMA Approach.

The Aggregate Wear Index (AWI) for all aggregates used in the HMA top course mixtures shall be a minimum of 220.

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 HMA Approach Items.

MANISTEE COUNTY ROAD COMMISSION

SPECIAL PROVISION
FOR
SLOPE RESTORATION

KPM/GLK

1 of 1

01-08-18

a. Description:

This work shall be done in accordance with the requirements of section 816 of the 2012 Edition of the Michigan Department of Transportation Standard Specifications for Construction, except as specified herein.

b. Materials:

The following materials shall meet the requirements of Section 917 of the 2012 Standard Specifications for Construction, and as shown below:

<u>Material</u>	<u>Application Rate</u>
Topsoil Surface	4 inches
Seeding, Mixture TDS	220 #/Acre
Fertilizer, Chemical Nutrient, CI A	176 #/Acre
Mulch Blanket	(Must be from MDOT Qualified Products list)

c. Construction Methods:

Topsoil, seed, fertilizer and place mulch blanket meeting the requirements of the 2012 MDOT Standard Specifications for Construction will be placed on disturbed areas beyond the roadway shoulder. Topsoil shall be furnished by the contractor but salvaged topsoil may be used as approved by engineer. Topsoil depth shall be not less than 4 inches. The Contractor is responsible for determining the amount of existing topsoil that can be salvaged.

d. Measurement and Payment:

The completed work shall be measured and paid for at the contract unit price for the following contract pay item and includes all materials, equipment and labor necessary to complete this item as described above.

Pay Item

Unit

Slope Restoration

Square Yard

Payment for **Slope Restoration** will be measured by area in square yard in place. All materials, labor and equipment required to install **Slope Restoration**, which includes Topsoil Surface, Furnished or Salvaged; Fertilizer, Chemical Nutrient, Class A; Seeding Mixture; and Mulch Blanket will not be paid for separately but shall be included in the contract unit price bid for **Slope Restoration**.

Big Four and Moore Roads
2018 HMA Resurfacing

MANISTEE COUNTY ROAD COMMISSION

**NOTICE TO BIDDERS
UTILITY COORDINATION**

KPM:GLK

1 of 1

12-29-17

BIG FOUR-MOORE RDS 2018 OVERLAY

The contractor shall cooperate and coordinate construction activities with the owners of utilities as stated in Section 104.08 of the 2012 MDOT Standard Specifications for Construction. In addition, for the protection of underground utilities, the contractor shall follow the requirements in Section 107.12 of the 2012 MDOT Standard Specifications for Construction. Contractor delay claims, resulting from a utility, will be determined based upon Section 108.09 and 109.05 of the 2012 MDOT Standard Specifications for Construction.

For protection of underground utilities and in conformance with Public Acts 174 of 2013, the contractor shall dial 1-800-482-7171 or 811 a minimum of three full working days, excluding Saturdays, Sundays, and holidays prior to beginning each excavation in areas where public utilities have not been previously located. Members will thus be routinely notified. This does not relieve the contractor of the responsibility of notifying utility owners who may not be a part of the MISS DIG alert system.

Public Utilities:

The following Public Utilities have facilities located within the Right-of-Way:

Kaleva Telephone Company 9281 Osmo Street Kaleva, MI49645 Contact: Gary Mazeske Cell (231) 590-6110	Telephone	Acentek 5351 North M-37, PO Box 69 Mesick, MI 49668 Contact: Trent Thomas 231-885-3165	Telecom
Cherryland Electric 5930 US-31 So Grawn, MI 49637 Contact: Kevin Krause (231) 486-9220	Electric	AT&T 205 E. Harris Street Cadillac, MI 49601-2161 Contact: Jeff Shuster (231) 779-8451	Telecom
Consumers Energy 821 Hastings St Traverse City, MI 49684 Contact: Curtis Hansen (231) 929-6242	Electric	Ward Lake Energy 685 E M-32, Suite 201 Gaylor, MI 49735 Contact: Jeff Riling (989) 732-8499	Gas
CenturyLink PO Box 389, 100 2 nd St Pinconning, MI 48650 Contact: Tom Beechum 989-879-8704	Telecom		

The owners of existing service facilities that are within grading or structure limits and in conflict will move them to locations designated by the Engineer or will remove them entirely from the highway Right-of-Way, when feasible. Owners of Public Utilities will not be required by the County to move additional poles or structures in order to facilitate the operation of construction equipment unless it is determined by the Engineer that such poles or structures constitute a hazard to the public or are dangerous to the Contractor's operations.