

**Manistee County Road Commission
Plans and Specifications**

**Hoxeyville Road 2018 HMA Resurfacing
Seaman Road (South) to East County Line
Norman Township
Manistee County, Michigan**

May 11, 2018

MANISTEE COUNTY ROAD COMMISSION

PLANS OF PROPOSED IMPROVEMENTS TO

HOXEYVILLE ROAD

INDEX TO SHEETS

- 1 TITLE SHEET
- 2-7 DESCRIPTION OF WORK
- 8-9 TYPICAL SECTION SHEETS
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JOB NO.

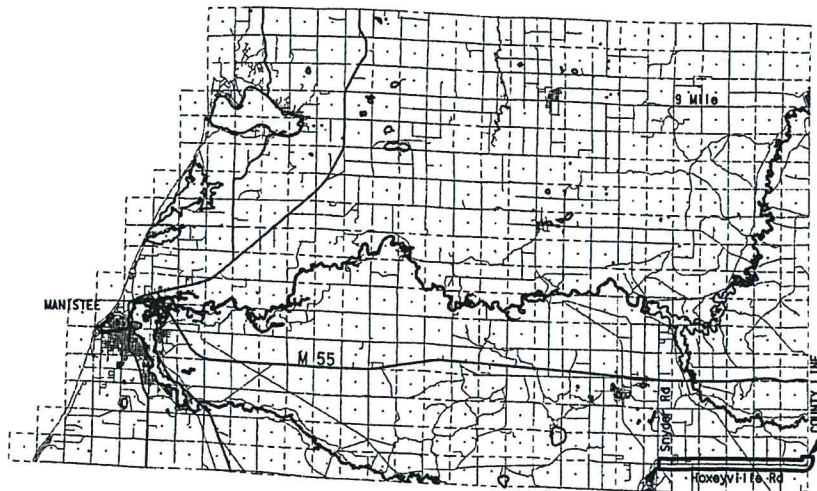
NORMAN TWP
MANISTEE COUNTY

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.

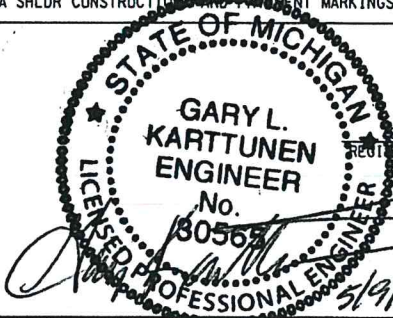
PLACING OF TEMPORARY TRAFFIC CONTROL ITEMS SHALL BE DONE IN ACCORDANCE WITH THE 2011 EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, AS REVISED.

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.

	HOXEYVILLE RD	
ADT (2018).....	463	
% COMMERCIAL.....	3%	
ADT (2038).....	625	
POSTED SPEED.....	55 MPH	
DESIGN SPEED.....	55 MPH	



PROJECT LENGTH: 5.60 MILES
CONTRACT FOR: HMA WEDGING & OVERLAY, TRENCHING AND HMA SHLDR CONSTRUCTION AND PAVEMENT MARKINGS.



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. Sohldey 5/10/18
MARK P. SOHLDEY, MCRC MANAGER DATE

SHEET NO.
1

5/9/2018 2:45:58 PM

PROJECT LOG

HOXEYVILLE ROAD, FROM SEAMAN ROAD (SOUTH) TO EAST COUNTY LINE NORMAN TOWNSHIP, MANISTEE COUNTY

Project Location:

The project is on Hoxeyville Road, from 83' east of the centerline of Seaman Road South (POB = Station 28+76) easterly to the East County Line (POE = Station 324+50). The project length is 5.60 miles.

Refer to the Project Title Sheet.

Description of Work:

The work at this location involves 5.60 miles of Hot Mix Asphalt (HMA) wedging and overlay, trenching and construction of proposed HMA and aggregate shoulders, approach paving, 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 full width HMA quarter crown wedging and HMA centerline wedging from POB Station 28+76 to Station 305+50. Application will be as directed by the Engineer. Utilizing a cold mill machine, trench for construction of 3' paved shoulder ribbons with aggregate base from POB to POE. The trench depth shall be 8 inches measured from top of the previously placed HMA pavement wedging. Place Shoulder, CI I (estimated at 6 inch depth) and shoulder HMA leveling course. Resurface the pavement and shoulder ribbons 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 (Note: An adjacent Wexford County resurfacing project may be under construction concurrently so the type of joint at the POE is subject to change).

PROJECT LOG

HOXEYVILLE ROAD, FROM SEAMAN ROAD (SOUTH) TO EAST COUNTY LINE NORMAN TOWNSHIP, MANISTEE COUNTY

HMA Surface, Rem	244 Syd
HMA, 4E1 (HMA Wedging)	5,860 Ton
Trenching	591 Sta
Shoulder, CI I	8,763 Ton
HMA, 4E1 (for HMA shoulder base)	2,277 Ton
HMA, 4E1 (for HMA overlay)	10,637 Ton
Shoulder, CI II	3083 Ton

Approach Treatment IIB – Peacock Rd (Lt), Prunski Rd (Lt), & Chalker Rd (Rt)

In accordance with the detail for Approach Treatment Type IIB and as directed by the Engineer, remove existing HMA surface, place approach aggregate, and resurface the approaches to meet the new pavement grade.

HMA Surface, Rem	422 Syd
Approach, CI I	64 Ton
HMA Approach	62 Ton
Approach, CI II	10 Ton

Approach Treatment Type I – Peacock Rd (Rt) & Majeska Rd (Lt)

In accordance with the Intersection Approach Type 1 Detail and as directed by the Engineer, place miscellaneous aggregate and HMA paving to construct an HMA apron and to meet the new pavement grade.

Approach, CI I	20 Ton
HMA Approach	18 Ton
Approach, CI II	10 Ton

Paved Shoulder Widening at Approaches

At other cross road approaches (7 locations), widen the proposed HMA shoulders by 2' across the approach during the mainline top course paving in accordance with the detail. The estimated length of the 2' widenings are indicated in the strip plans. A quantity of 10 Tons of HMA, 4E1 for this work is included in the mainline HMA Overlay quantity. The following Approach, CI II quantity is for surfacing the approaches to match the new pavement grade.

Approach, CI II	35 Ton
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PROJECT LOG

HOXEYVILLE ROAD, FROM SEAMAN ROAD (SOUTH) TO EAST COUNTY LINE NORMAN TOWNSHIP, MANISTEE COUNTY

HMA Driveway Approaches

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

HMA Surface, Rem (existing HMA drives)	183 Syd
Approach, CI I	10 Ton
HMA Approach	21 Ton

The sawcutting and removal of the existing paved approaches is included in payment for 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.

Approach, CI II	212 Ton
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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 are ten (10) government corners in the pavement within the project limits. Five (5) of the corners have exposed monument boxes and shall be adjusted using the Monument Box Adjust pay item. Five (5) of the corners are buried and shall be preserved and adjusted using the Monument Preservation item. A miscellaneous quantity of Monument Boxes is provided for use where directed by the Engineer.

Monument Box Adjust	5 Ea
Monument Preservation	5 Ea
Monument Box	3 Ea

PROJECT LOG

HOXEYVILLE ROAD, FROM SEAMAN ROAD (SOUTH) TO EAST COUNTY LINE NORMAN TOWNSHIP, MANISTEE COUNTY

Replace existing mail box posts where directed by the Engineer:

Post, Mailbox **5 Ea**

Entire project quantities for permanent pavement markings are as follows:

Pavt Mrkg, Waterborne, 4 inch White **59,148 Ft**
Pavt Mrkg, Waterborne, 4 inch Yellow **18,141 Ft**

At Station 208+93, place Protective Ovly, Snowmobile Trail Crossing (Estimated 14' wide x 35' long) in accordance with the special provision.

Protective Ovly, Snowmobile Trail Crossing **54 Syd**

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. Aggregate Base

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

5. Mobilization

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

PROJECT LOG

HOXEYVILLE ROAD, FROM SEAMAN ROAD (SOUTH) TO EAST COUNTY LINE NORMAN 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 28+76 to Sta 116+00	Skip
Sta 116+00 to Sta 126+00	EB Solid, WB Skip
Sta 126+00 to Sta 135+30	EB Skip, WB Solid
Sta 135+30 to Sta 143+50	Skip
Sta 143+50 to Sta 149+00	EB Solid, WB Skip
Sta 149+00 to Sta 153+50	Skip
Sta 153+50 to Sta 159+00	EB Skip, WB Solid
Sta 159+00 to Sta 171+00	Skip
Sta 171+00 to Sta 176+40	EB Solid, WB Skip
Sta 176+40 to Sta 181+25	Skip
Sta 181+25 to Sta 186+50	EB Skip, WB Solid
Sta 186+50 to Sta 266+10	Skip
Sta 266+10 to Sta 276+00	EB Solid, WB Skip
Sta 276+00 to Sta 286+25	EB Skip, WB Solid
Sta 286+25 to Sta 292+00	Skip
Sta 292+00 to Sta 302+00	EB Solid, WB Skip
Sta 302+00 to Sta 320+50	Double Yellow
Sta 320+50 to Sta 324+50	EB Skip, WB Solid

PROJECT LOG

HOXEYVILLE ROAD, FROM SEAMAN ROAD (SOUTH) TO EAST COUNTY LINE NORMAN 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

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.

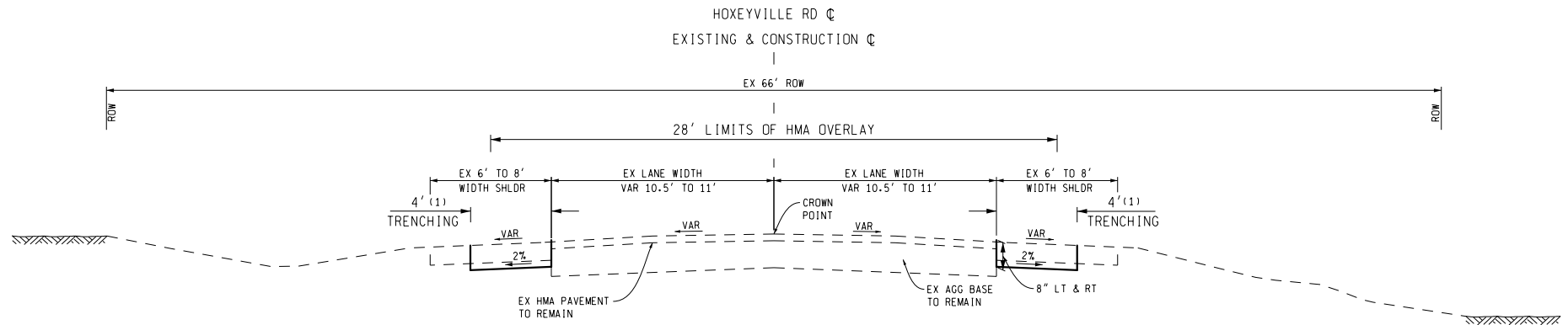
TEMPORARY TRAFFIC CONTROL DEVICES

WZD-125-E (S.D.)

LONGITUDINAL LINE TYPES AND PLACEMENT

PAVE-905-D

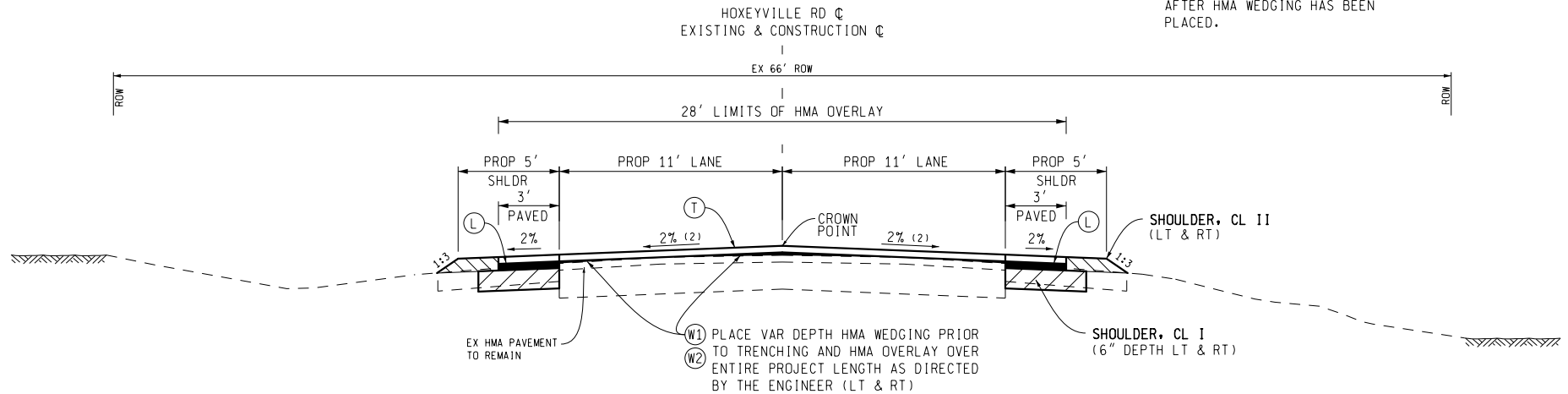
Note: Road Standard Plans, Road Special Details, and Traffic & Safety Standard Plans are not included in the Bid Documents. All bidders are required to obtain them from the MDOT website and utilize them if they are the selected contractor for the project.



EXISTING NORMAL CROWN SECTION

SECTION APPLIES:
POB STA 28+76 TO STA POE 305+50

(1) A COLD MILL MACHINE SHALL BE USED FOR TRENCHING ON THIS PROJECT AND SHALL BE PERFORMED AFTER HMA WEDGING HAS BEEN PLACED.



PROPOSED NORMAL CROWN OVERLAY SECTION

SECTION APPLIES:
POB STA 28+76 TO STA 305+50

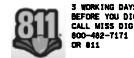
(2) VARY SLOPE 1.5% TO 3.0% (2% DESIRABLE) AS DIRECTED BY THE ENGINEER.

HMA APPLICATION ESTIMATE

IDENT NO.	ITEM	RATE PER SYD	PERFORMANCE GRADE	REMARKS
(T)	HMA, 4E1	220#	PG 58-28	HMA OVERLAY, 1 COURSE AWI = 220
(L)	HMA, 4E1	220#	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	250#	PG 58-28	HMA, 4E1 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

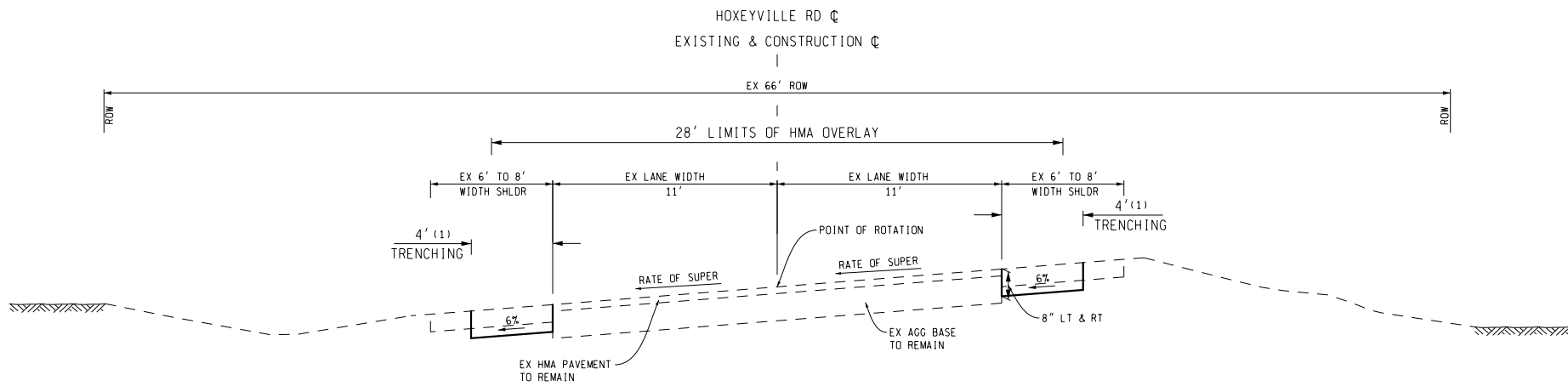


HOXEYVILLE ROAD
TYPICAL SHEET

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

DATE: 5/9/2018

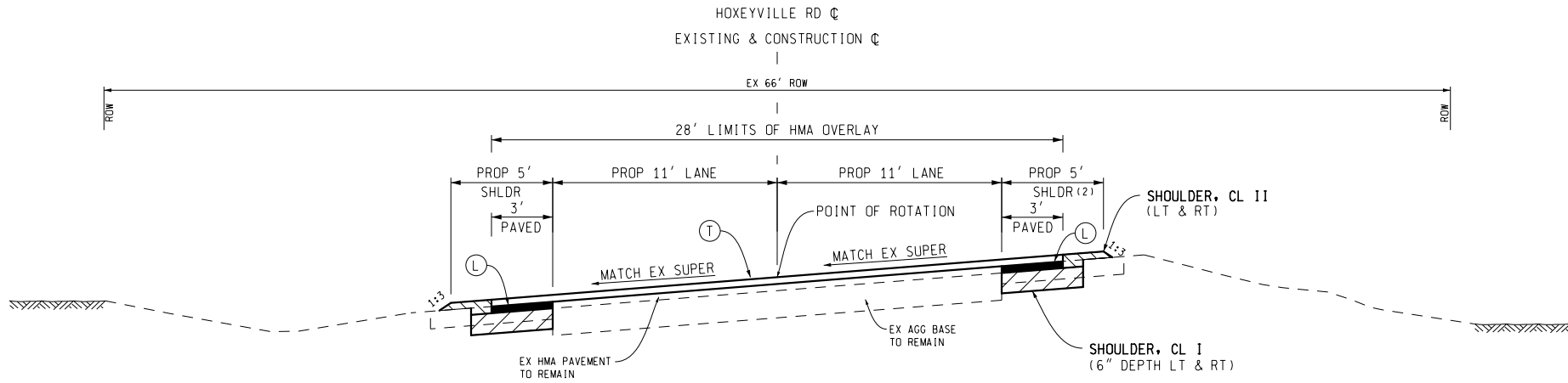
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EXISTING SUPERELEVATED SECTION

SECTION APPLIES:
STA 305+50 TO STA POE 324+50


(1) TRENCHING SHALL BE PERFORMED WITH A COLD MILL MACHINE ON THIS PROJECT



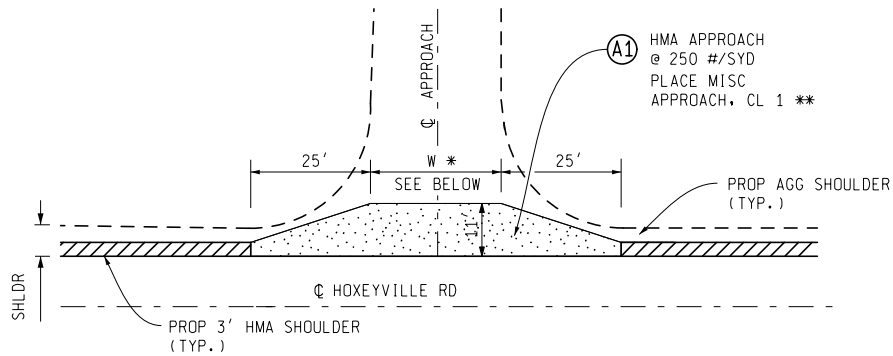
PROPOSED SUPERELEVATED OVERLAY SECTION

SECTION APPLIES:
STA 305+50 TO POE STA 324+50

(2) REDUCE PROPOSED SHOULDER WIDTH TO 4' WHERE DIRECTED BY THE ENGINEER.

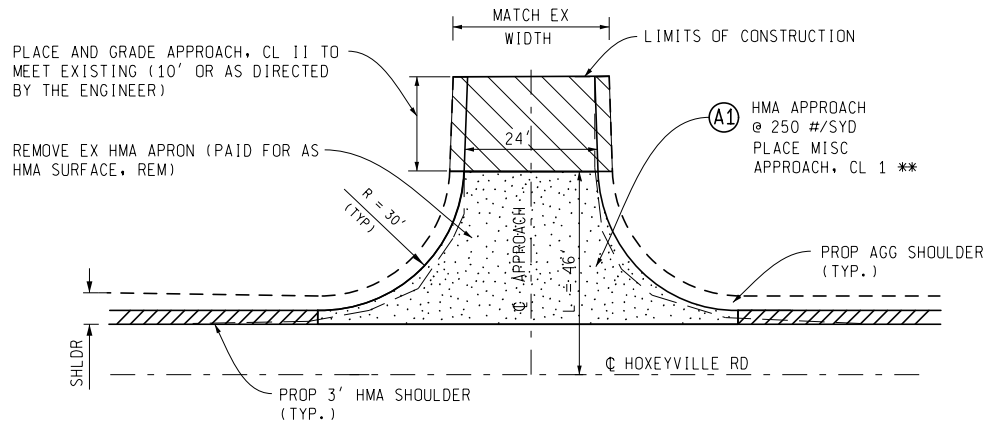
NO SCALE  KPM ENGINEERING	HOXEYVILLE ROAD TYPICAL SHEET		MANISTEE COUNTY ROAD COMMISSION 8946 CHIPPEWA HWY BEAR LAKE, MI 49614	
	DATE: 5/9/2018		DRAWN BY GLK	SHEET NO. 9

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APPROACH TREATMENT TYPE I (EX AGG)

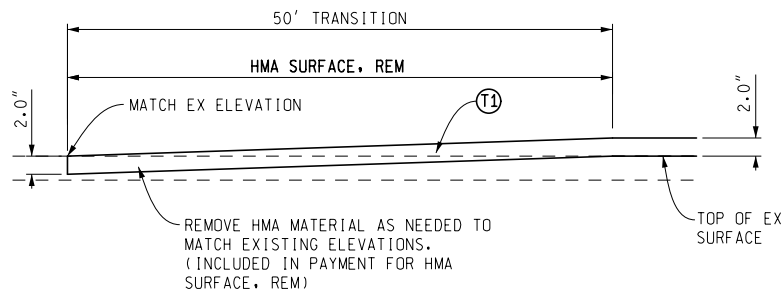
TO APPLY:
 PEACOCK ROAD (STA 93+56 RT) W = 32'
 MAJESKA ROAD (STA 107+02 LT) W = 18'



APPROACH TREATMENT TYPE IIB (EX AGG)

TO APPLY:
 PEACOCK ROAD (STA 80+68 LT)
 PRUNSKI ROAD (STA 238+71 LT)
 CHALKER ROAD (STA 264+63 RT)

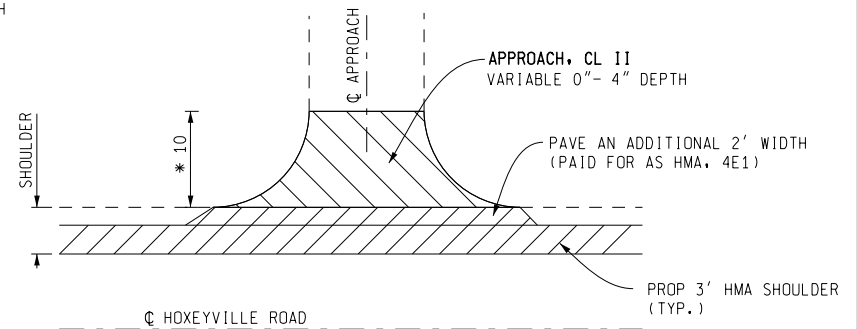
* OR AS DIRECTED BY THE ENGINEER
 ** GRADE AND SHAPE EX AGG APPROACH AND ADD MISC CL I APPROACH PRIOR TO PAVING. THIS WORK IS INCLUDED IN PAYMENT FOR HMA APPROACH.



BUTT JOINT DETAIL

TO APPLY:
 POB STA 28+76
 POE STA 324+50

NOTE: THE TYPE OF JOINT AT THE POE IS SUBJECT TO CHANGE DUE TO AN ADJACENT RESURFACING PROJECT IN WEXFORD COUNTY THAT MAY BE UNDER CONSTRUCTION AT THE SAME TIME.



PAVED SHOULDER WIDENING AT APPROACH ROAD DETAIL

TO APPLY:
 SUSAN STREET (STA 56+60 LT) KROPEL ROAD (STA 159+82 LT)
 DAVID STREET (STA 60+61 LT) CHALKER ROAD (STA 270+28 RT)
 JOSEPH STREET (STA 65+21 LT) HOXEYVILLE RD CUTOFF (STA 309+00 RT)
 COUNTY LINE ROAD (STA 319+90 RT)

NO SCALE

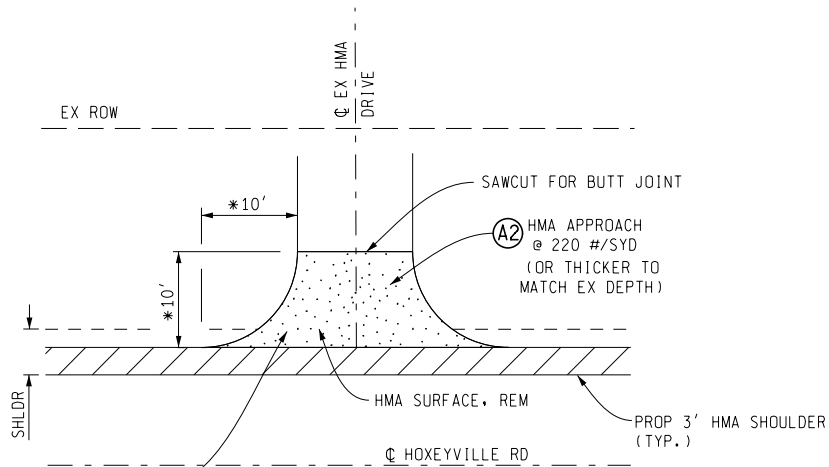


INTERSECTION APPROACH
 DETAIL SHEET

DATE: 5/9/2018

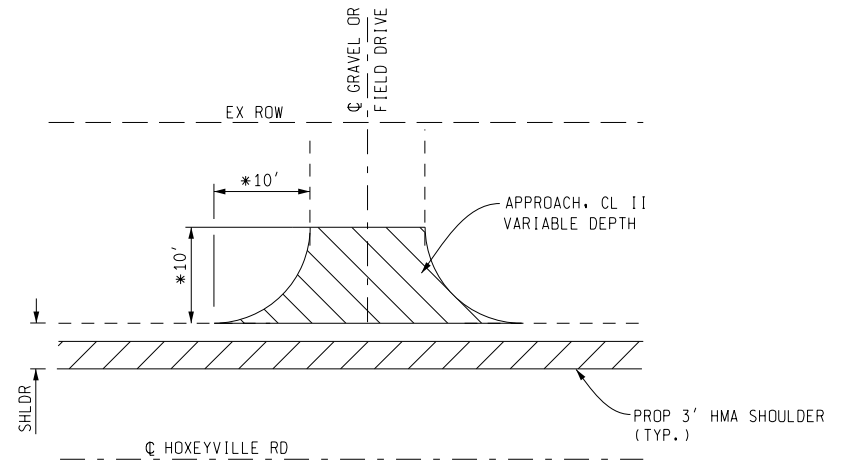
MANISTEE COUNTY
 ROAD COMMISSION
 8946 CHIPPEWA HWY
 BEAR LAKE, MI 49614

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**HMA PAVED
DRIVEWAY DETAIL**

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.



**UN-PAVED
DRIVEWAY DETAIL**

* OR AS DIRECTED BY THE ENGINEER

NO SCALE



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



DRIVEWAY
DETAIL SHEET

DATE: 5/9/2018

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

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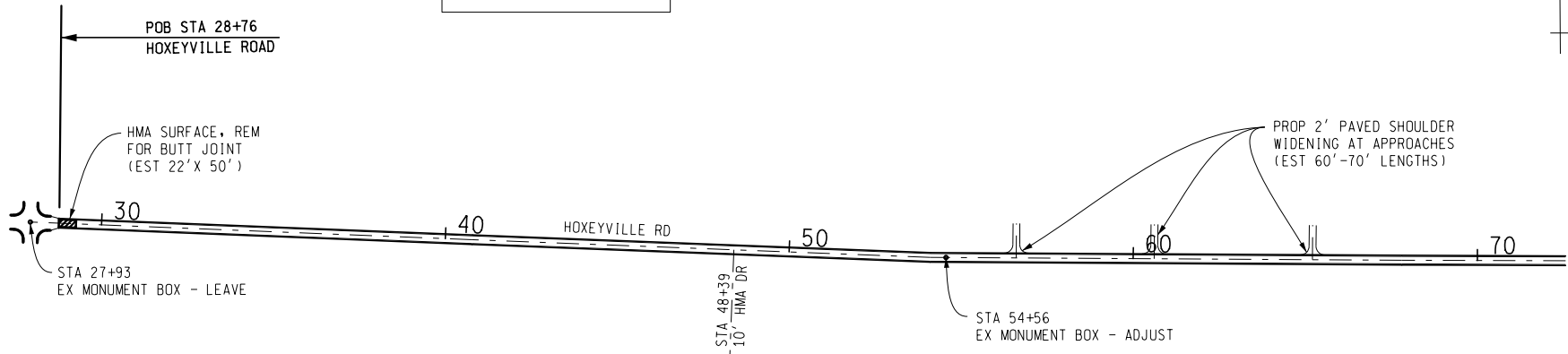
SNYDER ROAD
STA 27+93

SUSAN ST
STA 56+60
(PRIVATE)

DAVID ST
STA 60+61
(PRIVATE)

JOSEPH ST
STA 65+21
(PRIVATE)

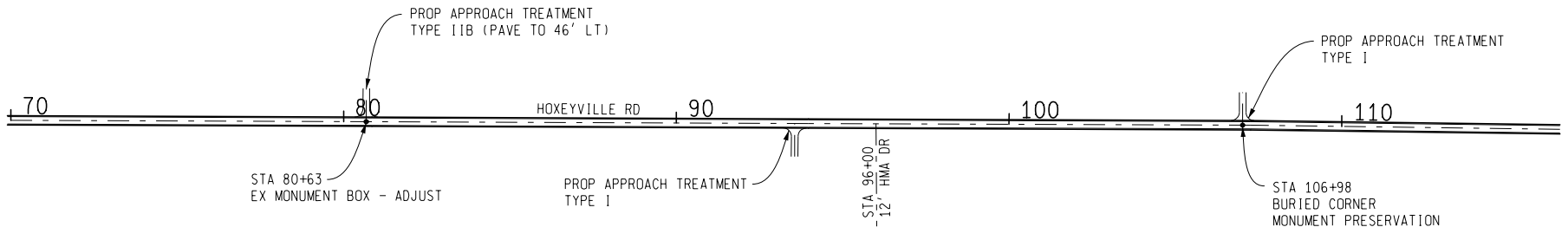
STA 28+76 TO STA 115+00
HMA WEDGING AND OVERLAY,
TRENCH & CONSTRUCT 3' HMA
SHLDRS



SEAMAN ROAD
STA 27+93

PEACOCK RD
STA 80+68

MAJESKA RD
STA 107+02



PEACOCK RD
STA 93+56

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM
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NO SCALE



HOXEYVILLE ROAD
POB STA 28+76 TO STA 115+00
NORMAN TWP

DATE: 5/10/2018

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

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KROPEL RD
 STA 159+82
 (SEASONAL ROAD)



STA 115+00 TO STA 205+00
 HMA WEDGING AND OVERLAY,
 TRENCH & CONSTRUCT 3' HMA
 SHLDRS

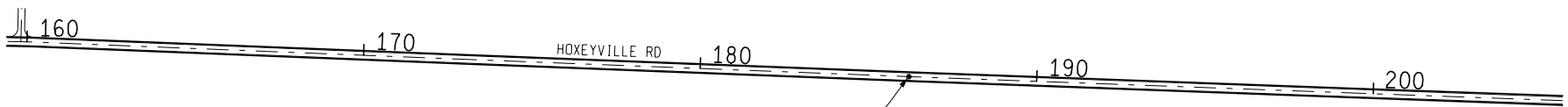
PROP 2' PAVED SHOULDER
 WIDENING AT APPROACH
 (EST 30' LENGTH)



STA 133+42
 APPROXIMATE LOCATION
 OF BURIED CORNER -
 MONUMENT PRESERVATION

STA 159+77
 BURIED CORNER -
 MONUMENT PRESERVATION

KROPEL RD
 STA 159+82
 (SEASONAL ROAD)



STA 186+20
 BURIED CORNER -
 MONUMENT PRESERVATION

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

NO SCALE



3 WORKING DAYS
 BEFORE YOU DIG
 CALL MISS 811
 800-452-7171
 OR 811



HOXEYVILLE ROAD
 STA 115+00 TO STA 205+00
 NORMAN TWP

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

DATE: 5/9/2018

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LAVERNE RD
 STA 208+93
 (SEASONAL ROAD)

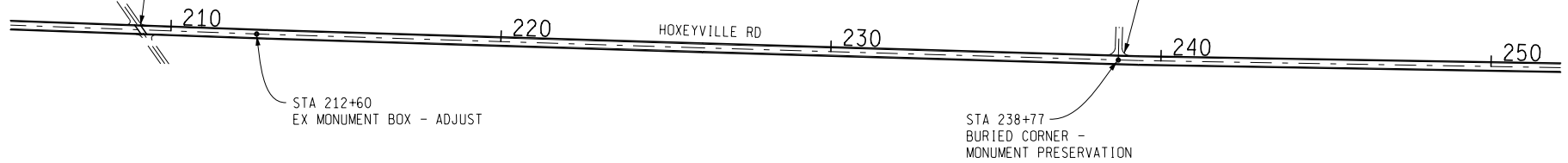
STA 205+00 TO STA 295+00
 HMA WEDGING AND OVERLAY,
 TRENCH & CONSTRUCT 3' HMA
 SHLDRS

PRUNSKI RD
 STA 238+71



PROPOSED PROTECTIVE OVLY,
 SNOWMOBILE TRAIL CROSSING
 (EST 14' X 35')

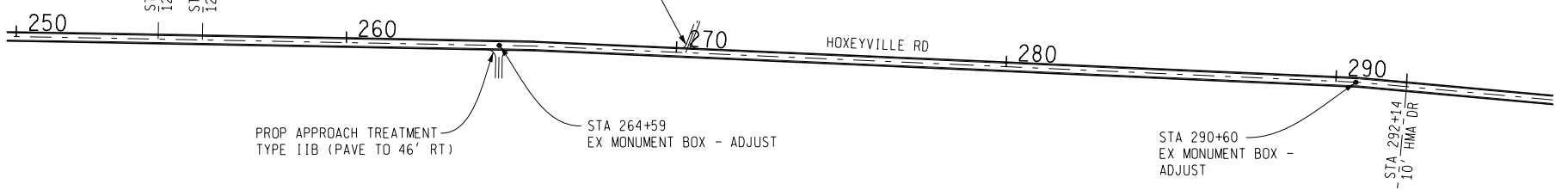
PROP APPROACH TREATMENT
 TYPE IIB (REM EX HMA TO
 53' LT, PAVE TO 46' LT)



LAVERNE RD
 STA 208+93
 (SEASONAL ROAD)

CHALKER RD
 STA 270+28
 (SEASONAL ROAD)

PROP 2' PAVED SHOULDER
 WIDENING AT APPROACH
 (EST 25' LENGTH)



PROP APPROACH TREATMENT
 TYPE IIB (PAVE TO 46' RT)

STA 264+59
 EX MONUMENT BOX - ADJUST

STA 290+60
 EX MONUMENT BOX -
 ADJUST

CHALKER RD
 STA 264+63

NOTE: ALIGNMENT INFORMATION HAS BEEN DERIVED FROM
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NO SCALE



HOXEYVILLE ROAD
 STA 205+00 TO STA 295+00
 NORMAN TWP

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

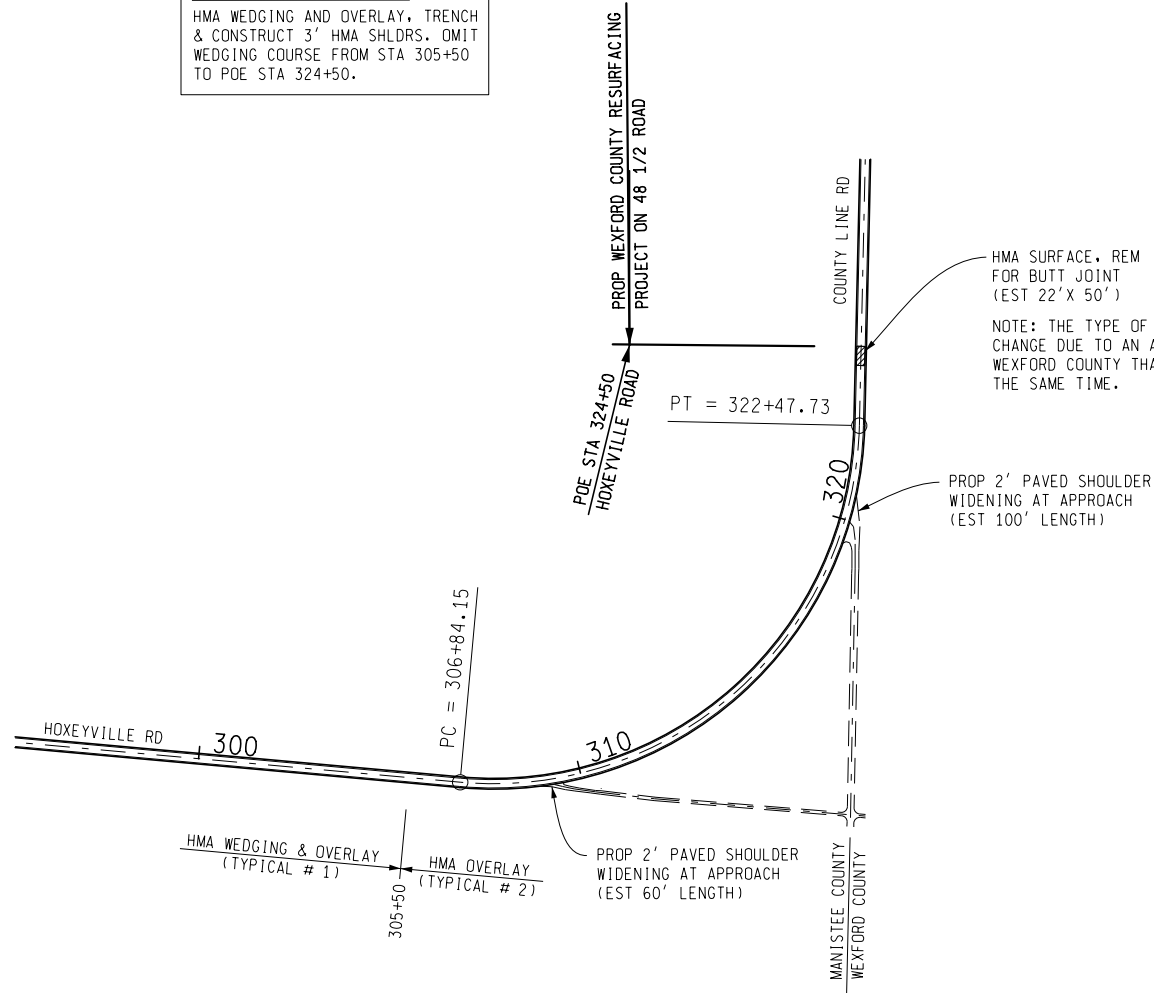
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HOXEYVILLE ROAD
 APPROXIMATE CURVE DATA
 $\Delta=93^{\circ}52'46''$ (LT)
 $D=6^{\circ}00'15''$
 $R=954.27'$
 $T=1,021.18'$
 $L=1,563.58'$
 $E=443.38'$
 $PC=306+84.15$
 $EI=317+05.33$
 $EI=322+47.73$

STA 295+00 TO STA 324+50
 HMA WEDGING AND OVERLAY, TRENCH
 & CONSTRUCT 3' HMA SHLDRS. OMIT
 WEDGING COURSE FROM STA 305+50
 TO POE STA 324+50.



HOXEYVILLE RD CUTOFF
 STA 309+00

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



NO SCALE



HOXEYVILLE ROAD
 STA 295+00 TO POE STA 324+50
 NORMAN TWP

DATE: 5/9/2018

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

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Manistee County Road Commission
Special Provision
For
Maintaining Traffic

KPM:GLK

Page 1 of 3

05/09/18

General

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

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

Construction Influence Area (CIA)

The CIA limits shall include the area within the right-of-way for Hoxeyville Road from Seaman Road (South) easterly to the East County Line in Norman 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:

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.

Traffic shall be maintained with traffic regulator control in accordance with the attached Maintaining Traffic Typical M0020a and M0150a.

Hoxeyville Road Overlay

Manistee County Road Commission
Special Provision
For
Maintaining Traffic

KPM:GLK

Page 2 of 3

05/09/18

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 one sequence of Maintaining Traffic Typical M0150a plus ten (10) W20-1 "Road Work Ahead" signs to be placed on the intersecting roads a minimum of 550' in each direction from the centerline of Hoxeyville 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 and wedging courses 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 equipment, will be measured and paid for at the contract unit price for the following contract items (pay items).

Contract Item

Pay Unit

Traffic Control.....	Lump Sum
Temporary Pavement Markings.....	Lump Sum

Hoxeyville Road Overlay

Manistee County Road Commission
Special Provision
For
Maintaining Traffic

KPM:GLK

Page 3 of 3

05/09/18

Estimates of Maintaining Traffic Quantities

Lighted Arrow, Type C, Furn,	2 Each
Lighted Arrow, Type C, Oper,	2 Each
Sign, Type B, Temp, Prismatic Furn	432 Square Foot
Sign, Type B, Temp, Prismatic Oper.....	432 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

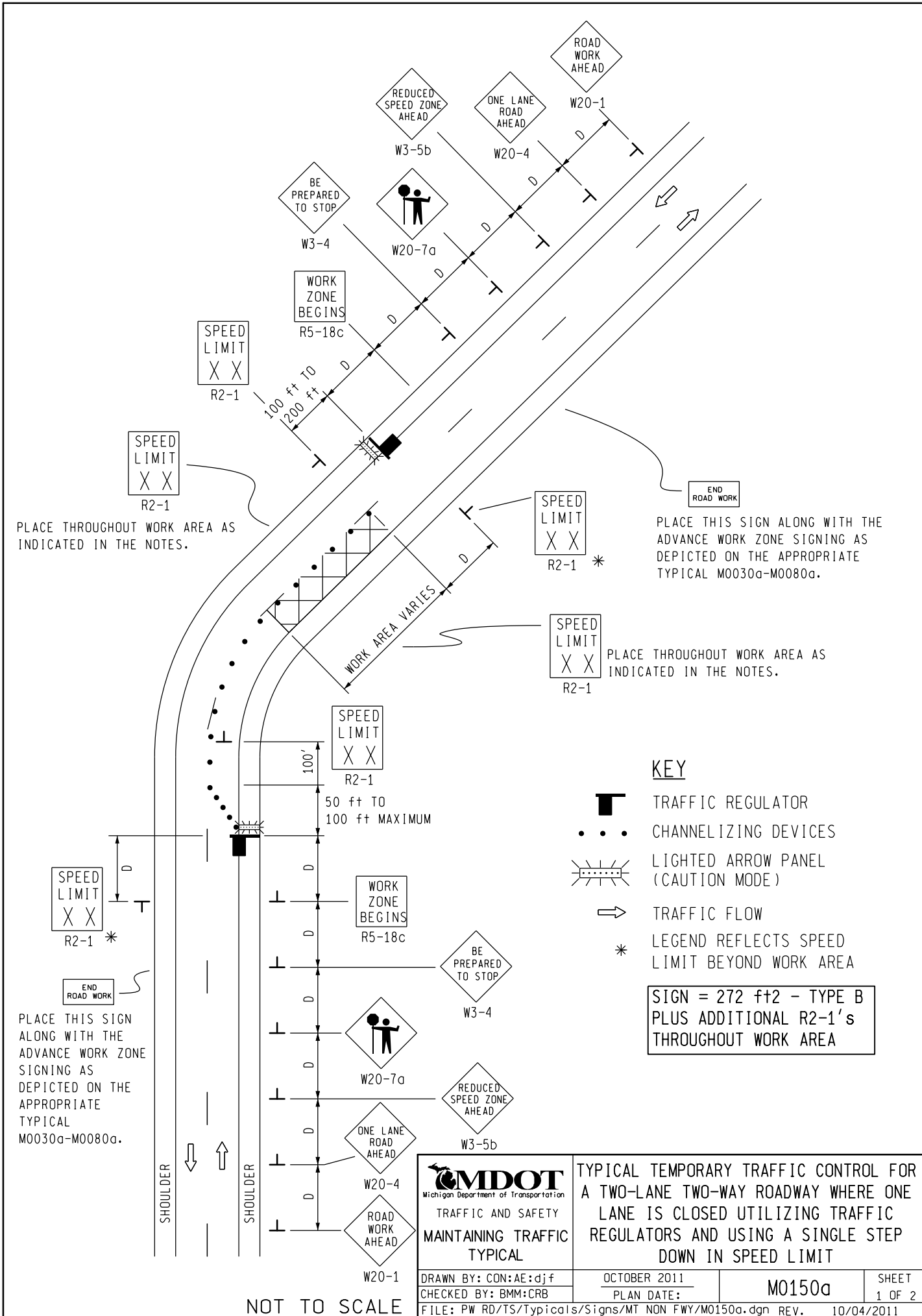
GUIDELINES FOR LENGTH OF
LONGITUDINAL BUFFER SPACE "B"

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.

 Michigan Department of Transportation TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL	TABLES FOR "L", "D" AND "B" VALUES		
	DRAWN BY: CON:AE:djf CHECKED BY: BMM	JUNE 2006 PLAN DATE:	M0020a
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PLACE THROUGHOUT WORK AREA AS INDICATED IN THE NOTES.

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

PLACE THROUGHOUT WORK AREA AS INDICATED IN THE NOTES.

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
- LEGEND REFLECTS SPEED LIMIT BEYOND WORK AREA *

SIGN = 272 ft x 2 - TYPE B PLUS ADDITIONAL R2-1's THROUGHOUT WORK AREA

NOT TO SCALE

<p>Michigan Department of Transportation</p> <p>TRAFFIC AND SAFETY</p> <p>MAINTAINING TRAFFIC TYPICAL</p>		<p>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</p>	
<p>DRAWN BY: CON:AE:djf</p> <p>CHECKED BY: BMM:CRB</p> <p>FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0150a.dgn REV.</p>	<p>OCTOBER 2011</p> <p>PLAN DATE:</p>	<p>M0150a</p>	<p>SHEET 1 OF 2</p>


NOTES

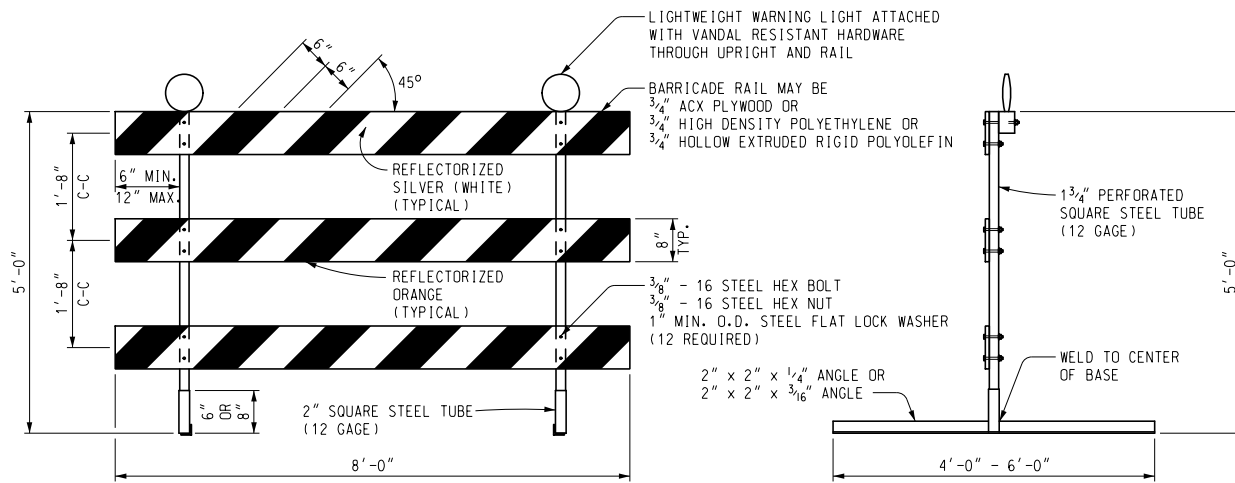
- 1H. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES AND LENGTH OF LONGITUDINAL BUFFERS
SEE **M0020a** FOR "D" VALUES.
2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.
3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE 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

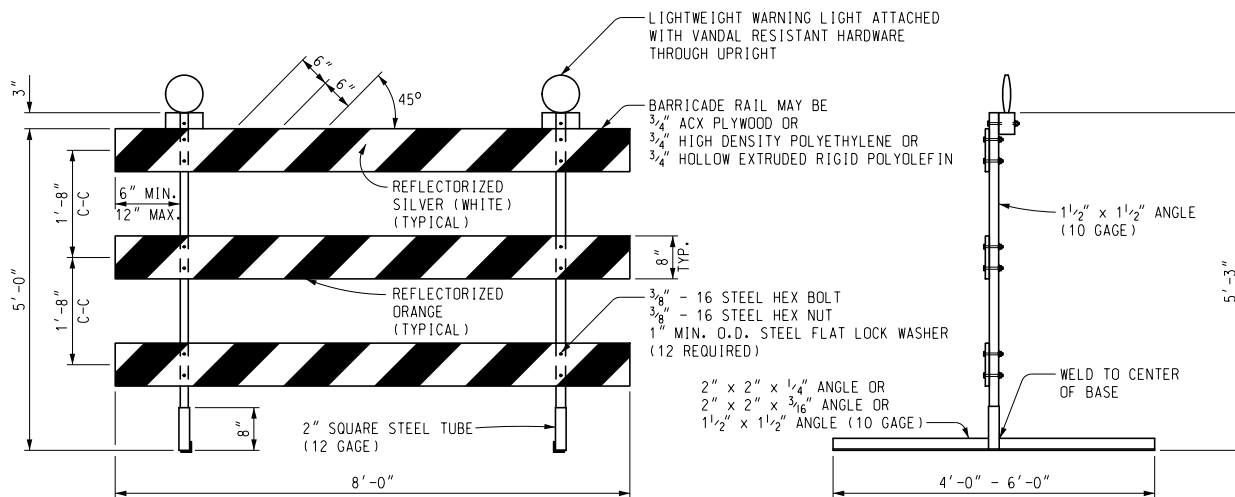
 TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL	TYPICAL TEMPORARY TRAFFIC CONTROL FOR A TWO-LANE TWO-WAY ROADWAY WHERE ONE LANE IS CLOSED UTILIZING TRAFFIC REGULATORS AND USING A SINGLE STEP DOWN IN SPEED LIMIT		
DRAWN BY: CON:AE:djf	OCTOBER 2011	M0150a	SHEET
CHECKED BY: BMM:CRB	PLAN DATE:		2 OF 2
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0150a.dgn REV. 10/04/2011			



FRONT ELEVATION

SIDE VIEW

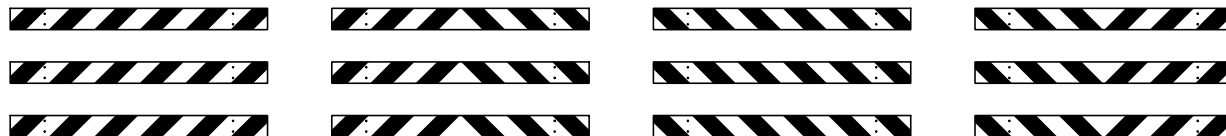
PERFORATED SQUARE STEEL TUBE OPTION



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



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

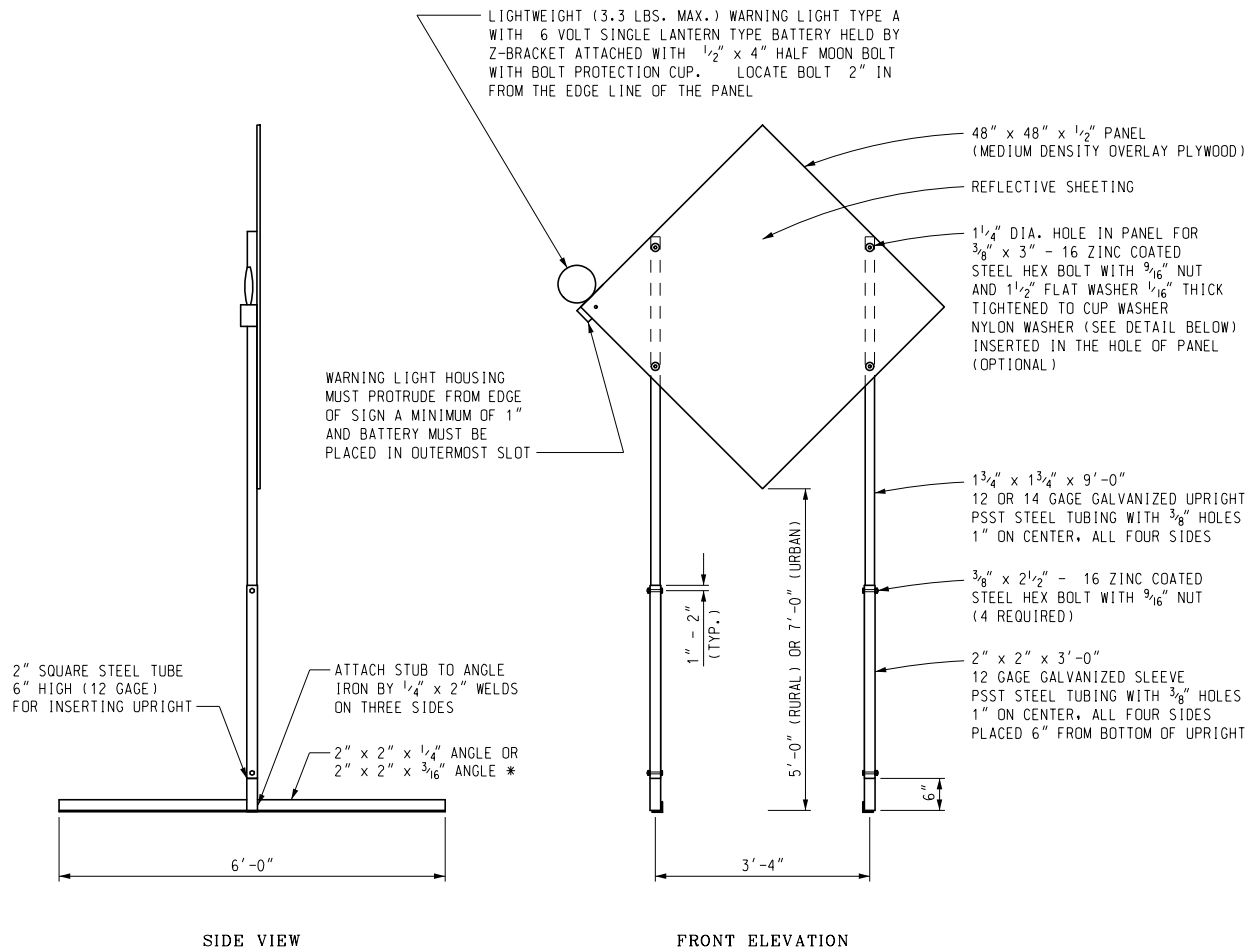
**Temporary
Traffic Control Devices**

F.H.W.A. APPROVAL

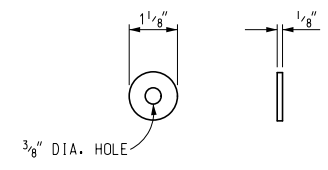
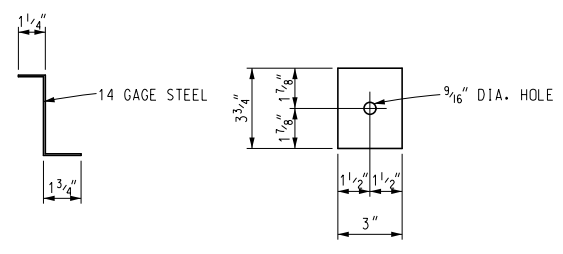
1/18/11
PLAN DATE

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

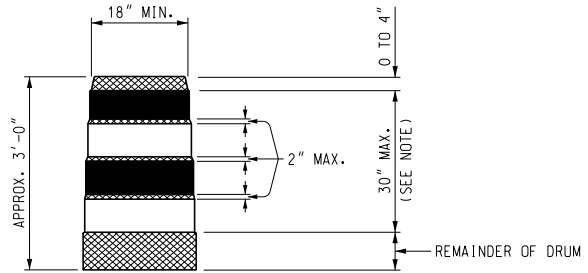
NOT TO SCALE

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

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

**MANISTEE COUNTY ROAD COMMISSION
HMA APPLICATION ESTIMATE**

KPM:GLK

1 of 2

DATE: 05/09/18

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

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

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

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

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

d. Materials.- The HMA, 4E1 wedging courses to modify the existing pavement cross slopes and 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 220 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 220 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: 05/09/18

The HMA Approach for approach roads will consist of HMA, 4E1 and shall have a yield of 250 pounds per square yard. The yield shall increase where needed to match existing HMA thickness.

The HMA Approach for paving driveways 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.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
PROTECTIVE OVERLAY FOR PAVEMENT AT SNOWMOBILE TRAIL CROSSINGS

OFS:JD

1 of 5

APPR:TES:KPK:07-13-16

FHWA:APPR:07-13-16

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

b. Materials.

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

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

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

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

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

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

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

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

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

Remove all debris from the neoprene glands of strip-seal style expansion joints. Protect the expansion joints, and any other areas not to be overlaid, from damage during preparation of the surface. Ensure the protection is removed once the epoxy and aggregate has been applied and prior to initial set. Ensure removing the protection is done soon enough to in no way harm the adjacent overlay. Ensure protection is applied again prior to the second coat and removed again prior to initial set as to not damage adjacent surfaces. Ensure the protection meets the approval of the Engineer.

2. Application. Ensure handling and mixing of the epoxy resin and hardening agent is performed in a safe manner to achieve the desired results in accordance with the manufacturer's recommendations for a two-coat system or as directed by the Engineer. Do not place epoxy overlay materials when surface is less than 50 degrees Fahrenheit (F) or ambient air temperature is forecast to fall below 50 degrees F within 8 hours after application. Do not place epoxy overlay materials if weather or surface conditions are such that the material cannot be properly handled, placed, and cured within the manufacturer's requirements and specified requirements of traffic control.

Apply the epoxy overlay in two separate courses in accordance with the manufacturer's recommendation for a two-coat system with the following rate of application. Ensure the first course is no less than 2½ gallons per 100 square feet. Ensure the second course is no less than 5 gallons per 100 square feet.

Ensure application of aggregate to both the first and second courses is of sufficient quantity so the entire surface is covered in excess. Ensure no bleed through, or wet spots are visible in the overlay. Remove and replace any areas within course applications with wet spots or where epoxy has bled through.

After the epoxy mixture has been prepared for the overlay, immediately and uniformly apply it to the concrete surface with a notched squeegee. Apply the dry aggregate in such a manner as to cover the epoxy mixture completely within 5 minutes. Minimize all foot traffic on the uncured epoxy and ensure any foot traffic will only be done with steel spiked shoes approved by the Engineer. Cure each course of epoxy overlay until vacuuming or brooming can be performed without tearing or damaging the surface. Do not allow traffic or equipment on the overlay surface during the curing period. Remove by vacuuming or brooming all loose aggregate after the first course curing period. Immediately apply the next overlay course to complete the overlay. Ensure the minimum curing periods are according to the manufacturer's recommendations, as shown in Table 4, or as directed by the Engineer. Remove by vacuuming or brooming all loose aggregate after the second course curing period. Ensure all strip-seal style expansion joints are free of loose aggregate, epoxy and other debris resulting from overlay operations.

Plan and execute the work to provide the minimum curing periods as specified in Table 4, or other longer minimum curing periods as recommended by the manufacturer prior to opening to public or construction traffic, unless otherwise permitted. Ensure first course applications are not opened to traffic. Remove any contamination, detrimental to adhesion of the second course, from the first course at Contractor's expense prior to the application of the second course.

Remove and replace any areas damaged or marred by the Contractor's operations in accordance with this special provision at no additional cost to the Department.

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

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

Pay Item

Pay Item

Protective Ovly, Snowmobile Trail CrossingSquare Yard

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

Table 1: Approved Two Component 100% Solids Epoxy Systems

Supplier	Product	Contact Information
BASF	MasterSeal 350	BASF (David McCarron) 20611 Windemere Macomb, MI 48044 (586) 557-0235
E-Bond	526 Lo-Mod	Ridgemoor Supply Inc. (Stan Bosscher) 4484 Roger B. Chaffee Dr. Kentwood, MI 49548 (616) 532-0782
E-Chem	EP50	E-Chem, LLC (Ray Breer) 2944 William St. SE Albuquerque, NM 87102 (505) 217-2121
Euclid Chemical	Flexolith Flexolith Summer Grade Flexolith HD	The Euclid Chemical Co. (Tim Brewer) 20416 Harper Avenue Harper Woods, MI 48225 (313) 886-9700
Poly-Carb	Flexogrid Mark – 163 Flexogrid Mark - 154	Poly-Carb, Inc. (Dan Patacca) 1881 West Oak Parkway Marletta, GA 30062 (330) 405-3311
Sika	Sikadur 22-Lo Mod	Sika – US (Wesley Pringle) 673 Cherry Orchard Road Canton, MI 48188 (248) 866-8956
Transpo	T-48 Chip Seal	Transpo Industries, Inc. (Tom Donnelly) 20 Jones St. New Rochelle, NY 10801 (573) 808-1040
Unitex	Propoxy Type III DOT	Dayton Superior Corporation (Blair Oldfield) 1125 Byers Road Miamisburg, OH 45342 (224) 217-0447

Table 2: Angular Aggregates Gradation Requirements

Sieve Size	Minimum % Passing	Maximum % Passing
3/8	100	100
4	98	100
8	30	75
16	0	5
30	0	1
Pan	0	0
	Minimum	Maximum
Fineness Modulus	2.28	2.81

Table 3: Approved Aggregate Suppliers

Earth Work Solutions – E.O. Sowerwine P.O. Box 1007 Gillette, WY 82717 (307) 682-4346
Fairmount Santrol - Chris Calhoun P.O. Box 87 Chardon, OH 44024 (800) 237-4986
Flint Rock Products - Tammy Epps 800 S. College Road P.O. Box 217 Picher, Oklahoma 74360 (918) 673-1737 Fax: (918) 673-1749
Red Flint Sand and Gravel - Jim Danzinger 1 American Blvd PO Box 688 Eau Clair, WI 54702 (800) 238-9139
US Silica - Ken Booz P.O. Box 254 Mauricetown, NJ 08329 (800) 257-7034
Washington Rock Quarries, Inc. - Greg Lanphere 21711 103 rd Ave. Ct. E Suite C302 Graham, WA 98338 (253) 377-3438

Table 4: Anticipated Cure Time (Hours)

Average Temp. of Deck, Epoxy and Aggregate Components, Degrees F.							
Temp Range	<60	60-65	65-70	70-75	75-80	80-85	>85
1 st Course		2	2	1.75	1.75	1.5	1
2 nd Course	(a)	2	2	1.75	1.75	1.5	1
a. Second course must be cured for minimum of 8 hours if the air temperature drops below 60 degrees F during the curing period, or per the manufacturer's recommendations.							

MANISTEE COUNTY ROAD COMMISSION

**NOTICE TO BIDDERS
UTILITY COORDINATION**

KPM:GLK

1 of 1

04-17-18
HOXEYVILLE RD 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
Consumers Energy 821 Hastings St Traverse City, MI 49684 Contact: Curtis Hansen (231) 929-6242	Electric	Great Lakes Energy 525 W US-10 PO Box 248 Scottville, MI 49454 Contact: Larry Phillips (888) 485-2537	Electric
Charter Communications 1690 Vine St Manistee, MI 49660 Contact: Dan Hornkohl (231) 463-1921	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.