Manistee County Road Commission Special Provision For Maintaining Traffic

KPM:GLK

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1/30/20

<u>General</u>

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 Milarch Road from US-31 to 8 Mile Road in Manistee, Brown, Onekama, and Bear Lake Townships, plus a distance in advance as required for the advance construction signing and traffic control devices. The CIA shall include the detour routes of US-31 and 8 Mile Road. 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 05/22/20 to 6:00 am, Tuesday, 05/26/20 Independence Day – 5:00 pm Thursday, 07/02/20 to 6:00 am, Monday, 07/06/20 Labor Day - 5:00 pm, Friday 09/04/20 to 6:00 am, Tuesday, 09/08/20

A closure of Milarch Road will be utilized for this project. Through traffic will be detoured in accordance with the detour signing plan. Local traffic shall be maintained at all times. At the end of the workday, 2-way local traffic shall be restored on a minimum 20' wide crushed material, paved or aggregate surface. The maximum duration of the detour shall be 45 calendar days. All proposed guardrail shall be installed prior to opening the roadway to traffic.

Milarch Road 2020 Crush & Shape and HMA Resurfacing

Manistee County Road Commission Special Provision For Maintaining Traffic

KPM:GLK

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A lane closure, utilizing traffic regulator control, is not anticipated on this project. If a lane closure is approved by the Engineer, it shall be in accordance with the attached Maintaining Traffic Typicals M0020a and M0150a. All lanes shall be open for traffic at night.

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 (1) sequence of Maintaining Traffic Typical M0150a, detour signing, plus four (4) W20-1 "Road Work Ahead" signs to be placed on the intersecting roads a minimum of 550' in each direction from the centerline of Milarch 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.

Manistee County Road Commission Special Provision For Maintaining Traffic

KPM:GLK

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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

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 49	7 Square Foot
Sign, Type B, Temp, Prismatic Oper 49	7 Square Foot
Barricade, Type III, High Intensity, Double Sided, Lighted, Furn	6 Each
Barricade, Type III, High Intensity, Double Sided, Lighted, Oper	6 Each
Plastic Drum, High Intensity, Furn	25 Each
Plastic Drum, High Intensity, Oper	25 Each
Traf Regulator Control	. 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.



ROAD CLOSURE/DETOUR SIGNING PLAN

OFFSET		POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)									
FEET	25	30	35	40	45	50	55	60	65	70	
1	10	15	20	27	45	50	55	60	65	70	
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	z
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	NGT
10	104	150	204	267	450	500	550	600	650	700	
11	115	165	225	293	495	550	605	660	715	770	<u>م</u>
12	125	180	245	320	540	600	660	720	780	840	APE
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	

MINIMUM MERGING TAPER LENGTH "L" (FEET)

THE FORMULAS FOR THE <u>MINIMUM LENGTH</u> 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 × 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

<u>TYPES OF TAPERS</u>
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

Michigan Department of Transportation TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL	TABLES FOR "L'	′, ″D″	AND	″B″ V	ALUES
DRAWN BY: CON:AE:djf	JUNE 2006		unna	0.0	SHEET
CHECKED BY: BMM	PLAN DATE:		NUUZ	UU	1 OF
FILE: K:/DGN/TSR/STDS/E	NGLISH/MNTTRF/M0020a.	dgn	REV.	08/22	1/2006

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

"D"		Р	OSTED S	SPEED L	IMIT,	MPH (PF	RIOR TO	WORK	AREA)	
DISTANCES	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.

Wichigen Department of Transportation TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL	TABLES FOR "L'	", "D" AND "B" \	/ALUES
DRAWN BY: CON:AE:djf Checked by: BMM	JUNE 2006 PLAN DATE:	M0020a	SHEET 2 OF 2
FILE: K:/DGN/TSR/STDS/E	NGLISH/MNTTRF/M0020a.	dgn REV. 08/2	1/2006



<u>NOTES</u>

- 1H. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES AND LENGTH OF LONGITUDINAL BUFFERS SEE MOO2Og 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.

	TANDOT	TYPICAL TEMPORA	RY TRAFFIC CONTR	OL FOR
SIGN SIZES	Michigan Department of Transportation	A TWO-LANE TWO-	WAY ROADWAY WHEF	E ONE
<u>3101(312E3</u>	TRAFFIC AND SAFETY	LANE IS CLOSE	D UTILIZING TRAF	FIC
DIAMOND WARNING - 48″ × 48″	MAINTAINING TRAFFIC	REGULATORS AND	USING A SINGLE	STEP
RECTANGULAR REGULATORY - 48" x 60"	TYPICAL	DOWN IN	N SPEED LIMIT	
$RS = 18C REGULATURT = 48 \times 48$	DRAWN BY: CON:AE:djf	OCTOBER 2011	M0150g	SHEET
NOT TO COM F	CHECKED BY: BMM:CRB	PLAN DATE:	MOTOD	2 OF 2
NUT TU SCALE	FILE: PW RD/TS/Typicals	s/Signs/MT NON FWY/MO1	50a.dgn REV. 10/04	/2011





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



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

DATE: 11/19/19

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	Number of Rollers	
Rate,	Required	
Square Yards Per		
Hour		
	Compaction	Finish
	Rollers	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.

Materials.- The HMA, 4E1 (Leveling course) shall have a yield of 165 pounds per square yard.

The HMA, 4E1 (Top course) shall have a yield of 165 pounds per square yard.

HMA Approach for paving approach roads will consist of HMA, 4E1 and shall have an average yield of 330 pounds per square yard placed in 2 courses. The yield shall increase where needed to match existing HMA thickness.

MANISTEE COUNTY ROAD COMMISSION HMA APPLICATION ESTIMATE

KPM:GLK

2 of 2

DATE: 11/19/19

The HMA Approach for paving HMA driveways will consist of HMA, 4E1 and shall have a average yield of 220 pounds per square yard placed in 1 course. 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.

a. 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

11-19-19

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:

Material	Application Rate
Topsoil Surface	4 inches
Seeding, Mixture TDS	220 #/Acre
Fertilizer, Chemical Nutrient, Cl 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

<u>Unit</u>

Square Yard

Slope Restoration

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**.

COORDINATION CLAUSE

KPM/GLK

Page 1 of 1

01/27/2020

The contractor is advised that other projects in the vicinity may be under construction during the life of this contract.

1.48 miles of Chip & Fog Sealing on 8 Mile Road, from M-22 easterly to US-31.

The contractor is reminded of the requirements in Section 104.08 of the 2012 Standard Specifications to cooperate with other contractors, utility companies, and public agencies.

MANISTEE COUNTY ROAD COMMISSION

NOTICE TO BIDDERS UTILITY COORDINATION

KPM:GLK

1 of 1

01-27-20 Milarch Rd 2020 HMA Resurfacing

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:

DTE Energy	Gas (Trans)	Consumers Energy	Electric
1250 Michcon Lane SW		821 Hastings St	
Kalkaska, MI 49646		Traverse City, MI 49684	
Contact: Karla Shawhan-Be	onnee	Contact: Eric Marr	
Cell (231) 258-3750		(231) 779-5536	
Superior Energy	Gas	Markwest Michigan Pipeline	Oil
11690 Chippewa Hwy		1515 Thomas Road	
Bear Lake, MI 49614		Kalkaska, MI 49646	
Contact: Mark Hearit		Contact: Donna Bonn	
Cell (989) 737-3880		(231)258-4614	
AT&T	Telecom		
205 E. Harris Street			

205 E. Harris Street Cadillac, MI 49601-2161 Contact: Jeff Shuster (231) 779-8451

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 Rightof-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.



INDIVIDUAL CONSTRUCTION PERMIT

For Operations within State Highway Right-of-Way

Issued To: 51021-067793-20-010220 Permit Number: **Manistee County Road Commission** Permit Type: **Individual Application** Permit Fee: \$.00 8946 Chippewa Hwy **Effective Date:** Jan 02, 2020 to Jan 02, 2021 Bear Lake MI 49614 **Bond Numbers:** Liability Insurance Expiration Date: Contact: Mark Sohlden 231-889-0000(O) manager@manisteecrc.org

Contractor:	Contact:
KPM ENGINEERING, PLLC	Gary Karttunen
1984 WALTON RD KINGSLEY MI 49649-9648	231-889-0000(O) 231-878-0869(Cell) garyk@komengineering.com

THIS PERMIT IS VALID ONLY FOR THE FOLLOWING PROPOSED OPERATIONS:

PURPOSE:

This section of Stronach Rd is being resurfaced in preparation for use as a future detour route for an MDOT bridge project on M-55 over the Manistee River. This project includes cold milling and HMA resurfacing in the vicinity of the Stronach Rd intersections with M-55 and US-31. Temporary construction signing and traffic control devices will be placed within the ROW of M-55 and US-31. A short term flagging operation will be required at the M-55/Stronach Rd intersection.

STATE ROUTE: M-55	TOWNSHIP OF:	Stronach	COUNT	Y: Manistee	County
NEAREST INTERSECTION:	SIDE OF ROAD:	DISTANCE TO ⁽ⁱⁱ NEAREST INTERSE	n feet) ECTION:	DIRECTION T	O NEAREST N:
Stronach Rd	W	0.00		East	
CONTROL SECTION:	MILE POINT FROM:	MILE POINT TO:	LEFT MI	LOCATION: EDIAN RIGHT	TRANSVERSE
51021	5.520	5.520		X	
REQUISITION NUMBER:	WORK ORDER NUMBER	R: MDOT JOB NUMBE	R:	ORG JOB NU	MBER:
		208035			

208035

This permit is incomplete without "General Conditions and Supplemental Specifications"

I certify that I accept the following:

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

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

CAUTION

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

Manistee County Road Commission		January 02, 2020 Approved Date
	Traverse City T:	

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

STANDARD ATTACHMENTS:

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

ADDITIONAL ATTACHMENTS:

- 1 Stronach_Plans_1-2-20.pdf
- 2 Stronach Rd MOT.pdf
- 3 m0020a (tables for L, D, and B values).pdf
- 4 m0050a (Advance Signing).pdf
- 5 mdot_wzd-100-a (Ground Driven Sign Supports For Temp Signs).pdf
- 6 mdot_wzd-125-e (Temporary Traffic Control Devices).pdf

AMENDMENT ATTACHMENTS:

SPECIAL CONDITIONS:

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

Michigan Department of Transportation 2205-1 (08/18)

This permit is issued subject to the following conditions:

- This permit grants to the permittee only those rights specifically stated and no other. Maintenance work within the trunkline right of way may require a separate permit unless authorized within the scope of the annual permit.
- Issuance of this permit does not relieve permittee from meeting any and all requirements of law, or of other public bodies or agencies. The permittee shall be responsible for securing including but not limited to any other permissions including or required by law including but not limited to cities, villages, townships, corporations, or individuals for the activities hereby permitted.
- 3. The permittee agrees as a condition of this permit to:
 - a. Have in the permittee's or the permittee's representative's possession on the job site at all times the approved permit, advanced notice and any necessary plans or sketches.
 - b. Submit Advance Notice through the online Construction Permit System (CPS) at least five (5) working days prior to commencement of any operations covered by this permit. No work shall start until an approved Advance Notice is e-mailed to the permittee.
 - c. Perform no work except emergency work, unless authorized by the Department, on Saturdays, Sundays, or from 3:00 p.m. on the day proceeding until the normal starting time the day after the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.
 - d. Provide and maintain all necessary precautions to prevent injury or damage to persons and property from operations covered by this permit.
 - e. Furnish, install and maintain all necessary traffic controls and protection during permittee's operations in accordance with the Michigan Manual of Uniform Traffic Control Devices and any supplemental specifications set forth herein.
 - f. Notify the Department of completion of work authorized by this permit through CPS, so that final inspection may be made and surety deposit released (where applicable). Surety deposit will not be released until the work authorized by the permit has been completed and inspected, and all inspection charges billable to the permittee are paid.
- 4. Nothing in this permit shall be construed to grant any rights what so ever to any public utilities, except as to the consent herein specifically given, nor to impair any existing rights granted in accordance with the constitution or laws of this state.
- 5. Any operations in the trunkline right of way not covered by permit and the appropriate Department specifications are in violation of the jurisdictional authority of the Department, with respect to the control of the trunkline right of way, unless approved by the Department. Any change or alteration in the permit activities requires prior approval of the Department and may require a new permit.
- 6. Performance of the requirements of this permit is the responsibility of the permittee. The permittee shall complete all operations for which this permit is issued in accordance with the conditions of this permit, by the specified completion date. The permittee shall meet all requirements of the current Department Standard Specifications for Construction, and the Supplemental Specifications set forth on/or incorporated as a part of this permit.

- 7. The construction, operation and maintenance of the facility covered by this permit shall be performed without cost to the Department unless specified herein. The permittee shall be responsible for the cost of restoration of the state trunkline and right of way determined by the Department to be damaged as a result of the activities of the permittee.
- 8. Facilities allowed on state trunkline right of way shall be placed and maintained in a manner which will not impair the state trunkline or interfere with the reasonable safe and free flow of traffic. Failure of the permittee to maintain the facilities located within the State trunkline right of way so as not to interfere with the operation, maintenance or use of the state trunkline by the traveling public may result in revocation of the permit.
- The permittee is solely and fully responsible for all activities 9. undertaken pursuant to the permit. Any and all actions by the Department and those governmental bodies performing permit activities for the Department pursuant to a maintenance contract, including but not limited to any approved reviews and inspections of any nature, permit issuing, and final acceptance or rejection of the work or activity authorized by the permit shall not be construed as a warranty or assumption of liability on the part of the Department or those governmental bodies. It is expressly understood and agreed that any such actions are for the sole and exclusive purposes of the Department and the governmental bodies acting in a governmental capacity. Any such actions by the Department and governmental bodies will not relieve the permittee of its obligations hereunder, nor are such actions by the Department and the governmental bodies to be construed as a warranty as to the propriety of the permittee's performance. The permittee shall indemnify and save harmless the State of Michigan, Michigan Transportation Commission, the Department and all officers, agents and employees thereof, and those governmental bodies performing permit activities for the Department and all officers, agents and employees thereof, pursuant to a maintenance contract, against any and all claims for damages arising from operations covered by this permit except claims resulting from the sole negligence or willful acts or omissions of said indemnities, its agent, or employees. In addition, permittee upon request shall furnish proof of insurance coverage for the term of this permit in an amount pre-specified.
- 10. The permittee or representative must ensure that all insurance policies and binders include an endorsement by which the insurer agrees to notify the Department in writing at least 30 days before there is a cancellation or material change in coverage. The permittee or representative must stop operations if any insurance is cancelled or reduced, and must not resume operations until new insurance is in force. The State of Michigan, Michigan Transportation Commission, Department of Transportation, and governmental bodies performing permit activities under a maintenance contract, and all officers, agents, and employees of all the above, for claims arising out of, under, or by reason of operations covered by the permits issued to the permittee.
- 11. This permit is not assignable and not transferable unless specifically agreed to by the Department.
- 12. The permittee, upon request of the Department, shall immediately remove, cease operations, and surrender this permit, or alter or relocate, at the permittee's own expense, the facility for which this permit is granted. Upon failure to do so, the Department may take any necessary action to protect the trunkline interest and the permittee shall reimburse the Department for its costs in doing same. The permittee expressly waives any right to claim damages or compensation in the event this permit is revoked.

- 13. The permittee shall, upon request by the Department, furnish a performance surety deposit in the form of a bond, cash, certified check, or (when authorized by the Department) an irrevocable letter of credit in such amount as deemed necessary by the Department to guarantee restoration of the trunkline highway or performance under the conditions of the permit.
- 14. The permittee hereby acknowledges and agrees that the Department has the right to demand completion by the permittee, or the performance surety, or to complete any uncompleted activity authorized by this permit which adversely affects the operation and/or maintenance of the state trunkline highway, or which is not completed by the expiration date of the permit, including:
 - a. Completion of construction of driveway and/or approach (not authorized by annual permit).
 - b. Removal of materials.
 - c. Restoration of the trunkline facilities and right of way as necessary for the reasonably safe and efficient operations of the trunkline highway.

The permittee further agrees to immediately reimburse the Department in full for all such costs incurred by the Department upon receipt of billing, and that upon failure to pay, the Department may affect payment with the performance surety deposit. Should the surety deposit be insufficient to cover expenses incurred by the Department, the permittee shall pay such deficiency upon billing by the Department. If the surety deposit exceeds the expense incurred by the Department, any excess will be returned or released to the depositor upon completion of the work to the satisfaction of the Department.

- 15. The Department reserves the right during the time any or all of the work is being performed to assign an inspector to protect the trunkline interest, and to charge the permittee all such costs incurred. In addition, the permittee may be billed any engineering and review fees incurred by the Department or its agent in connection with the work covered by this permit.
- 16. Emergency Operations: In time of disaster or emergency, or when utility lines or facilities are so damaged as to constitute a danger to life and/or property of the public, access to the same may be had by the most expeditious route. Work is to be completed in a manner which will provide the traveling public with maximum possible safety and minimize traffic distribution. Notice of such situations shall be given to the nearest police authority and the department as soon as can reasonably be done under the circumstances. During normal Department work hours, the facility owner shall advise the Department of any operations within right of way which affect traffic operations or the highway structure or facilities prior to performance of the work. After normal Department work hours, the permittee, at the beginning of the first working day after the emergency operation, shall advise the Department of any operations which affect traffic operations or the highway structures and facilities. If determined necessary by the Department, the permittee shall secure an individual permit for such work after notification.
- 17. Upon the Department's request, as built drawings of work performed will be furnished to the Department within 30 days after completion of the work.
- 18. The permittee shall give notice to public utilities in accordance with Act 174 of 2013, as amended, and comply with all applicable requirements of this act. The permittee shall also comply with requirements of Act 451, P.A. of 1994, as amended.

- 19. The permittee acknowledges that the Department is without liability for the presence of the permittee's facility which is located within the trunkline right of way. Acceptance by the Department of work performed, and/or notice of termination of performance obligations for the surety and/or the permittee do not relieve the permittee of full responsibility for the permittee's work or for the presence of the permittee's facility in the trunkline right of way.
- 20. Where the Department has accepted an Indemnification Commitment in lieu of bond and/or insurance policies, such commitment is incorporated into this permit by reference.
- 21. It is illegal to discharge substances other than storm water into the Department's storm sewer system unless permission has been obtained in writing for other discharges.
- 22. The permittee shall be responsible for obtaining information on permitted environmental site closures within MDOT right of way. MDOT has implemented a program that allows environmental contamination to remain within the right of way by use of a permit. Issued permit information can be obtained from the Region/TSC in which the permit is issued. If the permittee will encounter a site area identified as a site closure permit area, the permittee shall follow instructions and conditions set forth in Supplemental Specifications #3 and specifications found in form 2205-C, "Special Conditions for Underground Construction".

>>>NEW>>>

23. Other than for normal daily vehicle and equipment usage requirements, the permittee shall not use or store unattended equipment, or the following types of hazardous materials on, over, under, or immediately adjacent to Department or Local Agency owned buildings, bridges and structures, unless expressly approved by the Department in writing;

Explosive, flammable gas, non-flammable gas, inhalation hazard, oxygen, flammable liquids, fuel oil, combustible, gasoline, flammable solids, spontaneously combustible, dangerous-when-wet, oxidizer organic peroxide, toxic, poisonous, inhalation hazard, infectious, radioactive, corrosive, or any other potentially hazardous material.

Furthermore, the permittee shall not allow hazardous or unreasonably objectionable smoke, fumes, vapor, or odors to emit from any permitted operation. No junk, garbage, refuse or unused construction materials shall be stored or accumulated within the MDOT Right-of-Way. <u>Construction and Maintenance of Facilities</u> – To construct and maintain utility crossings of limited access highways, access for the utility's service vehicles may be from county roads, service roads, and openings authorized in limited access right of way fences. The construction of utilities across limited access highways should be for the purpose of serving a general area rather than providing individual services, unless extenuating circumstances necessitate such crossings.

Equipment, vehicles or personnel will not operate within a distance of 30 feet from the edge of the pavement of roadways or ramps on limited access highways. At locations where utilities have been constructed in medians having a width greater than 80 feet or have otherwise been allowed to remain or to be constructed in limited access right of way, ingress and egress shall be by such routes as specified by the Department, which may also specify additional safety provisions.

- 2. <u>Restoration</u>- Restoration of the trunkline highway and right of way will be such that it will provide a condition equal to or better than the original condition, in accordance with Michigan Department of Transportation Standard Specifications.
- 3. Excavation and Disposal of Excavated Material The permittee shall provide and place the necessary sheeting, shoring and bracing required to prevent caving, loss or settlement of foundation material supporting the pavement, or any other highway installation such as sewers, culverts, etc. The permittee shall assume the full responsibility for this protection and shall not proceed in these areas before approval of the methods by the Department.

Construction equipment and excavating material shall not be stocked in such locations that it creates a traffic hazard or interferes with the flow of traffic; and on limited access highways, shall be a minimum of 30 feet from the traveled way. Sod and topsoil shall be stacked separately from other excavated material. The permittee shall dispose of all surplus and unsuitable material outside of the limits of the highway, unless the permit provides for disposal at approved locations within right of way. In the latter case, the material shall be leveled and trimmed in an approved manner.

When the permittee is excavating within trunkline right of way and discovers existing contaminated soil and/or an abandoned underground storage tank, special permit specifications entitled "Special Conditions for Underground Construction" (Form 2205-C) shall apply.

Utility Cuts, Trenches and Pavement Replacement - Utility crossing by pavement cutting and removal are generally prohibited. If extenuating circumstances make tunneling, boring and jacking impractical pavement cutting may be used with approval of the Department. All utility cuts, trenching and pavement replacement shall comply with the requirements of the Standard Specifications and the Standard Plan "Utility Cuts, Trenches and Pavement Replacement". Unless otherwise specified, cuts in concrete residential and commercial drives shall be as above; except that the patch width shall be a minimum of 3 feet and the remaining slab from patch to existing joint shall be a minimum of 3 feet. Backfill shall be made with sand-gravel as specified in the Standard Specifications, unless otherwise directed. After the backfill has been placed and compacted by controlled density method, the pavement shall be replaced with new pavement of the original type and quality, unless at the season of the year when it is not feasible to replace pavement in kind. In this case, a temporary surface of bituminous material shall be placed with Department approval and later replaced with pavement of the original type at the applicant's expense. Other pavement types may be allowed with prior approval of the Department.

- <u>Crossing Roadbed by Tunneling or Boring and Jacking</u> All crossing of roadbed operations involving tunneling, boring and jacking shall comply with the Department's special provisions for such work.
- <u>Backfilling and Compacting Backfill</u> Unless otherwise specified, all trenches, holes and pits shall be filled with sound earth or with sand-gravel if so provided, placed in successive layers not more than 9 inches in depth, loose measure, and each layer shall be thoroughly compacted by tamping. All backfill compaction will be subject to check by the controlled density method.
- 7. <u>Depth of Cover Method</u>- Unless otherwise authorized, pipes shall be placed to a depth that will provide not less than 4 feet of cover between the top of the roadway surface and the pipe, 3 feet cover below the ditch line and the pipe.
- 8. <u>Trees</u>:
 - a. The permittee is responsible for obtaining permission from abutting owners when trimming or removing trees on easement right of way.
 - b. Tree removal or trimming may be undertaken only after submission of an "Advance Notice" through CPS, a field review by the Region Resource Specialist and an approved copy of the advanced notice is e-mailed to the permittee.
 - c. Limbs, logs, stumps and litter shall be disposed of in a manner acceptable to the Department.
 - d. Tree roots shall be bored a distance of one foot for each one inch of trunk diameter for underground utility installations
- <u>Aerial Wire Crossings</u> Vertical clearance of wires, conductors and cables over state trunkline shall not be less than required by Section 232 of the National Electrical Safety Code, except in no case shall the under-clearance below any wire, conductor, or cable, under any temperature or loading condition, be less than eighteen feet (18').

ENVIRONMENTAL REQUIREMENTS FOR ACTIVITIES WITHIN MDOT RIGHT-OF-WAY

Issuance of a permit by MDOT does <u>not</u> relieve the permit applicant from meeting any and all requirements of law, or of other public bodies or agencies, including but <u>not</u> limited to the following:

1. Goemare-Anderson Wetland Protection Act, Part 303, P.A. 451 of 1994

Any activity that involves excavation or fill, located within a regulated wetland, requires a Michigan Department of Environmental Quality (MDEQ) permit. Regulated wetlands are those systems that are contiguous to a lake or stream (within 500 feet) or greater than five (5) acres in size.

2. Inland Lakes and Streams Act, Part 301, P.A. 451 of 1994

Any activity located within the ordinary high-water mark of a regulated body of water, i.e., lake, stream, drain, pond. etc., shall require a permit. There are <u>no</u> exemptions to this requirement. Permit applications and questions can be submitted to the MDEQ's Land and Water Management Division.

3. Soil Erosion and Sedimentation Control Act, Part 91, P.A. 451 1994

Any land disturbance of one (1) acre or greater, or that is located within 500 feet of a lake or stream, requires a soil erosion permit. Municipalities who are classified as an Authorized Public Agency (APA) are exempt from permits, but must follow proper soil erosion practices as identified in their standard plan. Any construction activity located within MDOT Right-of-Way that is authorized by a MDOT permit is the responsibility of the permit applicant and is <u>not</u> covered under MDOT's APA authority.

Soil erosion and sedimentation controls are required on all projects, even if a soil erosion permit is <u>not</u> required. Individuals performing work shall prevent sediment from entering any body of water or leaving the Right-of-Way. Permits can be obtained from the county/municipal agencies. Minor earth changes are exempted in this Act and are classified as normal maintenance and emergency repairs.

4. <u>Clean Water Act: National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Requirements for</u> <u>Construction Activities</u>

Any land disturbance of five (5) acres or greater requires an NPDES Storm Water Discharge Permit. This can include any filling, excavating, grading, clearing, etc. Municipally-owned utilities who service a population of less than 100,000 are exempt from permit provisions, but <u>not</u> from environmental protection requirements. Permit applications require the Part 31, P.A. 451 permit number, or a declaration of APA status and the effective date. Permit applications and questions can be submitted to the MDEQ's Surface Water Quality Division.

5. Environmental Site Closures

A procedure was developed by the MDEQ and MDOT which may allow a property owner, who is responsible for of these sites, to close an environmentally impacted site. Questions regarding this activity shall be addressed by contacting MDOT's Environmental Specialist at 517-335-2271.

- 6. The Land and Water Management Division of the MDEQ also administers the following environmental laws which may require review prior to construction:
 - Sand Dune Protection Act, Part 353, P.A. 451 of 1994.
 - Shore-lands Protection and Management, Part 323, P.A. 451 of 1994.
 - Great Lakes Submerged Lands Act, Part 325, and P.A. 451 of 1994.
- 7. The Wildlife Division of the MDNR also administers the following environmental laws which may require review prior to construction:
 - Endangered Species Act, Part 365, and P.A. 451 of 1994.

Questions regarding these permits may be addressed by contacting the nearest MDEQ district field office, or the MDEQ Land and Water Management Division at 517-373-1170.

Additional information is available in MDOT's Environmental Procedures Manual.

















MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR					
GUARDRAIL,					
TYPES A, B, BD, T, TD,					
MGS-8, & MGS-8D					
F.H.W.A. APPROVAL	2-27-2019 Plan date	R-60-J	SHEET 8 OF 17		













SECTION THROUGH BEAM ELEMENT



FRONT ELEVATION OF BEAM ELEMENT















TWO-WAY TRAFFIC DIRECTION OF RAIL LAP

NOTES:

DETAILS SPECIFIED ON THIS STANDARD ARE ACCORDING TO THE AASHTO-AGC-ARTBA JOINT COMMITTEE. TASK FORCE 13 PUBLICATION TITLED "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE."

BEAM ELEMENTS SHALL BE SHOP BENT TO PLAN RADIUS FOR CURVE RADII 150' OR LESS. A TAG IDENTIFYING THE CURVATURE OF THE SHOP BENT SECTION WILL BE REQUIRED FOR EACH CURVED ELEMENT.

SEE STANDARD PLAN R-61-SERIES, R-62-SERIES OR R-63-SERIES FOR GUARDRAIL APPROACH TERMINALS, STANDARD PLAN R-66-SERIES FOR GUARDRAIL DEPARTING TERMINALS AND STANDARD PLAN R-67-SERIES FOR GUARDRAIL ANCHORAGE, BRIDGE.

WHEN THE PLANS SPECIFY GUARDRAIL (TYPE B OR T) TO BE PLACED ON THE SHOULDER HINGE POINT, RATHER THAN AS SPECIFIED ON THIS PLAN, 8'-0'' POSTS SHALL BE PROVIDED, WITH THE ADDITIONAL LENGTH EMBEDDED FOR ADDED STABILITY. (NOT NECESSARY WHEN THE SLOPE IS REASONABLY LEVEL BEYOND THE SHOULDER HINGE POINT, AS DETERMINED BY THE ENGINEER.)

WHEN THE PLANS SPECIFY GUARDRAIL TYPE MGS-8 TO BE PLACED ON THE SHOULDER HINGE POINT, RATHER THAN AS SPECIFIED ON THIS PLAN, 9'-0'' POSTS SHALL BE PROVIDED, WITH THE ADDITIONAL LENGTH EMBEDDED FOR ADDED STABILITY. (NOT NECESSARY WHEN THE SLOPE IS REASONABLY LEVEL BEYOND THE SHOULDER HINGE POINT, AS DETERMINED BY THE ENGINEER.)

WOOD POSTS WITH ${}^{1\prime}\!\!\!\!\!\!_{2}^{\prime\prime}$ BEVELS AT THE TOP MAY BE USED IN LIEU OF WOOD POSTS WITHOUT BEVELS SPECIFIED. THE LENGTH, WIDTH AND DEPTH OF THE POST SHALL BE AS SPECIFIED ON THIS STANDARD AND THE POST BOLT HOLES SHALL BE LOCATED TO ENSURE PROPER RAIL HEIGHT.

WOOD OFFSET BLOCKS WITH $^{1}\prime_{2}''$ BEVELS AT THE TOP AND BOTTOM OR A 1" BEVELED TOP MAY BE USED IN LIEU OF WOOD BLOCKS WITHOUT BEVELS SPECIFIED. THE LENGTH (FRONT AND BACK FACE), WIDTH AND DEPTH OF THE BLOCK SHALL BE AS SPECIFIED ON THIS STANDARD AND THE POST BOLT HOLES SHALL BE LOCATED TO ENSURE PROPER RAIL HEIGHT AND COMPATIBILITY WITH POST HOLES.

WHEN THE FACE OF GUARDRAIL IS PLACED FLUSH WITH FACE OF CURB, THE RAIL HEIGHT SHOULD BE MEASURED FROM THE FRONT EDGE OF THE GUTTER PAN, WHICH IS THE POINT ON THE GUTTER PAN THAT IS CLOSEST TO THE EDGE OF THE TRAVELED LANE. WHEN THE FACE OF THE GUARDRAIL PANEL IS LOCATED BEHIND THE CURB THE RAIL HEIGHT SHOULD BE MEASURED FROM THE GROUND JUST IN FRONT OF THE GUARDRAIL.

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR

GUARDRAIL, TYPES A, B, BD, T, TD, MGS-8, & MGS-8D

	2-27-2019	R-60-J	SHEET
F.H.W.A. APPROVAL	PLAN DATE	10 00 0	17 OF 17









4 OF 15



R-61-H-LAP

5 OF 15





GUARDRAIL APPROACH TERMINAL TYPES 1B & 1T (SRT & FLEAT)

R-61-H-LAP















NOTES:

ALL POSTS, OFFSET BLOCKS, BEAM ELEMENTS, AND HARDWARE (INCLUDING BOLTS, NUTS, AND WASHERS) SHALL CONFORM TO THE CURRENT STANDARD SPECIFICATIONS AND TO THE CURRENT STANDARD PLAN R-60-SERIES, WHERE APPLICABLE, EXCEPT AS SPECIFIED ON THIS STANDARD.

ALL 1:10 SLOPES SHALL BE GRADED TO CLASS A SLOPE TOLERANCES.

GUARDRAIL REFLECTORS AND OTHER ATTACHMENTS ARE NOT TO BE USED ON THE GUARDRAIL APPROACH TERMINAL. PLACE REFLECTORS BEGINNING ON STANDARD RUN OF GUARDRAIL.

USE REFLECTIVE SHEETING ACCORDING TO THE FOLLOWING TRAFFIC CONDITIONS: (NOTE: ALTERNATE 3" BLACK AND 3" YELLOW STRIPES ON A 45° ANGLE)





TRAFFIC PASSING ON

TRAFFIC PASSING ON THE LEFT SIDE TRAFFIC PASSING ON TRAFFIC PASSING O BOTH SIDES THE RIGHT SIDE

ON THE "SRT", THE CURVED PORTION OF THE TERMINAL END SHOE FACING TRAFFIC (HALF CIRCLE) SHALL BE COMPLETELY COVERED WITH HIGH INTENSITY ADHESIVE REFLECTIVE SHEETING.

ON THE "FLEAT", THE PORTION OF THE IMPACT HEAD ASSEMBLY FACING TRAFFIC SHALL BE COMPLETELY COVERED WITH HIGH INTENSITY ADHESIVE REFLECTIVE SHEETING.



















NOTES:

ALL POSTS, OFFSET BLOCKS, BEAM ELEMENTS, AND HARDWARE (INCLUDING BOLTS, NUTS, AND WASHERS) SHALL CONFORM TO THE CURRENT STANDARD SPECIFICATIONS AND TO THE CURRENT STANDARD PLAN R-60-SERIES, WHERE APPLICABLE, EXCEPT AS SPECIFIED ON THIS STANDARD.

ALL 1:10 SLOPES SHALL BE GRADED TO CLASS A SLOPE TOLERANCES.

WHEN SITE CONDITIONS WARRANT AND WITH THE APPROVAL OF THE ENGINEER, GUARDRAIL APPROACH TERMINAL TYPES 2B & 2T CAN BE INSTALLED STRAIGHT (WITHOUT THE 1'-O" OFFSET FROM THE TANGENT LINE TO THE TRAFFIC FACE OF POST 1).

GUARDRAIL REFLECTORS AND OTHER ATTACHMENTS ARE NOT TO BE USED ON THE GUARDRAIL APPROACH TERMINAL. PLACE REFLECTORS BEGINNING ON STANDARD RUN OF GUARDRAIL.

USE REFLECTIVE SHEETING ACCORDING TO THE FOLLOWING TRAFFIC CONDITIONS: (NOTE: ALTERNATE 3" BLACK AND 3" YELLOW STRIPES ON A 45° ANGLE)





TRAFFIC PAS

TRAFFIC PASSING ON THE LEFT SIDE TRAFFIC PASSING ON BOTH SIDES

TRAFFIC PASSING ON THE RIGHT SIDE

THE PORTION OF THE IMPACT HEAD ASSEMBLY FACING TRAFFIC SHALL BE COMPLETELY COVERED WITH HIGH INTENSITY ADHESIVE REFLECTIVE SHEETING.

GUARDRAIL APPROACH					
TERMINAL	ΤY	PES	2B	&	2T
(SKT	&	ET-PLU	JS)		

R-62-H-LAP













CONTROLLED RELEASING TERMINAL POST (CRT)

NOTES:

THE SLOPE IN FRONT OF THE INSTALLATION SHOULD NOT EXCEED 1:10 AND EXTEND TO $2^\prime-0^{\prime\prime}$ BEYOND THE GUARDRAIL POST. THE SLOPE BEYOND THIS HINGE LINE SHALL BE 1:2 OR FLATTER.

THE CROSS HATCHED AREA BEHIND THE $\mbox{curved guardrail should be kept free of fixed objects.}$

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT SPECIAL DETAIL					
GUARDRAIL AT INTERSECTIONS					
A-9-2018 SPECIAL 21 SHEET					