85 WEST HIGHWAY M-115
BOON, MICHIGAN 49618
PHONE 231-775-9731
FAX 231-775-9732

WEXFORD COUNTY ROAD COMMISSION

OUR MISSION IS TO IMPROVE AND MAINTAIN A SAFE AND EFFICIENT ROAD SYSTEM

July 15, 2025

NOTICE TO PAVING CONTRACTORS

Sealed bids will be received at the office of the Wexford County Road Commission, 85 West Highway M-115, Boon, Michigan 49618 until 2:00 p.m. Monday, July 28, 2025, at which time and place the bids will be opened and read for furnishing the Wexford County Road Commission for construction of the following:

HMA Paving- 1½" Cold Mill and Overlay on M -55 from Joint East of 35 Rd to Joint West of 31 Rd

All submitted bids must be in a sealed envelope clearly marked: **M-55 Paving, Wexford M-55 TWA**

Specifications are available at www.wexfordcrc.org and at the Road Commission office in Boon, Michigan. Telephone or faxed bids will not be accepted.

All materials and all work will be in accordance with the 2020 MDOT Standard Specifications for Construction.
Insurance requirements shall be in accordance with the 2020 MDOT Standard Specifications for Construction. Award is contingent upon Board approval and funding being available from MDOT.

The Wexford County Road Commission, in accordance with Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42 U.S.C 2000d to 2000d-4 and Title 49, Code of Federal Regulations, Department of Transportation, SubTitle A, Office the Secretary, Part 21, Nondiscrimination in Federally assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively insure that in any contact entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

The Board reserves the right to reject any or all bids or any part of the same, to waive irregularities and/or informalities and to make the award in part or entirety in any manner deemed to be in the best interest of the Wexford County Road Commission. Contractors / suppliers that do not honor their bid through out the season may at WCRC discretion be precluded from future bid lettings.

Wexford County Road Commission

Harry Hagstrom, Chairman
Harold Falan, Vice-Chairman
Dean Jurik, Member
Jim Leggett, Member
Robert Hilty, Member

HMA Paving- 1½" Cold Mill and Overlay
M-55 from Joint East of 35 Rd to Joint West of 31 Rd
MDOT TWA project for Wexford County Road Commission

The following project is an MDOT TWA project that will be facilitated by Wexford County Road Commission.
This Work Must be completed by **September 26, 2025**.

Project Location:
M-55, Cherry Grove Township, Wexford County, Michigan.
The project POB is approximately 500' west of 31 Rd intersection (Sta. 2149+85) and the POE is approximately 50' east of 35 Rd intersection (Sta. 2272+53). Existing joints at each location.

Description of Work:
There are 2 different work types along this section of road. Read the project description carefully to understand what is being performed. See attached log sketch of the project provided by MDOT.

Work Type I: Overlay with Shoulder Repair
Location: 31 Rd to 33 Rd (Sta. 2149+85 to 2205+50)
The intent of this work is to cold mill repair intermittent failing sections of the existing shoulder between the joint west of 31 Rd (POB) and 33 Rd. A cold mill will be used to mill the existing 3' wide failed shoulders where indicated. Cold mill the existing HMA shoulder will be variable width from 3' to 5' wide, as directed. The milled sections to be 2" deep at variable width. The milled shoulder repair sections will be paved separately, placing HMA, 5EML at a rate of 220 lbs/syd on milled surface prior to paving the HMA overlay.
The entire roadway from POB to 33 Rd will be paved with HMA 1½" overlay, including the existing shoulders and the shoulder repair sections. HMA, 5EML to be placed at a rate of 165 lbs/syd.
There are 18 HMA paved driveways that will have HMA wedged to transition from the new road surface to the old driveway surface. Length of taper will be determined in the field to provide the residents with a minimal grade change.
S 31 Rd currently has paved HMA approaches on both the north and south sides. These approaches will be overlayed with HMA, 5EML at a rate of 165 lb/syd.

Work Type II: Mill & Resurface
Location: 33 Rd to 35 Rd (Sta. 2205+50 to 2272+53)
The intent of this work is Cold Milling of the drive lanes and ½ foot of each shoulder (25'wide) from 33 Rd to the joint just east of 35 Rd (POE). This includes 2 passing flares. Cold Milling to be to a depth of 1½" deep.
The drive lanes and passing flares will be paved back with HMA, 5EML at a rate of 165 lbs/syd.
The curbed approaches at Wexford County intersecting roads will be profile milled. Cold Milling the shoulder to produce a 1½" joint along the face of the curbs and through the approach while matching the milled edge of the lane. Cold Milling of shoulder at approaches will begin at the end of the curbs and will continue through the intersection to the end of the opposite curb.
Below is a list of intersections the profile milling applies to, quantities are estimated:

Thirsty's	180 Syds
Taylor	180 Syds

Bucchanalia Dr	350 Syds
Benson Road	200 Syds.
Morel Drive	160 Syds.

There are 2 Wexford County roads intersecting that will have fully paved approaches. The approaches will have both curbs profile milled along M-55 as described above and also milled around the radii of the curbs to the ends of curbs, transitioning to overlay with a tapered mill joint. The entire approach will be overlayed with HMA, 5EML at a rate of 165 lbs/syd.
See the list of intersections for approach Cold Milling below, quantities are estimated:

35 Road	550 Syds
33 Road	600 Syds.

Work Type II, Mill and Resurface will transition to **Work Type I, Overlay**, with a milled taper to transition at the west end of the passing flare lane at the 33 Rd intersection (Sta 2205+550). Tapered butt joint will be cold milled at POB (Sta. 2149+85) to transition to existing surface. Milled taper to be 75' long.

The milled material will become property of the Wexford County Road Commission. The contractor will haul material off site and stockpile at the DNR snowmobile staging area at 33 Rd and 48 ½ Rd.

Class II shoulders to be placed after completion of paving. Class II shoulders to be placed flush to new asphalt and compacted.

Temporary Removable Yellow pavement markings are to be placed on centerline only. Permanent Yellow pavement markings to be placed upon completion of paving and aggregate shoulders.

The contractor's operations must be performed during daylight hours from Monday through Friday.

Project Schedule:
This project is to be completed prior to **September 26, 2025**. No work on Saturdays, Sundays, or holidays. In the event of a Labor Dispute, lockout, or strike, there will be no extensions of time and liquidated damages will begin on September 26, 2025, if the project is not completed.

General Log Notes:

1. Once work has been initiated, the work must be continued daily until it is completed. The project must be completed in 10 work days.

2. HMA, 5EML Overlay to be a MDOT approved mix design.

3. A HMA overlay will be paved over the existing roadway and shoulders, along with the milled surfaces, at a rate of 165 lbs/syd.

4. Asphalt Cement for the HMA, 5EML to be PG 64-28

5. The top course of HMA pavement to have a minimum AWI of 260.

6. The Bond Coat material shall be placed on the existing HMA surface. The application rate shall be 0.05 to 0.15 gal/syd. Surfaces are to be clean and dry.

7. Shoulder, CL II, will be placed 2’ to 3’ wide where needed. This material will be graded flush with HMA surface and compacted.

8. The Engineer will establish exact limits of operations in the field prior to work.

9. Milled material becomes the property of the Wexford County Road Commission. The contractor will haul material off site and stockpile at the DNR snowmobile staging area at 33 Rd and 48 ½ Rd.

10. WCRC may perform maintenance work within or adjacent to the Construction Influence Area (CIA). WCRC will coordinate their operations to minimize interference to the Contractor. NO additional payment will be made to the Contractor for the joint use of traffic control items.

11. The 2020 MDOT Standard Specifications for Construction and 2011 Michigan Manual of Uniform Traffic Control Devices and MDOT Standard Plans shall apply.

12. This project is not a Davis/Bacon project, nor does it require prevailing wages to be paid to the contractor or its employees.

Insurance Requirements:
Insurance: Requirements as per MDOT 2020 Standard Specifications for Construction.

HMA Paving- 1½" Cold Mill and Overlay
M-55 from Joint East of 35 Rd to Joint West of 31 Rd
MDOT TWA project for Wexford County Road Commission
Bid Tab

The total bid amount is to include all materials and labor to perform the above-mentioned work utilizing the following pay items:

Pay Item	Description	Qty	Unit	Unit Price	Total
1500001	Mobilization	1	LSum	_____	_____
3070121	Shoulder, CL II	525	Ton	_____	_____
5010002	Cold Mill HMA Surface	24575	Syd	_____	_____
5012037	HMA, 5EML	4050	Ton	_____	_____
8110234	Pavt Mrkg, Waterborne, 6 inch Yel	3300	Ft	_____	_____
8120035	Channelizing Device, 42 inch, Fluorescent, Furn	170	Ea	_____	_____
8120036	Channelizing Device, 42 inch, fluorescent Oper	170	Ea	_____	_____
8120140	Connected Lighted Arrow, Type C, Furn	2	Ea	_____	_____
8120141	Connected Lighted Arrow, Type C, Oper	2	Ea	_____	_____
8120180	Mobile Attenuator	1	Ea	_____	_____
8120246	Pavt Mrkg, Wet Reflective Type R, Tape, 4 inch, Yellow Temp.	1000	Ft	_____	_____
8120310	Sign Cover	4	Ea	_____	_____
8120350	Sign, Type B, Temp, Prismatic, Furn	600	Sft	_____	_____
8120351	Sign, Type B, Temp, Prismatic, Oper	600	Sft	_____	_____
8120170	Minor Traf Devices	1	LSum	_____	_____
8122188	Rumble Strip, Temp, Portable, Furn	12	Ea	_____	_____
8122189	Rumble Strip, Temp, Portable, Oper	12	Ea	_____	_____
8120370	Traffic Regulator Control	1	LSum	_____	_____

TOTAL BID AMOUNT = _____

Company Name _____

Address _____

By (Name and Title) _____

Authorized Signature _____

Date _____

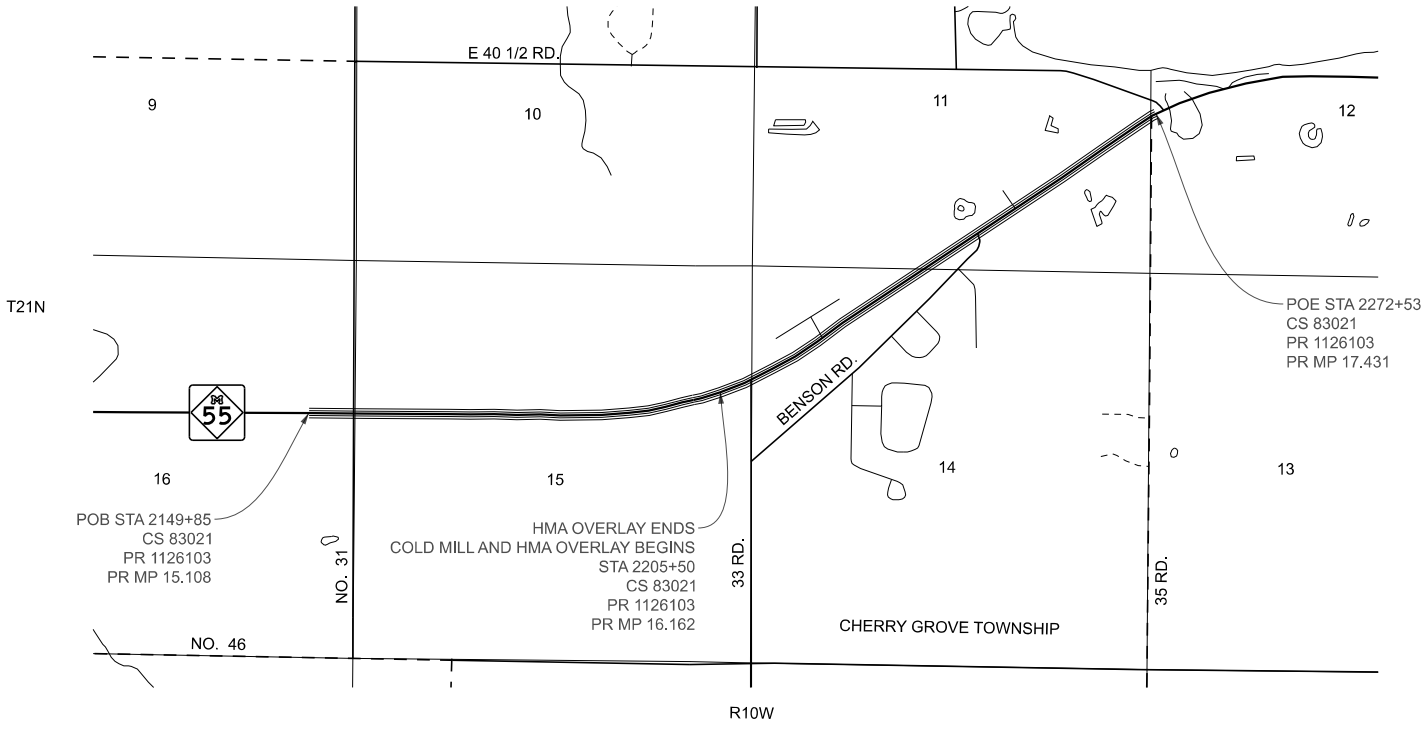
MICHIGAN DEPARTMENT OF TRANSPORTATION

N

ROUTE: M-55
CHERRY GROVE TOWNSHIP
WEXFORD COUNTY

SECTION	CONTROL SEC	JOB NO.	FED AID PROJ
1	83021		

COUNTY KEY



THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION. PHYSICAL ROAD NUMBER (PR#) & MILEPOST (MP) DATA ARE FROM MICHIGAN GEOGRAPHIC FRAMEWORK VERSION # 25.

MILES: 2.32

CONTRACT FOR:
HMA OVERLAY 31 RD TO 33 RD WITH HMA SHOULDER REPAIR
COLD MILL AND HMA OVERLAY 33 RD TO 35 RD WITH HMA RD APPROACHES

BRADLEY C. WIEFERICH, P.E. - DIRECTOR

MDOT Michigan Department of Transportation	NO SCALE	DESIGN UNIT: PHILLIPS	TSC: TRAVERSE CITY	DATE:
		CS: 83021	MAINTENANCE DESIGN	DRAWING: SHEET
		JN:	M-55 31 RD TO 35 RD	M-55 TITLE 001 / SECT 1
FILE: M-55 31 Rd to 35 Rd Title.dgn			TITLE SHEET	

LOG OF PROJECT

PROJECT LOCATION

M-55 approximately 506’ west of 31 road to approximately 66’ east of 35 road, Wexford County. See title sheet for more detail.

PROJECT DESCRIPTION

This project includes HMA shoulder repairs and overlaying existing HMA pavement from 31 road to 33 road and cold mill and overlay from 33 road to 35 road, as directed by the Engineer. This work will also include butt joints to tie into exiting pavement and HMA road approach improvements.

ITEMS OF WORK

M-55 31 Road to 33 Road HMA Shoulder Repairs: Cold mill shoulder HMA repairs at a depth of 2 inches and place leveling course HMA Overlay at 2 inches, as called out in the plan or as directed by the Engineer. Construction will be in accordance with the 2020 Standard Specifications for Construction. Project quantities are listed below:

Cold Milling HMA Surface	1,334	Syd
HMA, 5EML	200	Ton

M-55 31 Road to 33 Road Overlay: Cold mill butt joints, then place 1.5 inches of HMA Overlay on lanes and shoulders as called out in the plan or as directed by the Engineer. At un-curbed road approaches, overlay and feather down to the existing pavement as directed by the Engineer. Construction will be in accordance with the 2020 Standard Specifications for Construction. Project quantities are listed below:

Pavt for Butt Joints, Rem	334	Syd
HMA, 5EML	1,800	Ton
Shld, Cl II	525	Ton

M-55 33 Road to 35 Road Mill and Fill: Cold mill 0.5 feet of shoulders and lanes with auxiliary lanes 1.5 inches and place 1.5 inches of HMA Overlay on milled area, also Cold mill and HMA Overlay curbed road approaches as called out in the plan or as directed by the Engineer. Construction will be in accordance with the 2020 Standard Specifications for Construction. Project quantities are listed below:

Cold Milling HMA Surface	23,000	Syd
HMA, 5EML	1,950	Ton

MAINTAINING TRAFFIC ITEMS

Traffic will be maintained in accordance with the 2020 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).

The maintenance of traffic will be according to the plans in this document. Project quantities are listed below:

Connected Arrow Board, Type C, Furn	2	Ea
Connected Arrow Board, Type C, Oper	2	Ea

Sign Cover	4	Ea
Channelizing Device, 42 inch, Fluorescent, Furn	170	Ea
Channelizing Device, 42 inch, Fluorescent, Oper	170	Ea
Sign, Type B, Temp, Prismatic, Furn	600	Sft
Sign, Type B, Temp, Prismatic, Oper	600	Sft
Mobile Attenuator	1	Ea
Rumble Strip, Temp, Portable, Furn	12	Ea
Rumble Strip, Temp, Portable, Oper	12	Ea
Pavt Mrkg, Wet Reflective, Type R, Tape, 6 inch, Yellow, Temp	1,000	Ft
Pavt Mrkg, Waterborne, 6inch, Yellow	3,300	Ft

ENTIRE PROJECT QUANTITIES

The following quantities are estimated for use where needed throughout the project as directed by the Engineer.

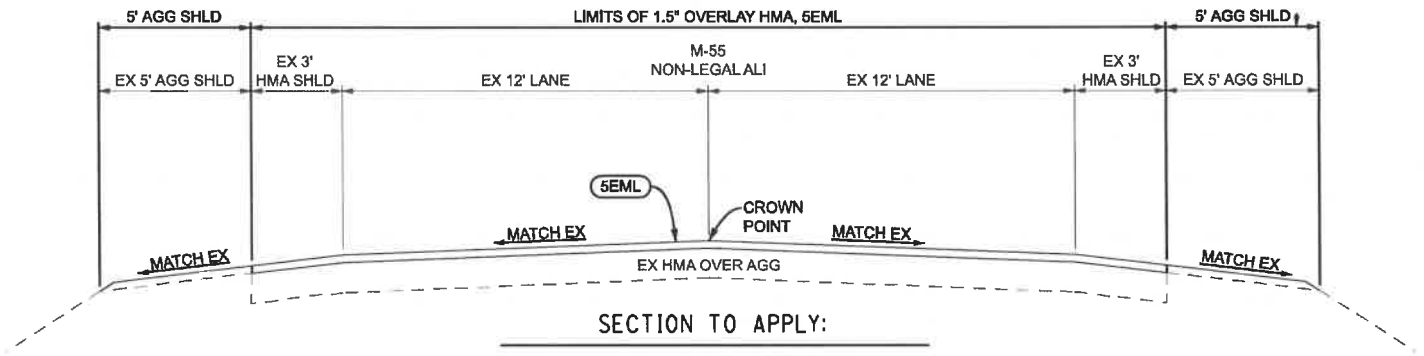
Mobilization, Max	1	LSUM
Minor Traf Devices	1	LSUM
Traf Regulator Control	1	LSUM

GENERAL NOTES

UTILITIES

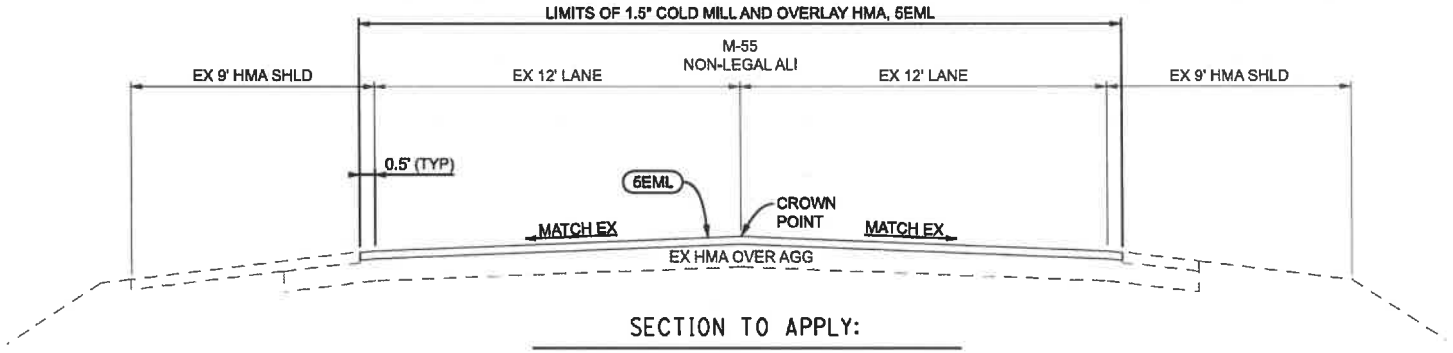
MISS DIG/UNDERGROUND UTILITY NOTIFICATION

Contact MISS DIG System, Inc. for the protection of underground utilities and in conformance with MCL 460.721 et seq, via the web at https://www.missdig811.org or by phone at 811 or 800-482-7171 a minimum of 3 working days prior to excavating, excluding weekends and holidays.



SECTION TO APPLY:

STA 2149+05 TO 2205+50

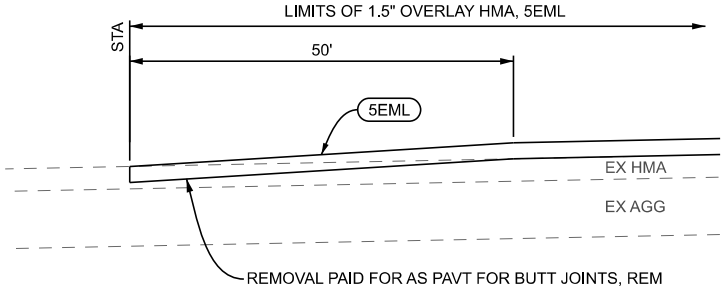


SECTION TO APPLY:

STA 2205+50 TO 2272+53

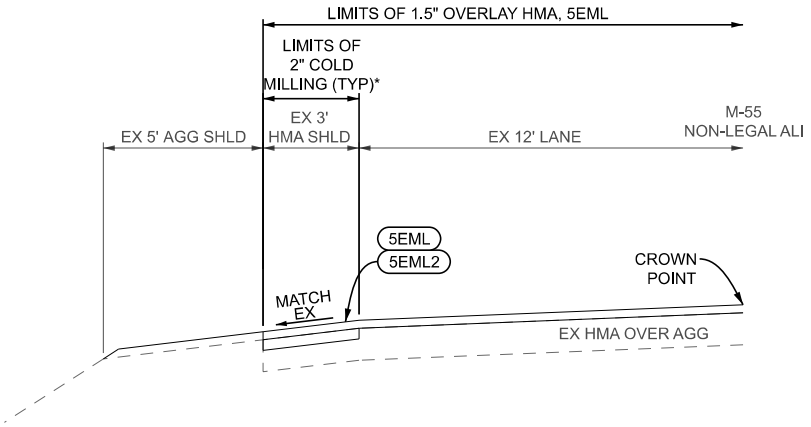
IDENT NO.	ITEM	RATE PER SYD	PERFORMANCE GRADE	REMARKS
5EML	HMA, 5EML	165#	64-28	AWI=260, TOP COURSE
5EML2	HMA, 5EML	220#	64-28	LEVELING COURSE IN SHOULDER
APP	HMA, 5EML	165#	64-28	HMA, 5EML
	BOND COAT	.05-.15 GAL		FOR INFORMATION ONLY

MDOT Michigan Department of Transportation	0 VERT. (FT) 3	DATE: 6/11/25	CS: 83021	TYPICAL CROSS SECTIONS	DRAWING	SHEET
FILE:	0 HORZ. (FT) 6	DESIGN UNIT: PHILLIPS	JN:		M-55 TYP 001	SECT 1
		TSC: TRAVERSE CITY				



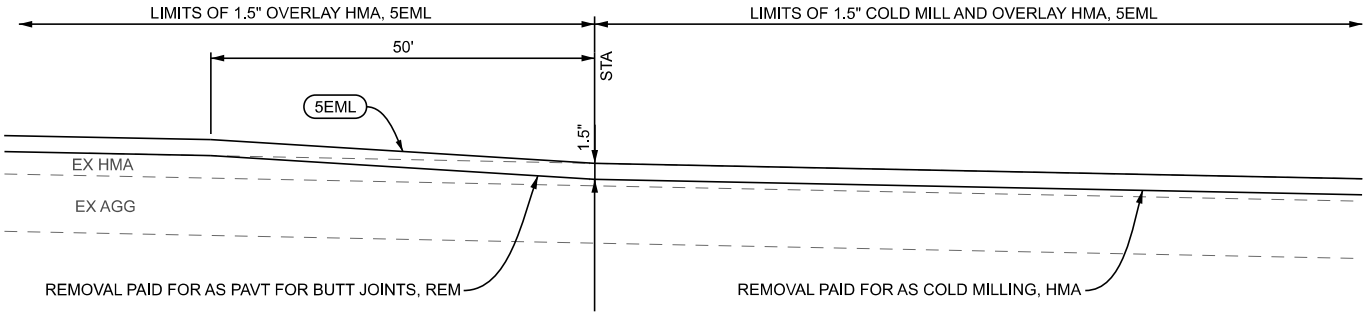
POB BUTT JOINT DETAIL

STA 2149+85 (POB)



HMA SHOULDER REPAIR DETAIL

APPROXIMATELY 4,000 FT
*AS DIRECTED BY THE ENGINEER



DEPTH TRANSITION WEST OF 33 RD

STA 2205+50

MDOT Michigan Department of Transportation	0 VERT. (FT) 3	DATE: 6/11/25	CS: 83021	TYPICAL CROSS SECTIONS	DRAWING	SHEET
	0 HORZ. (FT) 6	DESIGN UNIT: PHILLIPS	JN:		M-55 TYP 002	SECT 1
FILE:		TSC: TRAVERSE CITY				

31 ROAD

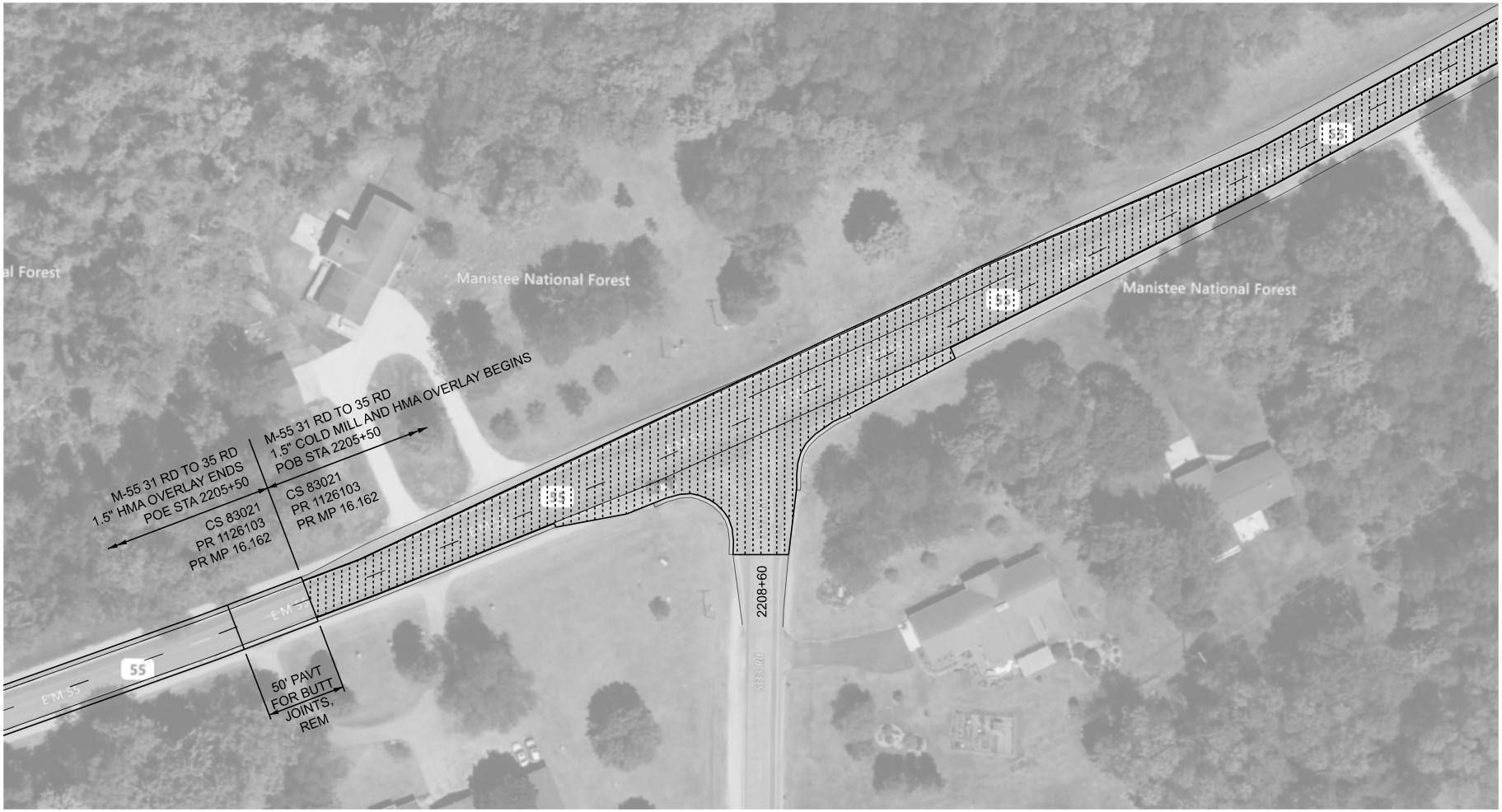
N

31 ROAD

MDOT Michigan Department of Transportation	0 HORZ. (FT) 100	DATE: 6/13/25	CS: 83021	M-55 PLAN SHEETS	DRAWING	SHEET
		DESIGN UNIT: PHILLIPS	JN:	31 RD	M-55 PLAN 001	SECT 1
FILE: M-55 31 Rd to 35 Rd Sheets.dgn		TSC: TRAVERSE CITY				

N

M-55



M-55

33 ROAD

MDOT Michigan Department of Transportation		DATE: 6/13/25	CS: 83021	M-55 PLAN SHEETS	DRAWING	SHEET
FILE: M-55 31 Rd to 35 Rd Sheets.dgn	0 HORZ. (FT) 100	DESIGN UNIT: PHILLIPS	JN:	33 RD	M-55 PLAN 002	SECT 1
		TSC: TRAVERSE CITY		TRANSITION FROM OVERLAY TO COLD MILL AND OVERLAY		

MOREL DRIVE

M-55

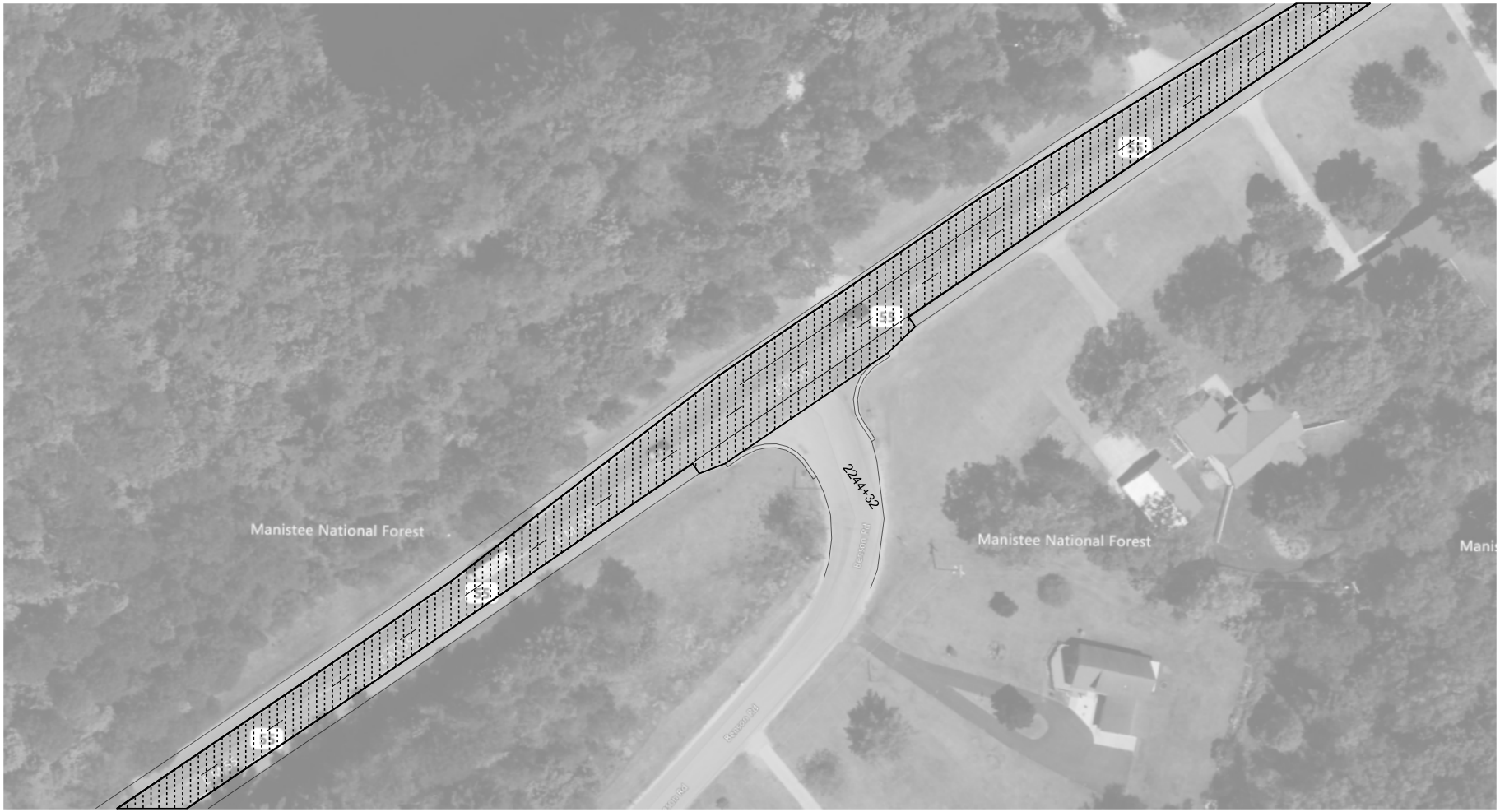
N

M-55

MDOT Michigan Department of Transportation	0 HORZ. (FT) 100	DATE: 6/13/25	CS: 83021	M-55 PLAN SHEETS	DRAWING	SHEET
		DESIGN UNIT: PHILLIPS	JN:	MOREL RD	M-55 PLAN 003	SECT 1
FILE: M-55 31 Rd to 35 Rd Sheets.dgn		TSC: TRAVERSE CITY				

M-55

N



M-55

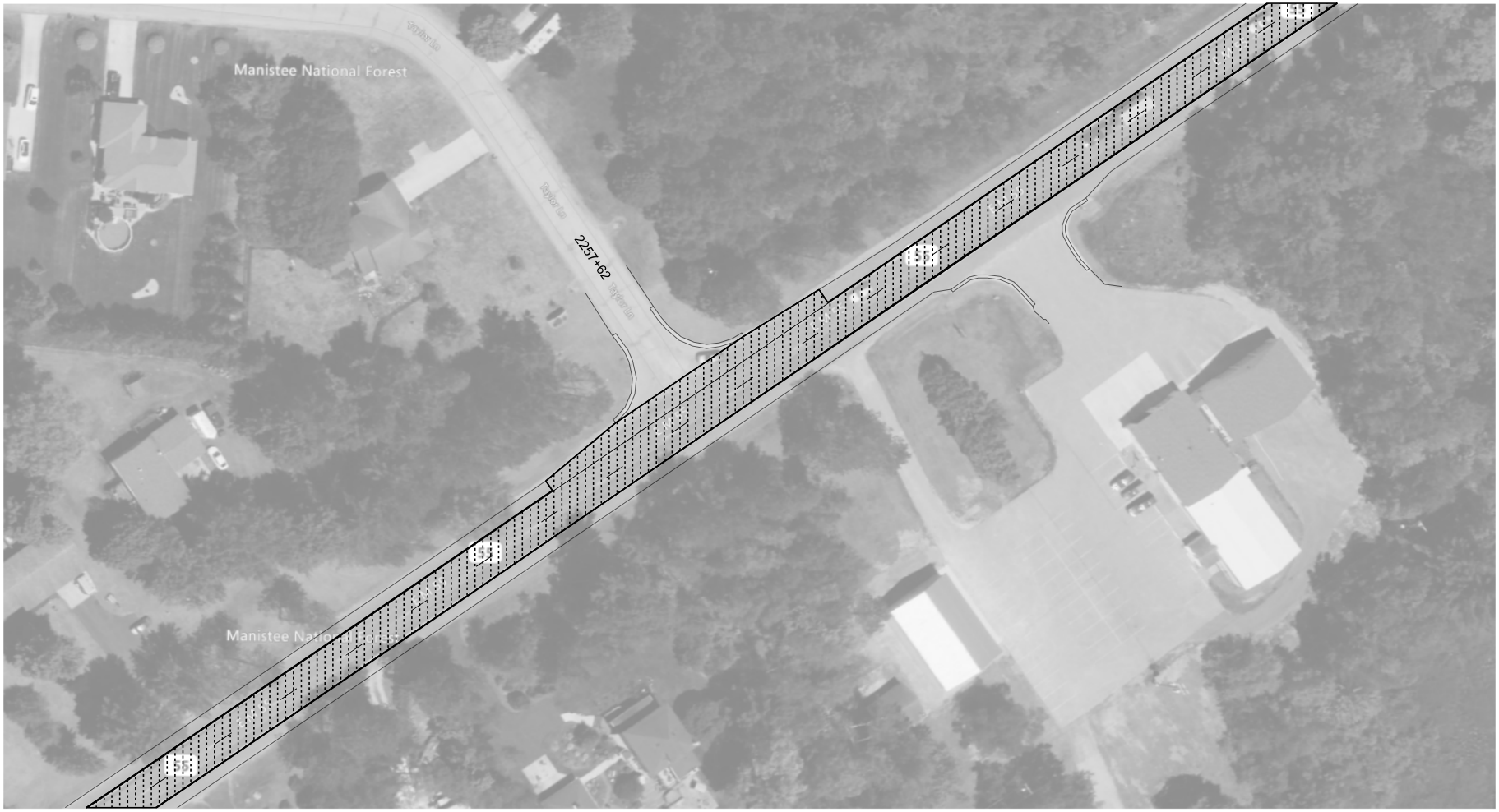
BENSON RD

MDOT Michigan Department of Transportation		DATE: 6/13/25	CS: 83021	M-55 PLAN SHEETS	DRAWING	SHEET
FILE: M-55 31 Rd to 35 Rd Sheets.dgn	0 HORZ. (FT) 100	DESIGN UNIT: PHILLIPS	JN:	BENSON RD	M-55 PLAN 004	SECT 1
		TSC: TRAVERSE CITY				

TAYLOR LANE

M-55

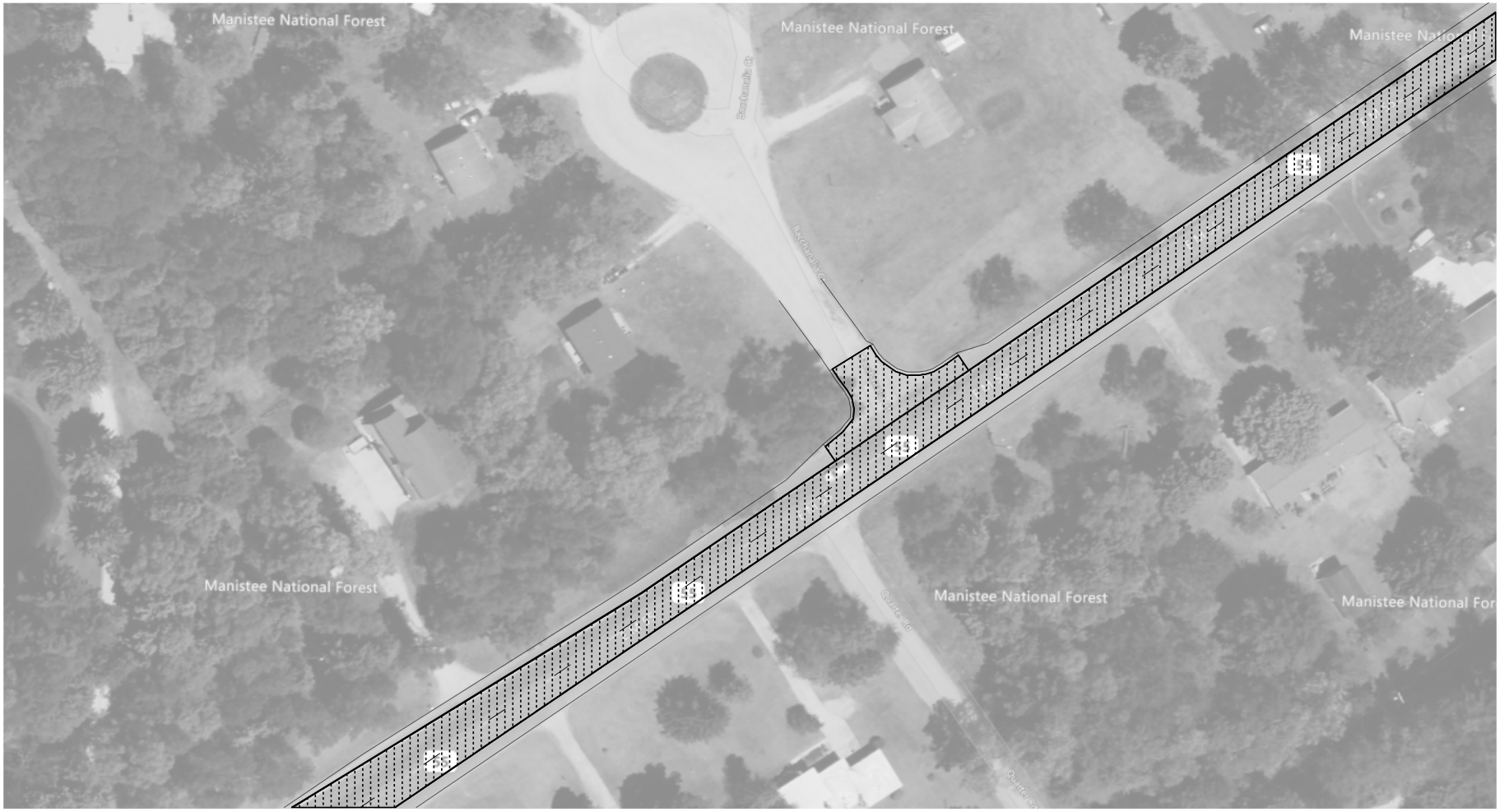
N



M-55

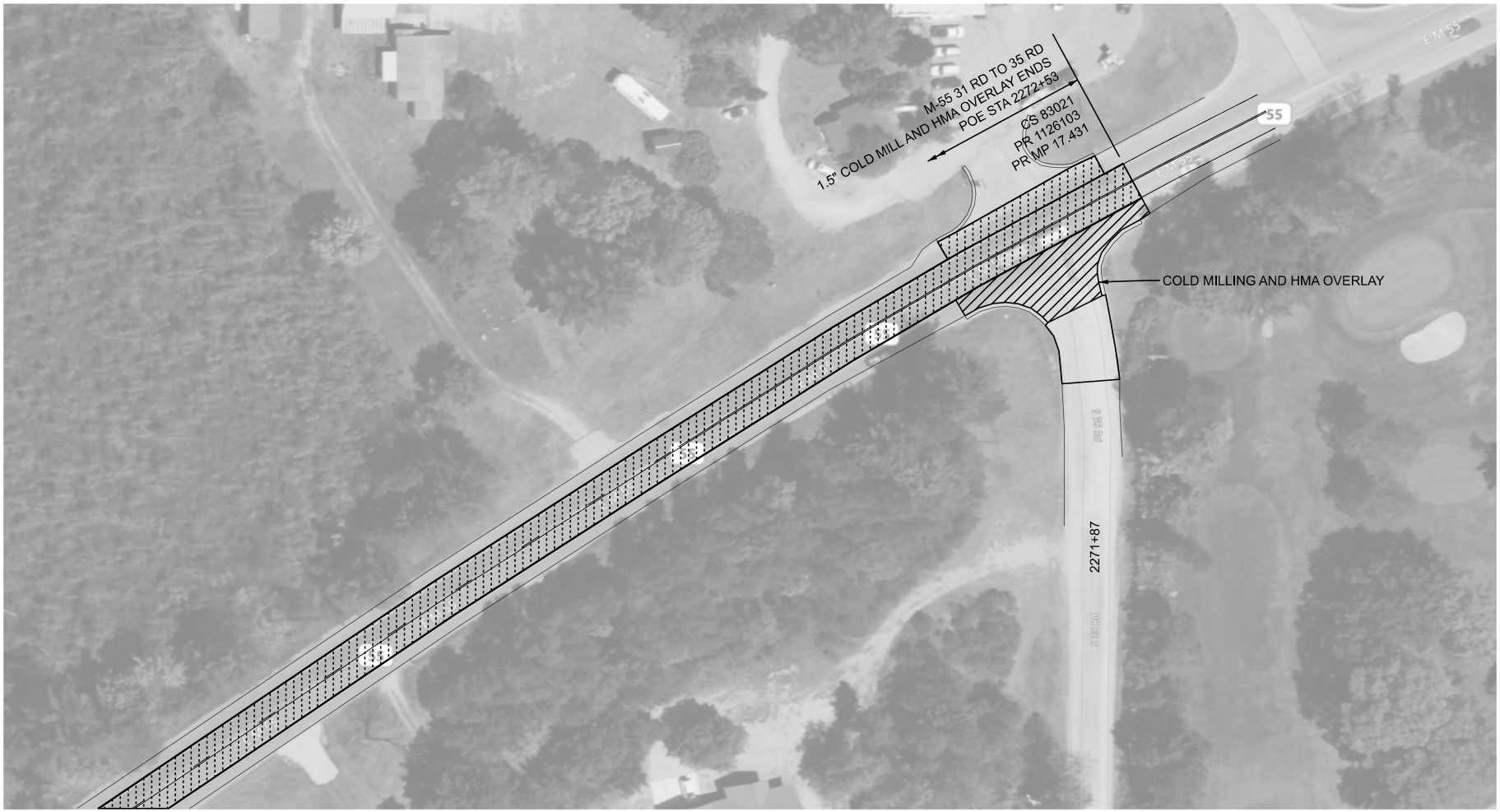
MDOT Michigan Department of Transportation	0 HORZ. (FT) 100	DATE: 6/13/25	CS: 83021	M-55 PLAN SHEETS	DRAWING	SHEET
		DESIGN UNIT: PHILLIPS	JN:	TAYLOR LANE	M-55 PLAN 005	SECT 1
FILE: M-55 31 Rd to 35 Rd Sheets.dgn		TSC: TRAVERSE CITY				

BACCHANALIA COURT



M-55

MDOT Michigan Department of Transportation	0 HORZ. (FT) 100	DATE: 6/13/25	CS: 83021	M-55 PLAN SHEETS	DRAWING	SHEET
		DESIGN UNIT: PHILLIPS	JN:	BACCHANALIA COURT	M-55 PLAN 006	SECT 1
FILE: M-55 31 Rd to 35 Rd Sheets.dgn		TSC: TRAVERSE CITY				



MDOT Michigan Department of Transportation	0 HORZ. (FT) 100	DATE: 6/13/25	CS: 83021	M-55 PLAN SHEETS	DRAWING	SHEET
		DESIGN UNIT: PHILLIPS	JN:	35 ROAD	M-55 PLAN 007	SECT 1
FILE: M-55 31 Rd to 35 Rd Sheets.dgn		TSC: TRAVERSE CITY				

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
MAINTAINING TRAFFIC

a. Description. This special provision consists of requirements and restrictions to maintain traffic on M-72 in the Village of Kalkaska, Kalkaska Township, Kalkaska County.

b. General. Maintain traffic throughout the project in accordance with the standard specifications, typicals, and supplemental specifications in the contract and as described on the plans for this project.

c. Traffic Restrictions. Maintain traffic in accordance with the Maintaining Traffic Typicals contained herein, except as noted below. Changes or adjustments to the Maintaining Traffic Typicals may be necessary to fit field conditions, subject to approval of the Engineer or as determined by the Engineer.

1. Utilize the following Maintaining Traffic Typicals:

   A. 100-GEN-KEY

   B. 101-GEN-SPACING-CHARTS

   C. 102-GEN-NOTES

   D. 103-GEN-SIGN

   E. 104-GEN-AB

   F. 107-GEN-SPEED

   G. 111-TR-NFW-2L-RUM

   H. 122-NFW-SHL-(R)

   I. WZD-100-A

   J. WZD-125-E

   K. WZD-150-A

2. Do not work, deliver material, or close lanes on Saturdays, Sundays, or during the holiday periods as defined in Table 1 unless approved by the Engineer.

Table 1: 2024 Holiday Periods

Holiday	Start Date and Time	End Date and Time
Memorial Day	Noon Friday, May 24th	6:00 a.m. Tuesday, May 28th
Independence Day	Noon Wednesday, July 3rd	6:00 a.m. Monday, July 8th
Labor Day	Noon Friday, August 30th	6:00 a.m. Tuesday, September 3rd

3. Conduct all work between sunrise and sunset, local time, unless approved by the Engineer. "Work" is defined as any activity on the project including set up and take down of traffic control devices.

4. Do not maintain traffic on a shoulder overnight.

5. Maintain a minimum of one lane of bi-directional traffic using traffic regulator control on M-72.

6. Close any dedicated lanes (turn, etc.) prior to the location under construction.

7. When a lane is closed, place channelizing devices at cross streets and major drives to form a radius that clearly defines the approaches to the through and turning traffic.

8. Maintain access to all driveways as directed by the Engineer unless prior agreements are made with the respective property owners.

d. Traffic General.

1. For any lane open to traffic, provide a minimum lane width of 10 feet with 1 foot of shy distance on both sides unless identified otherwise on plans.

2. Do not occupy any part of the active traffic lane with personnel or equipment when utilizing a shoulder closure. Place lane closures only in areas as show on the plans unless otherwise directed by the Engineer.

3. Prior to shifting traffic onto shoulders or opening any lanes/shoulders and/or ramps, remove, by sweeping all accumulated debris that has collected within the shoulder and/or within the closed lane/shoulder.

4. A speed reduction will be used. Set the work zone speed limit M-72 to 45 miles per hour (mph).

5. Develop and submit to the Engineer an Internal Traffic Control Plan (ITCP) per subsection 104.11.B of the Standard Specifications for Construction. The requirements listed herein are the requirements for a Type A ITCP. Submit the Type A ITCP at the preconstruction meeting. The Engineer will have 7 calendar days to review the ITCP for approval or provide comments for revisions required to obtain approval. Include in the ITCP, at a minimum, the proposed ingress/egress locations for construction equipment and vehicles, traffic control devices that will be utilized to warn the motoring public of ingress/egress locations, and measures that will be taken to ensure compliance with the ITCP. Ensure that the ITCP minimizes conflicts between construction vehicles and motorists and maintains overall safety

and mobility within the work zone. No work may begin prior to approval of the ITCP. Additional time required to obtain an approved ITCP will not be cause for delay or impact claims. All costs associated with obtaining an approved ITCP, providing and executing all parts of the approved ITCP including required traffic control devices, or resolving an incomplete or unacceptable ITCP will be borne by the Contractor.

6. Protect the work area at the end of each day. Close all open access points on the project to traffic with devices approved by the Engineer.

7. The Engineer will be responsible for notifying emergency services, transit agencies, law enforcement and schools prior to any lane closures, detours or major traffic shifts. In addition, the Contractor will be responsible for working with and complying with any coordination that is necessary with the Department and emergency services, transit agencies, law enforcement and schools. All costs associated with these coordination efforts will be considered included in the pay item “Minor Traf Devices”.

8. Remove all temporary traffic control devices from MDOT right-of-way during any shut down periods unless needed for directly maintaining or channelizing traffic. No additional payment will be made for removal and/or redeployment of these devices except for in the case of an approved extension of time.

9. Cover or remove construction signing that refers to work zone speed when work at a location is planned to be inactive for a period greater than 2 days, unless otherwise specified on the plans or as directed by the Engineer.

10. Once work is initiated that includes any lane restrictions, that work must be continued daily until completed. A lack of work activity for more than 3 days will require the removal of lane closures at no expense to the Department.

e. Traffic Regulator Control.

1. Maintain two-way traffic at all times on M-72 using traffic regulator control. A traffic regulator sequence is allowed to cover a maximum closure length of 1 mile. Place the arrow panel, signs and channelizing taper for the traffic regulator operation at locations approved by the Engineer for adequate visibility by oncoming traffic.

2. Do not utilize more than 1 traffic regulator operation at one time on M-72.

3. Crossroads must remain open to traffic at all times. Use intermediate traffic regulators at each intersection approach and commercial driveways within the closure limits, as directed by the Engineer. Use traffic regulator control as directed by the Engineer for cross street traffic while paving through intersections.

f. Traffic Control Devices. Ensure all traffic control devices are in accordance with the *MMUTCD* and must meet the “acceptable” criteria as defined in the *ATSSA* publication entitled “*Quality Guidelines for Temporary Traffic Control Devices and Features*” at the time of initial deployment and after each major stage change.

1. During non-working periods, place applicable advance signs and channelizing devices at specific locations, as directed by the Engineer, at no additional cost to the Department.

2. Notify the Engineer 24 hours in advance of when traffic control devices are being delivered to the project site, to allow for initial inspection of devices to take place.

3. Remove from the project site all traffic control devices no longer needed for a particular operation and equipment for construction within 5 work days of reopening the shoulder/lane/roadway.

4. Channelizing Devices.

A. Ensure all devices have sufficient ballast to prevent moving or tipping. If moving or tipping occurs, place additional ballast, as directed by the Engineer, at no additional cost to the Department. No more than two ballasts are allowed on each channelizing device.

B. Do not use caution tape on this project.

5. Temporary Signs.

A. Additional W20-1 (ROAD WORK AHEAD) signs are included in the quantities to be placed on all intersecting or adjacent roads where construction activities may be encountered.

6. Portable Changeable Message Signs (PCMS's). Use PCMS's to warn traffic of upcoming and changing traffic control during the life of the project. Obtain approval from the Engineer for all sign locations.

A. Install PCMS's and make them operational a minimum of 6 calendar days prior to the start of work, unless otherwise directed by the Engineer. Messages displayed on the PCMS's must conform to MDOT's policy on PCMS's. Notify the Engineer if displaying a different message than those listed below for the project.

B. Do not leave PCMS's with a blank screen within the clear zone of any roadway at any time. Remove the PCMS or display flashing dots in each corner of the screen when there is no message to display. Update the PCMS messages at the end of each work period to reflect current traffic lane restrictions.

C. Display the following two messages within 6 days prior to work.

M-72 LANE CLOSURES	BEGIN DAY TIME

D. Display the following two messages during work.

TRAFFIC FLAGGER AHEAD	PREPARE TO STOP

g. Temporary Pavement Markings.

1. Remove conflicting pavement markings, pavement markings in taper/transition areas and other markings as directed by the Engineer, for operations occupying a location longer than 3 days. Durable markings in these areas should be covered rather than be removed.

2. Quantities for temporary tape to be placed during paving operations are based on the MDOT PAVE 900 Series standard plans.

3. When Type R or NR tape is used, ensure that all temporary pavement markings adhere to the pavement surface until permanent markings are installed.

4. Complete temporary pavement markings in each stage prior to shifting traffic as directed by the Engineer.

5. Replace all existing pavement markings that are removed for traffic control or obliterated during construction.

6. Place solid 6" white pavement markings to delineate the edge line, to be repainted weekly until permanent pavement markings are placed. The Contractor may also elect to delineate the edge line using drums spaced at 200 ft at their own expense.

h. Measurement and Payment. Payment will be in accordance with the standard specifications unless otherwise specified. No additional payment will be made for the following activities:

1. Transporting traffic control items from site to site.

2. Providing sufficient vehicles and staff to make changes as-needed on site during work.

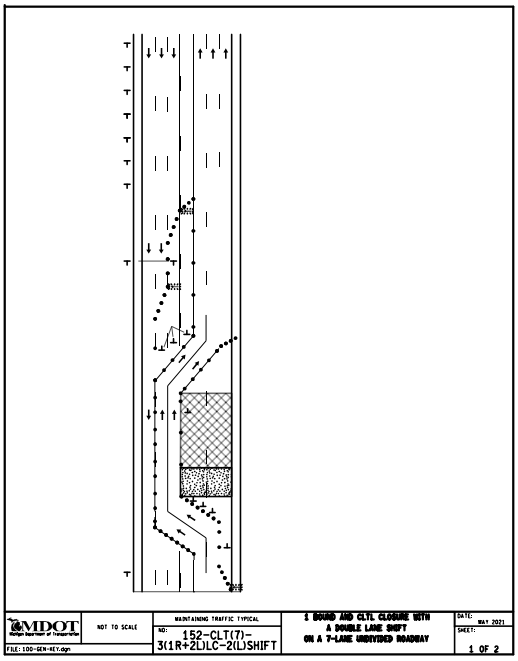
3. Providing sufficient vehicles and staff to remove closures from the roadway.

4. Providing additional traffic control devices required to expedite the construction for the convenience of the Contractor.

TYPICAL NUMBER KEY

CODES

AB = ARROW BOARD	LO = LANE OPEN
AW = ADVANCE WARNING	O = OUTSIDE (LANE CLOSURE)
C = CLOSURE	OUT = OUTSIDE OF SHOULDER
CLT = CENTER LEFT TURN LANE	MID = MIDDLE OF INTERSECTION OR ROAD
CROSS = CROSSOVER	NFW = NON-FREEWAY
CruSha = CRUSH AND SHAPE	PARK = PARKING LANE
EM = EARLY MERGE	PCMS = PORTABLE CHANGEABLE MESSAGE SIGN
EnR = ENTRANCE RAMP	(R) = RIGHT
ExR = EXIT RAMP	ROLL = ROLLING ROADBLOCK
FW = FREEWAY	RUM = RUMBLE STRIP
GEN = GENERAL INFORMATION	SD = SHORT DURATION
GORE = FREEWAY GORE AREA	SHL = SHOULDER CLOSURE
IN = INSIDE	SIGN = SIGN
INT = INTERSECTION	SP = SPECIAL
L = LANE	SPEED = SPEED
(L) = LEFT	STA = STOPPED TRAFFIC ADVISORY
LC = LANE CLOSURE	TR = TRAFFIC REGULATOR
LD = LONG DURATION	TS = TEMPORARY SIGNAL
	ZIP = ZIPPER MERGE



100 - GENERAL NOTES
110 - TRAFFIC REGULATORS
120 - NON-FREEWAY
130 - CENTER LEFT TURN (CLT) LANES
140 - PARKING LANES
150 - CLT 7 LANE SECTIONS
160 - SIGNAL WORK
200 - FREEWAY CLOSURES
210 - FREEWAY LANE SHIFTS
220 - FREEWAY ENTRANCE RAMPS
230 - FREEWAY EXIT RAMPS
300 - ADVANCE WARNINGS
310 - CROSSOVER CLOSURE
320 - CRUSH AND SHAPE
340 - MERGE SYSTEMS
350 - GORE LOCATIONS
360 - ROLLING ROADBLOCK
4000 - MAINTENANCE
5000 - SURVEY

EXAMPLE TYPICAL

CODE: 152-CTL(7)-3(1R+2L)LC-2(L)SHIFT

152 - TYPICAL NUMBER
CTL(7) = CENTER LEFT TURN LANE, 7 LANES TOTAL.
3(1R+2L)LC = 3 LANES CLOSED, (1 RIGHT LANE AND 2 LEFT LANES).
2(L)SHIFT = 2 LANES SHIFTED TO THE LEFT.

NOT TO SCALE

MDOT Michigan Department of Transportation	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL	TYPICAL NUMBERING KEY	DATE: DECEMBER 2021
		NO: 100-GEN-KEY		SHEET: 1 OF 1
FILE: 100-GEN-KEY.dgn				

DISTANCE BETWEEN TRAFFIC SIGNS, "D"

"D" DISTANCES	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)										
	25	30	35	40	45	50	55	60	65	70	75
D (FEET)	250	300	350	400	450	500	550	600	650	700	750

GUIDELINES FOR LENGTH OF LONGITUDINAL BUFFER SPACE, "B"

"B" LENGTHS	SPEED,* MPH (PRIOR TO WORK AREA)											
	20	25	30	35	40	45	50	55	60	65	70	75
B (FEET)	33	50	83	132	181	230	279	329	411	476	542	625

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

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	75
1	11	15	21	27	45	50	55	60	65	70	75
2	21	30	41	54	90	100	110	120	130	140	150
3	32	45	62	80	135	150	165	180	195	210	225
4	42	60	82	107	180	200	220	240	260	280	300
5	53	75	103	134	225	250	275	300	325	350	375
6	63	90	123	160	270	300	330	360	390	420	450
7	73	105	143	187	315	350	385	420	455	490	525
8	84	120	164	214	360	400	440	480	520	560	600
9	94	135	184	240	405	450	495	540	585	630	675
10	105	150	205	267	450	500	550	600	650	700	750
11	115	165	225	294	495	550	605	660	715	770	825
12	125	180	245	320	540	600	660	720	780	840	900
13	136	195	266	347	585	650	715	780	845	910	975
14	146	210	286	374	630	700	770	840	910	980	1050
15	157	225	307	400	675	750	825	900	975	1050	1125

NOT TO SCALE

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

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

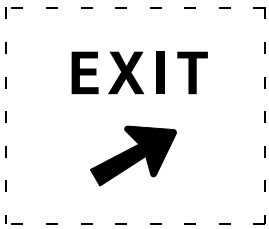
TYPES OF TAPERS	TAPER LENGTH
UPSTREAM TAPERS	
MERGING TAPER	L - MINIMUM
SHIFTING TAPER	1/2 L - MINIMUM
SHOULDER TAPER	1/3 L - MINIMUM
2 TO 1 LANE ROAD TAPER	100' - MAXIMUM
DOWNSTREAM TAPERS	
(USE IS RECOMMENDED)	100' (PER LANE)

MAXIMUM SPACING FOR CHANNELIZING DEVICES

WORK ZONE SPEED LIMIT	DRUM AND 42" DEVICE SPACING (FT)		NIGHTTIME 42" DEVICE SPACING (FT)	
	TAPER	TANGENT	TAPER	TANGENT
< 45 MPH	1 x SPEED LIMIT	2 x SPEED LIMIT	25 FEET	50 FEET
≥ 45 MPH	50 FEET	100 FEET	25 FEET	50 FEET

SIGN OUTLINE KEY

DASHED OUTLINES INDICATE A SIGN THAT EXISTS ON SITE, AND NEEDS TO BE COVERED.



SOLID OUTLINES INDICATE A SIGN THAT IS TO BE PLACED ON THE PROJECT

NOT TO SCALE

GUIDELINES FOR ROLL-AHEAD DISTANCES FOR TMA VEHICLES - TEST LEVEL 2

WEIGHT OF TMA VEHICLE	PREVAILING SPEED (POSTED SPEED PRIOR TO WORK ZONE)	ROLL-AHEAD DISTANCE* (DISTANCE FROM FRONT OF TMA VEHICLE TO WORK AREA)
5.5 TONS (STATIONARY)	40 MPH OR LESS	25 FT

* ROLL-AHEAD DISTANCES ARE CALCULATED USING A 4,410 POUND IMPACT VEHICLE WEIGHT.

GUIDELINES FOR ROLL-AHEAD DISTANCES FOR TMA VEHICLES - TEST LEVEL 3

WEIGHT OF TMA VEHICLE	PREVAILING SPEED (POSTED SPEED PRIOR TO WORK ZONE)	ROLL-AHEAD DISTANCE* (DISTANCE FROM FRONT OF TMA VEHICLE TO WORK AREA)
5 TONS (MOBILE)	45 MPH	100 FT
	50-55 MPH	150 FT
	60-75 MPH	175 FT
12 TONS (STATIONARY)	45 MPH	25 FT
	50-55 MPH	25 FT
	60-75 MPH	50 FT

* ROLL-AHEAD DISTANCES ARE CALCULATED USING A 10,000 POUND IMPACT VEHICLE WEIGHT.

THE FOLLOWING NOTES APPLY IF CALLED FOR ON THE TRAFFIC TYPICAL

GENERAL NOTES

G1: SEE GEN-SPACING-CHARTS FOR COMMON VALUES INCLUDING:
D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
L = MINIMUM LENGTH OF TAPER
B = LENGTH OF LONGITUDINAL BUFFER
ROLL AHEAD DISTANCE

G2: DISTANCE BETWEEN SIGNS, "D", THE VALUES FOR WHICH ARE SHOWN IN TYPICAL GEN-KEY ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

G3: ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING MUST MEET NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM REPORT 350 (NCHRP 350) TEST LEVEL 3, OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) TL-3 AS WELL AS 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.

G4: DO NOT STORE EQUIPMENT, MATERIALS OR PERFORM WORK IN ESTABLISHED BUFFER AREAS.

G5: ALL EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH EITHER PROPOSED CHANGES IN TRAFFIC PATTERNS OR PROPOSED TEMPORARY TRAFFIC MARKINGS SHALL BE REMOVED BEFORE ANY CHANGE IS MADE IN THE TRAFFIC PATTERN. EXCEPTION WILL BE MADE FOR TRAFFIC PATTERNS FOR WORK LESS THAN THREE DAYS THAT ARE ADEQUATELY DELINEATED BY OTHER TRAFFIC CONTROL DEVICES.

SIGN NOTES

S1: ALL NON-APPLICABLE SIGNING WITHIN THE CIA MUST BE MODIFIED TO FIT CONDITIONS, COVERED, OR REMOVED. FOR GUIDANCE SEE THE WORK ZONE SAFETY AND MOBILITY MANUAL, SECTIONS 6.01.09 AND 6.01.10.

S2: R5-18b SIGNS ARE ONLY REQUIRED ON FREEWAY PROJECTS WITH A DURATION OF 15 DAYS OR LONGER OR NON-FREEWAY PROJECTS WITH A DURATION OF 90 DAYS OR LONGER. TO APPLY THIS TYPICAL WITHOUT R5-18b SIGNS, REMOVE THE SIGNS AND CONSOLIDATE THE SEQUENCE AS APPROPRIATE.

S3: R5-18c IS ONLY REQUIRED IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. OMIT THIS SIGN IN SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE.

S4: ADDITIONAL SIGNING AND/OR ELONGATED SIGNING SEQUENCES SHOULD BE USED WHEN TRAFFIC VOLUMES ARE SIGNIFICANT ENOUGH TO CREATE BACKUPS BEYOND THE W20-5 SIGNS.

S5: PLACE ADDITIONAL SPEED LIMIT SIGNS REFLECTING THE WORK ZONE SPEED AFTER EACH MAJOR CROSSROAD THAT INTERSECTS THE WORK ZONE, OR AFTER EACH ENTRANCE RAMP THAT COMES ONTO THE FREEWAY WHERE THE REDUCED SPEED IS IN EFFECT. PLACE ADDITIONAL SPEED LIMIT SIGNS AT INTERVALS ALONG THE ROADWAY SUCH THAT NO SPEED LIMIT SIGNS ARE MORE THAN 2 MILES APART. WHEN REDUCED SPEED LIMITS ARE UTILIZED IN THE WORK AREA, PLACE ADDITIONAL SPEED LIMIT SIGNS RETURNING TRAFFIC TO ITS NORMAL SPEED BEYOND THE LIMITS OF THE WORK AREA AS INDICATED. IF PERMANENT SIGNS DISPLAYING THE CORRECT SPEED LIMIT ARE POSTED, OMIT ALL W3-5b AND R2-1 SIGNS AND REDUCE SPACING ACCORDINGLY.

S6: FABRICATE SPECIAL SIGNS IN ACCORDANCE WITH CURRENT SIGNING DESIGN STANDARDS.

S7: PLACE ADDITIONAL R8-3 SIGNS AT A MAXIMUM 500' SPACING THROUGHOUT THE WORK ZONE.

S8: WHEN SPEED LIMIT SIGNS CANNOT BE PLACED SIDE BY SIDE AS SHOWN, PLACE THEM "D" DISTANCE APART.

S9: STOP SIGNS NOT REQUIRED IF SIGNALS ARE ON 4-WAY FLASHING RED. STOP AHEAD SIGNS ARE NOT REQUIRED IF THERE IS ADEQUATE VISIBILITY OF THE STOP SIGN OR IF SIGNALS ARE BEING USED TO CONTROL TRAFFIC.

S10: PLACE REDUCED SPEED ZONE AHEAD SIGN (W3-5b) HERE WHEN USING A SPEED REDUCTION IN THIS DIRECTION.

S11: THE NUMBER OF W1-6 SHIFT SIGNS TO PLACE FOR A SHIFT IS AS FOLLOWS:
SHIFTS 4FT OR LESS, PLACE ONE W1-6(R)(L)
SHIFTS 5FT TO 12FT, PLACE TWO W1-6(R)(L)
SHIFTS MORE THAN 12FT, PLACE THREE OR MORE W1-6(R)(L) SIGNS DEPENDING UPON LENGTH OF SHIFT AND AS PER THE ENGINEER.

S12: PLACE R2-1 SIGNS AS DETAILED IN NOTE S5 WHEN THERE IS A SPEED REDUCTION IN THIS DIRECTION

TRAFFIC REGULATOR NOTES

TR1: TRAFFIC REGULATORS MUST FOLLOW ALL THE REQUIREMENTS IN THE STANDARD SPECIFICATIONS, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS, THE CURRENT VERSIONS OF THE TRAFFIC REGULATOR'S INSTRUCTION MANUAL AND THE VIDEO "HOW TO SAFELY REGULATE TRAFFIC IN MICHIGAN". THE MAXIMUM DISTANCE BETWEEN THE TRAFFIC REGULATORS IS DETERMINED BY THE ROADWAY ADT, GEOMETRICS, AND AS DIRECTED BY THE ENGINEER.

TR2: PROVIDE APPROPRIATE BALLOON LIGHTING TO SUFFICIENTLY ILLUMINATE TRAFFIC REGULATOR'S STATIONS WHEN TRAFFIC REGULATING IS ALLOWED DURING THE HOURS OF DARKNESS.

TEMPORARY TRAFFIC CONTROL DEVICE NOTES

TCD1: THE MAXIMUM DISTANCE IN FEET BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD NOT EXCEED 1.0 TIMES THE WORK ZONE SPEED LIMIT IN MPH FOR ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT LESS THAN 45 MPH AND SHOULD NOT EXCEED 50 FEET ON ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT OF 45 MPH OR GREATER. THE SPACING FOR 42 INCH CHANNELIZING DEVICE TAPERS ARE NOT TO EXCEED 25 FEET AT NIGHT.

TCD2: THE MAXIMUM DISTANCE IN FEET BETWEEN CHANNELIZING DEVICES IN A TANGENT SHOULD NOT EXCEED TWICE THE WORK ZONE SPEED LIMIT IN MPH FOR ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT LESS THAN 45 MPH AND SHOULD NOT EXCEED 100 FEET ON ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT OF 45 MPH OR GREATER. THE SPACING FOR 42 INCH CHANNELIZING DEVICE TANGENTS ARE NOT TO EXCEED 50 FEET AT NIGHT.

TCD3: TYPE III BARRICADES MUST BE LIGHTED FOR OVERNIGHT CLOSURES.

TCD4: WHEN THE HAUL ROAD IS NOT IN USE, PLACE LIGHTED TYPE III BARRICADES WITH "ROAD CLOSED" EXTENDING COMPLETELY ACROSS THE HAUL ROAD.

TCD5: USE OBJECT MARKER SIGNS IN LIEU OF THE TYPE B HIGH INTENSITY LIGHT SHOWN IN THE STANDARD PLAN FOR TEMPORARY CONCRETE BARRIER (R-53, AND R-126) WHEN USED WITH A TEMPORARY SIGNAL SYSTEM. THE OBJECT MARKERS MUST BE A MINIMUM OF 12 INCHES IN WIDTH AND 36 INCHES IN HEIGHT AND HAVE ORANGE AND WHITE RETROREFLECTIVE SHEETING. THE RETROREFLECTIVE SHEETING MUST HAVE ALTERNATING DIAGONAL ORANGE AND WHITE STRIPES SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION VEHICULAR TRAFFIC IS TO PASS.

TCD6: PLACE LIGHTED ARROW PANELS AS CLOSE TO THE BEGINNING OF TAPERS AS PRACTICAL, BUT NOT IN A MANNER THAT WILL OBSCURE OR CONFUSE APPROACHING MOTORISTS WHEN PHYSICAL LIMITATIONS RESTRICT PLACEMENT. IN CURBED SECTIONS, IF ARROW BOARD CANNOT BE PLACED BEHIND CURB, PLACE ARROW BOARD IN THE CLOSED LANE AS CLOSE TO THE BEGINNING OF TAPER AS POSSIBLE.

TCD7: ADDITIONAL TYPE III BARRICADES MAY BE REQUIRED TO COMPLETELY CLOSE OFF ROAD FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT.

TCD8: WHERE THE SHIFTED SECTION IS SHORTER THAN 600 FEET, A DOUBLE REVERSE CURVE SIGN (W24-1) CAN BE USED INSTEAD OF THE FIRST REVERSE CURVE SIGN, AND THE SECOND REVERSE CURVE SIGN CAN BE OMITTED.

TCD9: RUMBLE STRIPS ARE TO BE PLACED AS SPECIFIED IN THE CONTRACT. IF NOT SPECIFIED IN THE CONTRACT, PLACE RUMBLE STRIPS AS SHOWN, AND IN ACCORDANCE WITH THE RUMBLE STRIP MANUFACTURER'S RECOMMENDATIONS. AN ARRAY OF RUMBLE STRIPS CONTAINS THREE RUMBLE STRIPS. PLACE THE RUMBLE STRIPS IN THE ARRAY AT A CONSISTENT DISTANCE, BETWEEN 10' AND 20' APART.

TCD10: SEE THE WORK ZONE SAFETY AND MOBILITY MANUAL, PORTABLE CHANGEABLE MESSAGE SIGN GUIDELINES FOR RECCOMENDED AND CORRECT PCMS MESSAGING. STAGGER PCMS THAT ARE ON OPPOSING SIDES OF THE ROAD 1000 FEET FROM EACH OTHER.

RAMP NOTES

RMP1: WHEN CONDITIONS ALLOW, E5-1 SIGNS MUST BE REMOVED OR COVERED AND CHANELIZING DEVICES MUST BE POSITIONED TO ENABLE RAMP TRAFFIC TO DIVERGE IN A FREE MANNER

RMP2: STOP AND YIELD CONDITIONS SHOULD BE AVOIDED WHENEVER PRACTICAL. WHEN CONDITIONS WARRANT, R1-1 SIGNS MAY BE USED IN PLACE OF R1-2 SIGNS. WHEN R-1 SIGNS ARE USED, W3-1 SIGNS MUST BE USED IN PLACE OF W3-2 SIGNS. CONSIDERATION SHOULD BE GIVEN TO CLOSING THE RAMP TO COMPLETE WORK TO ALLOW AN ADEQUATE MERGE DISTANCE. WORK SHOULD BE EXPEDITED TO AVOID THE STOP AND/OR YIELD CONDITIONS.

THE FOLLOWING NOTES APPLY IF CALLED FOR ON THE TRAFFIC TYPICAL

SIGNAL NOTES

SIG1: EXISTING SIGNAL MUST BE EITHER 4-WAY FLASHING RED, BAGGED, OR TURNED OFF.

SIG2: SIGNAL IS IN OPERATION.

SIG3: DELINEATE THE WORK ZONE AREA WITH 28 INCH CONES FOR DAYTIME WORK, OR 42 INCH CHANNELIZING DEVICES FOR NIGHTTIME WORK.

SIG4: THE CONTRACTOR MUST HAVE A DESIGNATED SPOTTER IF THE AERIAL BUCKET TRUCK IS LOCATED OVER ACTIVE TRAVEL LANES.

SIG5: THE LOWEST POINT OF THE BUCKET MAY NOT TRAVEL BELOW 14 FOOT VERTICAL CLEARANCE. THE CONTRACTOR MUST UTILIZE AN ALTERNATE SET UP, OR PLACE THE INTERSECTION IN A 4 WAY STOP IF THE 14 FOOT VERTICAL CLEARANCE IS COMPROMIZED. USE TRAFFIC REGULATORS TO CONTROL TRAFFIC THROUGH THE INTERSECTION WHEN TRAFFIC IS PLACED IN A 4 WAY STOP.

SIG6: DELINEATE THE TRUCK WITH CHANNELIZING DEVICES. THE POSITION OF THE TRUCK MAY BE MOVED TO FACILITATE WORK.

MAINTENANCE AND SURVEYING NOTES

MS1: WHENEVER STOPPING SIGHT DISTANCE EXISTS TO THE REAR, THE SHADOW VEHICLES SHOULD MAINTAIN THE RECOMENDED DISTANCE FROM THE WORK AREA AND PROCEEED AT THE SAME SPEED. THE SHADOW VEHICLE SHOULD SLOW DOWN AND TRAVEL AT A FARTHER DISTANCE TO PROVIDE ADEQUATE SIGHT DISTANCE IN ADVANCE OF VERTICAL OR HORIZONTAL CURVES.

MS2: WORKERS OUTSIDE OF VEHICLES SHOULD WORK WITHIN 150' OF WORK VEHICLES WITH AN ACTIVATED BEACON, BETWEEN THE "BEGIN WORK CONVOY" SIGN AND THE "END WORK CONVOY" SIGN, OR BETWEEN THE "WORK ZONE BEGINS" AND "END ROAD WORK" SIGN.

MS3: WORK OR SHADOW VEHICLES WITH OR WITHOUT A TMA MAY BE USED TO SEPARATE THE WORK SPACE FROM TRAFFIC. IF USED, THE VEHICLES SHOULD BE PARKED ACCORDING TO THE ROLL AHEAD DISTANCE TABLES.

MS4: WORK AND SHADOW VEHICLES SHALL BE APPROPRIATELY EQUIPPED WITH AN ACTIVATED AMBER BEACON.

MS5: WHEN WORKERS ARE OUTSIDE THEIR VEHICLES IN AN EXISTING LANE WHILE A MOBILE OPERATION IS OCCURRING DURING THE NIGHTTIME HOURS, CHANNELIZING DEVICES TO DELINEATE OPEN OR CLOSED LANES AT 50 FT SPACING MUST BE USED. AN EXAMPLE OF AN OPERATION (BUT NOT LIMITED TO) IS THE LAYOUT OF CONCRETE PATCHES.

MS6: W21-6 AND W20-1 SIGNS MAY BE SUBSTITUTED AS DETERMINED BY THE TYPE OF WORK TAKING PLACE AS PER THE ENGINEER.

SIGN NUMBER KEY

E5-1f
48" x 48"
60" x 48"

E5-2
48" x 36"

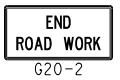
E5-2a
48" x 36"

E5-3
48" x 36"

E13-1P
VAR x 24"

E13-1aP
36" x 24"

G20-1
60" x 24"



G20-2
48" x 24"

G20-4
36" x 18"


I-6a
18" x 18"
24" x 24"
30" x 30"

M1-1
18" x 18"
24" x 24"
36" x 36"
48" x 48"

M1-1
22.5" x 18"
30" x 24"
45" x 36"
60" x 48"

M1-2
18" x 18"
24" x 24"
36" x 36"
48" x 48"

M1-2
22.5" x 18"
30" x 24"
45" x 36"
60" x 48"

M1-3
18" x 18"
24" x 24"
36" x 36"
48" x 48"

M1-3
22.5" x 18"
30" x 24"
45" x 36"
60" x 48"

M1-4
18" x 18"
24" x 24"
36" x 36"
48" x 48"

M1-4
22.5" x 18"
30" x 24"
45" x 36"
60" x 48"

M1-5
18" x 18"
24" x 24"
30" x 30"
36" x 36"

M1-5a
18" x 18"
24" x 24"

M1-6
18" x 18"
24" x 24"
36" X 36"

M1-6
22.5" x 18"
30" x 24"
45" x 36"

M3-1
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M3-2
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M3-3
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M3-4
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M4-1
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M4-1a
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M4-2
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M4-3
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M4-4
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M4-5
12" X 6"
18" x 9"
24" X 12"
30" X 15"
36" X 18"

M4-6
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M4-7
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M4-7a
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M4-8
12" x 6"
18" x 9"
24" x 12"
30" x 15"

M4-8a
24" x 18"

M4-8b
24" x 12"

M4-9L
30" x 24"
48" x 36"
60" x 48"

M4-9R
30" x 24"
48" x 36"
60" x 48"

M4-9j
30" x 24"
48" x 36"
60" x 48"

M4-9kL
30" x 30"
48" x 42"
60" x 54"

M4-9kR
30" x 30"
48" x 42"
60" x 54"

M4-9mL
30" x 30"
48" x 42"
60" x 54"

M4-9mR
30" x 30"
48" x 42"
60" x 54"


M4-9dL
12" x 18"


M4-9dR
12" x 18"


M4-9e
12" x 18"

M4-9f
12" x 18"


M4-9gL
12" x 18"


M4-9gR
12" x 18"


M4-9h
12" x 24"

M4-9i
12" x 18"

M4-10L
48" x 18"

M4-10R
48" x 18"

M4-11a
12" X 6"
18" x 9"
24" X 12"
30" X 15"
36" X 18"


M5-1L
12" x 9"
21" x 15"
30" x 21"


M5-1R
12" x 9"
21" x 15"
30" x 21"


M5-2L
12" x 9"
21" x 15"
30" x 21"


M5-2R
12" x 9"
21" x 15"
30" x 21"


M5-3
12" x 9"
21" x 15"
30" x 21"


M6-1L
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-1R
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-2L
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-2R
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-3
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-4
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-5
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-6L
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-6R
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-7L
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-7R
12" x 9"
18" x 12"
21" x 15"
30" x 21"

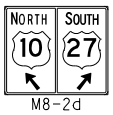
SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS

MDOT Michigan Department of Transportation	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL NO: 103-GEN-SIGN	TRAFFIC TYPICALS SIGN SHEET	DATE: JUNE 2021 SHEET: 1 OF 5
FILE: 103-GEN-SIGN.dgn				

SIGN NUMBER KEY

M8-1gL
36" x 66"

M8-1gR
36" x 66"

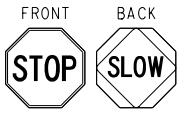


M8-2d
60" x 48"


OM-3L
12" x 36"
24" x 48"
36" x 72"


OM-3R
12" x 36"
24" x 48"
36" x 72"

R1-1
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"



R1-1a
18" x 18"
24" x 24"

R1-2
18"
24"
30"
36"
48"
60"

R1-2aP
24" x 18"
36" x 30"
48" x 36"

R2-1
18" x 24"
24" x 30"
30" x 36"
36" x 48"
48" x 60"

R2-1a
48" x 60"


R3-1
24" x 24"
30" x 30"
36" x 36"
48" x 48"


R3-2
24" x 24"
30" x 30"
36" x 36"
48" x 48"

R3-3
24" x 24"
36" x 36"
48" x 48"


R3-4
24" x 24"
30" x 30"
36" x 36"
48" x 48"

R3-5L
30" x 36"
36" x 48"

R3-5R
30" x 36"
36" x 48"

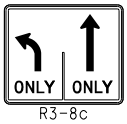
R3-5a
30" x 36"
36" x 48"


R3-6L
30" x 36"
42" x 48"

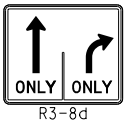

R3-6R
30" x 36"
42" x 48"

R3-7L
30" x 30"
36" x 36"

R3-7R
30" x 30"
36" x 36"



R3-8c
36" x 30"



R3-8d
36" x 30"

R4-1
12" x 18"
18" x 24"
24" x 30"
36" x 48"
48" x 60"

R4-2
12" x 18"
18" x 24"
24" x 30"
36" x 48"
48" x 60"


R4-7
12" x 18"
18" x 24"
24" x 30"
36" x 48"
48" x 60"


R4-8
18" x 24"
24" x 30"
36" x 48"
48" x 60"

R4-9
18" x 24"
24" x 30"
36" x 48"
48" x 60"

R5-1
30" x 30"
36" x 36"
48" x 48"

R5-1a
30" x 18"
36" x 24"
42" x 30"

R5-18b
48" x 60"

R5-18c
48" x 48"

R5-18d
78" x 12"

R5-18e
72" x 12"

R5-18f
48" x 60"

R5-18g
30" x 42"

R5-18h
48" x 60"

R6-1L
36" x 12"
54" x 18"

R6-1R
36" x 12"
54" x 18"

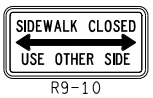
R6-2L
12" x 16"
18" x 24"
24" x 30"
36" x 48"
48" x 60"

R6-2R
12" x 16"
18" x 24"
24" x 30"
36" x 48"
48" x 60"


R8-3
12" x 12"
18" x 18"
24" x 24"
36" x 36"
48" x 48"

R9-8
36" x 18"

R9-9
24" x 12"
30" x 18"



R9-10
24" x 12"
48" x 24"

R9-11L
24" x 12"
48" x 36"

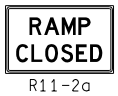
R9-11R
24" x 12"
48" x 36"

R9-11aL
24" x 12"
48" x 24"

R9-11aR
24" x 12"
48" x 24"

R10-6b
36" x 54"

R11-2
48" x 30"



R11-2a
48" x 30"

R11-2b
48" x 30"

R11-2c
60" x 30"

R11-3a
60" x 30"

R11-3b
60" x 30"

R11-4
60" x 30"

SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS

MDOT Michigan Department of Transportation	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL NO: 103-GEN-SIGN	TRAFFIC TYPICALS SIGN SHEET	DATE: JUNE 2021 SHEET: 2 OF 5
FILE: 103-GEN-SIGN.dgn				

SIGN NUMBER KEY

W1-1L
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-1R
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-2L
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-2R
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-2bL
36" x 36"
48" x 48"

W1-2bR
36" x 36"
48" x 48"

W1-3L
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-3R
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-4L
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-4R
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-4bL
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-4bR
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-4cL
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-4cR
24" x 24"
30" x 30"
36" x 36"
48" x 48"

30" x 30"
36" x 36"
W24-1L 48" x 48"

W24-1R
30" x 30"
36" x 36"
48" x 48"

W24-1aL
30" x 30"
36" x 36"
48" x 48"

W24-1aR
30" x 30"
36" x 36"
48" x 48"

W24-1bL
30" x 30"
36" x 36"
48" x 48"

W24-1bR
30" x 30"
36" x 36"
48" x 48"

W1-6L
24" x 12"
36" x 18"
48" x 24"
60" x 30"
96" x 48"

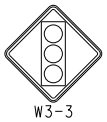
W1-6R
24" x 12"
36" x 18"
48" x 24"
60" x 30"
96" x 48"

W1-8L
12" x 18"
18" x 24"
24" x 30"
30" x 36"
36" x 48"

W1-8R
12" x 18"
18" x 24"
24" x 30"
30" x 36"
36" x 48"

W3-1
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W3-2
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W3-3
18" x 18"
30" x 30"
36" x 36"
48" x 48"

W3-4
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W3-4b
30" x 30"
36" x 36"
48" x 48"

W3-5
36" x 36"
48" x 48"

W3-5a
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W3-5b
30" x 30"
36" x 36"
48" x 48"

W4-1L
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W4-1R
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W4-2L
30" x 30"
36" x 36"
48" x 48"

W4-2R
30" x 30"
36" x 36"
48" x 48"

W4-3L
30" x 30"
36" x 36"
48" x 48"

W4-3R
30" x 30"
36" x 36"
48" x 48"

W4-5L
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W4-5R
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W4-5P
18" x 24"
24" x 30"

W4-6L
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W4-6R
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W4-7L
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W4-7R
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W5-1
30" x 30"
36" x 36"
48" x 48"

W5-2
18" x 18"
30" x 30"
36" x 36"
48" x 48"

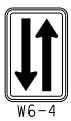
W5-3
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W5-4
30" x 30"
36" x 36"
48" x 48"

W6-1
30" x 30"
36" x 36"
48" x 48"

W6-2
30" x 30"
36" x 36"
48" x 48"

W6-3
30" x 30"
36" x 36"
48" x 48"



W6-4
12" x 18"

W7-1
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W7-1a
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-1
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS

MDOT Michigan Department of Transportation	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL NO: 103-GEN-SIGN	TRAFFIC TYPICALS SIGN SHEET	DATE: JUNE 2021 SHEET: 3 OF 5
FILE: 103-GEN-SIGN.dgn				

SIGN NUMBER KEY

W8-2
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-3
18" x 18"
30" x 30"
36" x 36"
48" x 48"

W8-4
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-5
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-5P
24" x 18"
30" x 24"
36" x 30"

W8-7
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-8
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-9
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-11
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-12
30" x 30"
36" x 36"
48" x 48"

W8-14
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-15
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-15P
24" x 18"
30" x 24"
36" x 30"

W8-17L
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-17R
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-17P
24" x 18"
30" x 24"
36" x 30"

W8-18
24" x 24"
36" x 36"
48" x 48"

W8-23
24" x 24"
36" x 36"
48" x 48"

W8-24
30" x 30"
36" x 36"
48" x 48"

W8-25
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-26
36" x 36"
48" x 48"

W9-1L
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W9-1R
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W9-2L
30" x 30"
36" x 36"
48" x 48"

W9-2R
30" x 30"
36" x 36"
48" x 48"

W9-3C
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W9-3L
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W9-3R
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W9-3a
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W9-3b
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W11-10
24" x 24"
30" x 30"
36" x 36"
48" x 48"

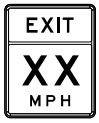
W11-10a
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W11-24
36" x 36"
48" x 48"

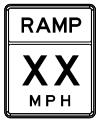
W12-1
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W12-2
18" x 18"
30" x 30"
36" x 36"
48" x 48"

W13-1P
18" x 18"
24" x 24"
30" x 30"



W13-2
24" x 30"
36" x 48"
48" x 60"



W13-3
24" x 30"
36" x 48"
48" x 60"

W13-4P
24" x 24"
36" x 36"

W13-6
24" x 42"
36" x 60"
48" x 84"

W13-6a
24" x 42"
36" x 60"
48" x 84"

W13-7
24" x 42"
36" x 60"
48" x 84"

W13-7a
24" x 42"
36" x 60"
48" x 84"

W14-3
36" x 24"
40" x 30"
48" x 36"
64" x 48"

W16-2P
18" x 12"
24" x 18"
30" x 24"

W16-4aP
18" x 12"
24" x 18"
30" x 24"
36" x 30"

W16-12P
24" x 18"

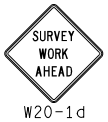
W16-13P
24" x 18"
30" x 24"

W20-1
24" x 24"
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W20-1a
24" x 24"
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W20-1b
24" x 24"
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W20-1c
24" x 24"
30" x 30"
36" x 36"
48" x 48"
60" x 60"



W20-1d
24" x 24"
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W20-2
30" x 30"
36" x 36"
48" x 48"

W20-3
30" x 30"
36" x 36"
48" x 48"

W20-3a
30" x 30"
36" x 36"
48" x 48"

SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS

MDOT Michigan Department of Transportation	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL NO: 103-GEN-SIGN	TRAFFIC TYPICALS SIGN SHEET	DATE: JUNE 2021 SHEET: 4 OF 5
FILE: 103-GEN-SIGN.dgn				

SIGN NUMBER KEY

W20-3b
30" x 30"
36" x 36"
48" x 48"

W20-4
30" x 30"
36" x 36"
48" x 48"

W20-4c
36" x 36"
48" x 48"

W20-5C
30" x 30"
36" x 36"
48" x 48"

W20-5L
30" x 30"
36" x 36"
48" x 48"

W20-5L1
30" x 30"
36" x 36"
48" x 48"

W20-5L2
30" x 30"
36" x 36"
48" x 48"

W20-5R
30" x 30"
36" x 36"
48" x 48"

W20-5R1
30" x 30"
36" x 36"
48" x 48"

W20-5R2
30" x 30"
36" x 36"
48" x 48"

W20-5aL2
30" x 30"
36" x 36"
48" x 48"

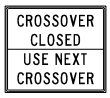
W20-5aL3
30" x 30"
36" x 36"
48" x 48"

W20-5aR2
30" x 30"
36" x 36"
48" x 48"

W20-5aR3
30" x 30"
36" x 36"
48" x 48"

W20-7a
30" x 30"
36" x 36"
48" x 48"

W20-8
24" x 18"



W20-9
54" x 48"

W20-10
48" x 24"
66" x 30"

W20-11
12" x 18"

W20-12P
VARIABLE x 12"

W20-13P
VARIABLE x 12"

W20-14L
36" x 36"
48" x 48"

W20-14R
36" x 36"
48" x 48"

W20-14aP
36" x 12"
48" x 12"

W20-14bP
36" x 12"
48" x 12"

W20-15
36" x 36"
48" x 48"

W20-15a
36" x 36"
48" x 48"

W20-15c
48" x 54"

W20-15d
48" x 54"

W20-16
36" x 36"
48" x 48"

W20-17
36" x 36"
48" x 48"

W21-1
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W21-2
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W21-2
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W21-3
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W21-4
36" x 18"

W21-5
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W21-5aL
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W21-5aR
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W21-5bL
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W21-5bR
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W21-6
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W21-7
30" x 30"
36" x 36"
48" x 48"

W21-8
30" x 30"
36" x 36"
48" x 48"

W22-1
30" x 30"
36" x 36"
48" x 48"

W22-2
42" x 36"

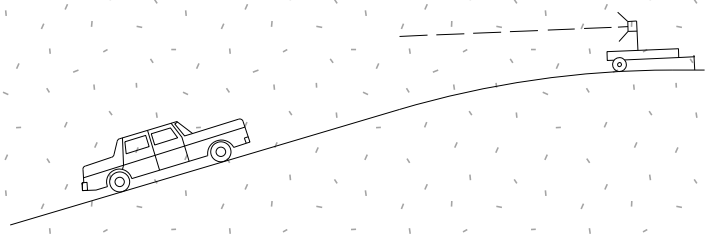
W22-3
36" x 30"
42" x 36"

W23-1
48" x 24"

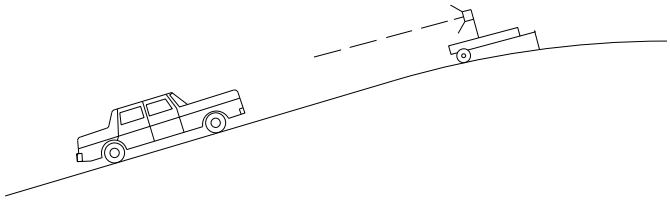
W23-2
36" x 36"
48" x 48"

SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS

MDOT Michigan Department of Transportation	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL NO: 103-GEN-SIGN	TRAFFIC TYPICALS SIGN SHEET	DATE: JUNE 2021 SHEET: 5 OF 5
FILE: 103-GEN-SIGN.dgn				

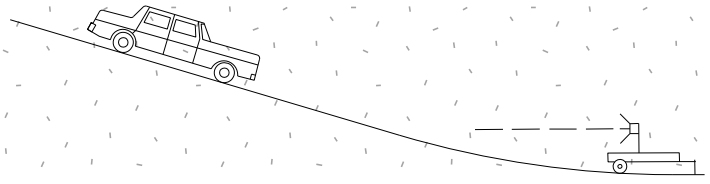


INCORRECT USAGE

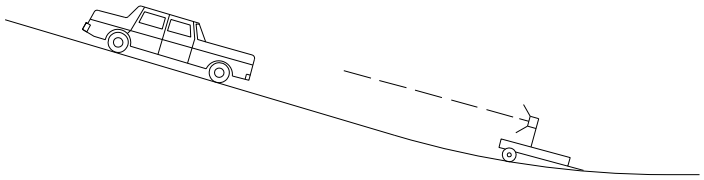


CORRECT USAGE

PLACEMENT ON A CREST VERTICAL CURVE

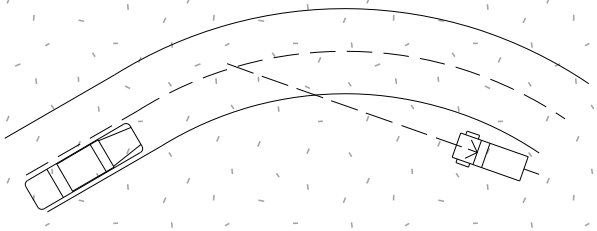


INCORRECT USAGE

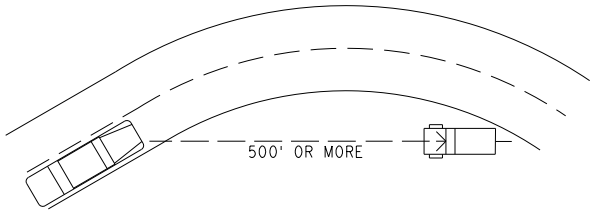


CORRECT USAGE

PLACEMENT ON A SAG VERTICAL CURVE



INCORRECT USAGE



CORRECT USAGE

NOT TO SCALE

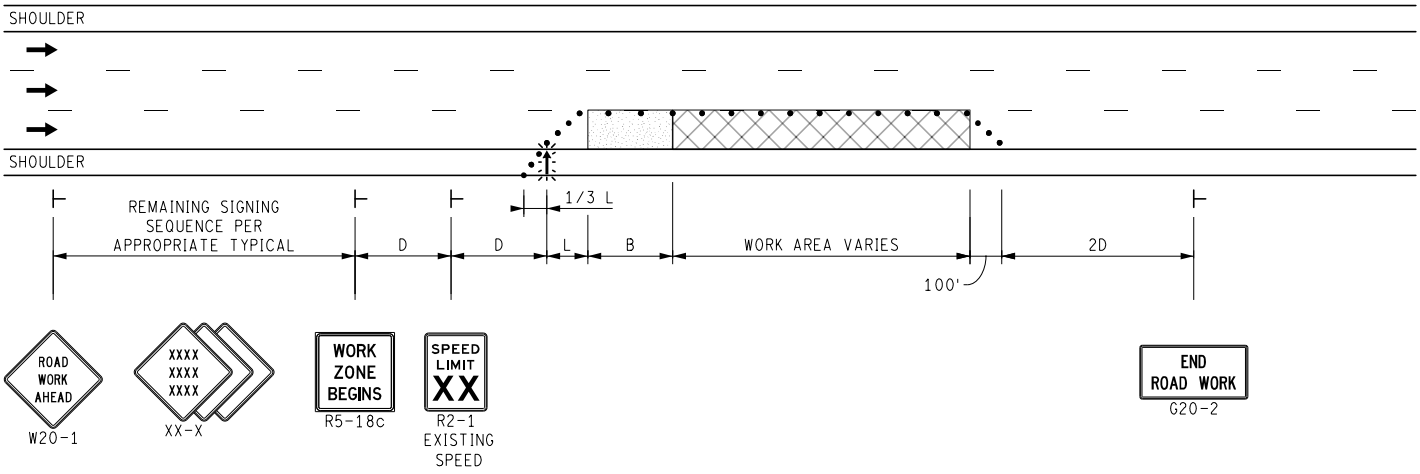
PLACEMENT ON A HORIZONTAL CURVE

NOTE:

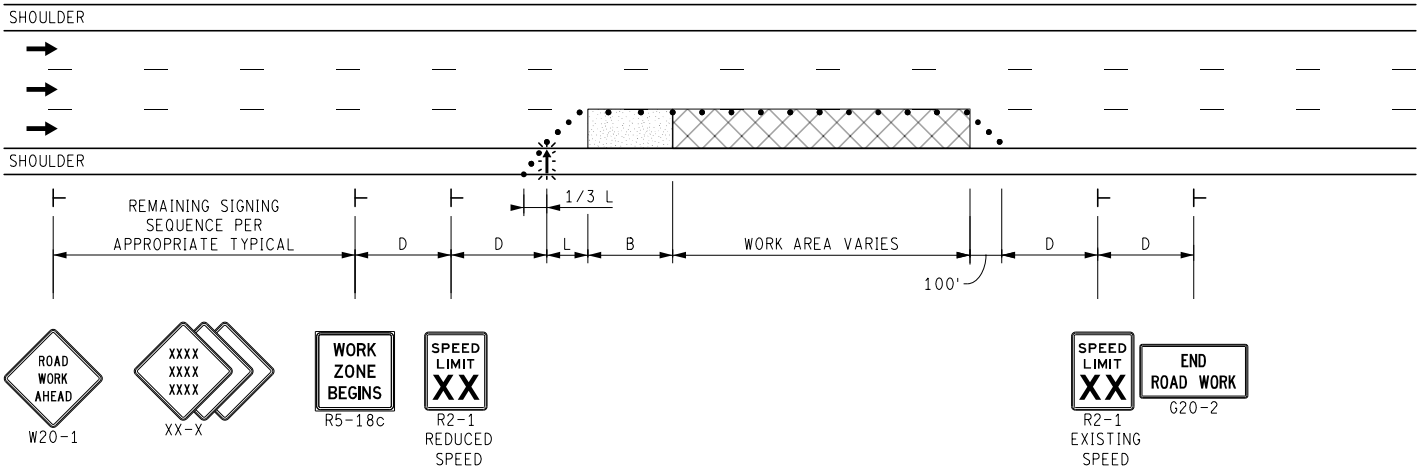
ENSURE THE ARROW REMAINS CLEARLY LEGIBLE AT DISTANCES FROM 2,500 FEET TO 200 FEET, FROM ALL TRAFFIC LANES AND ROADWAY ENTRANCES. DO NOT PLACE THE LIGHTED ARROW ON A HORIZONTAL OR VERTICAL CURVE THAT MIGHT INTERFERE WITH THIS LEGIBILITY REQUIREMENT.

MDOT Michigan Department of Transportation	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL NO: 104-GEN-AB	**USE OF ARROW BOARD ON HILL OR CURVE AND WORK ZONE LAYOUT**	DATE: MAY 2021 SHEET: 1 OF 1
FILE: 104-GEN-AB.dgn				

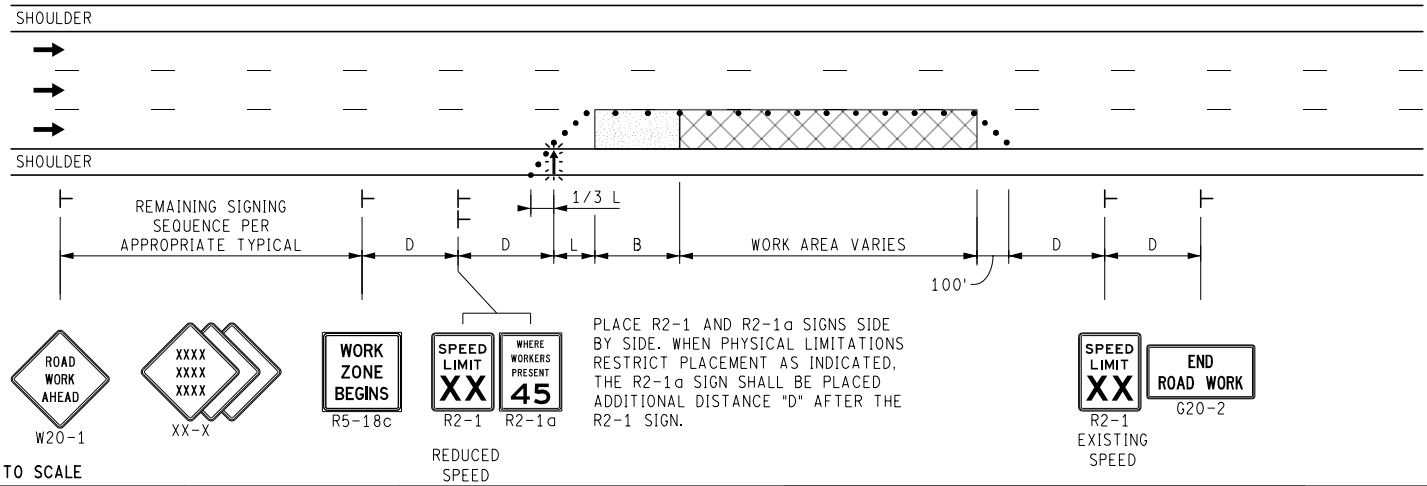
NO SPEED REDUCTION THROUGH WORK ZONE



REDUCED SPEED THROUGH WORK ZONE



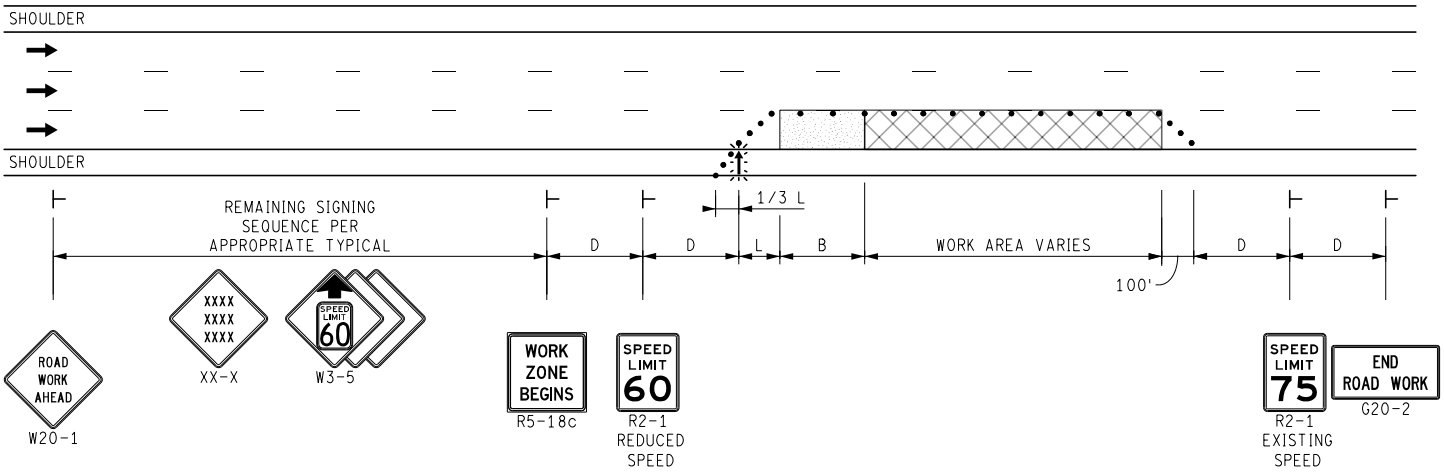
REDUCED SPEED THROUGH WORK ZONE USING "WHERE WORKERS PRESENT"



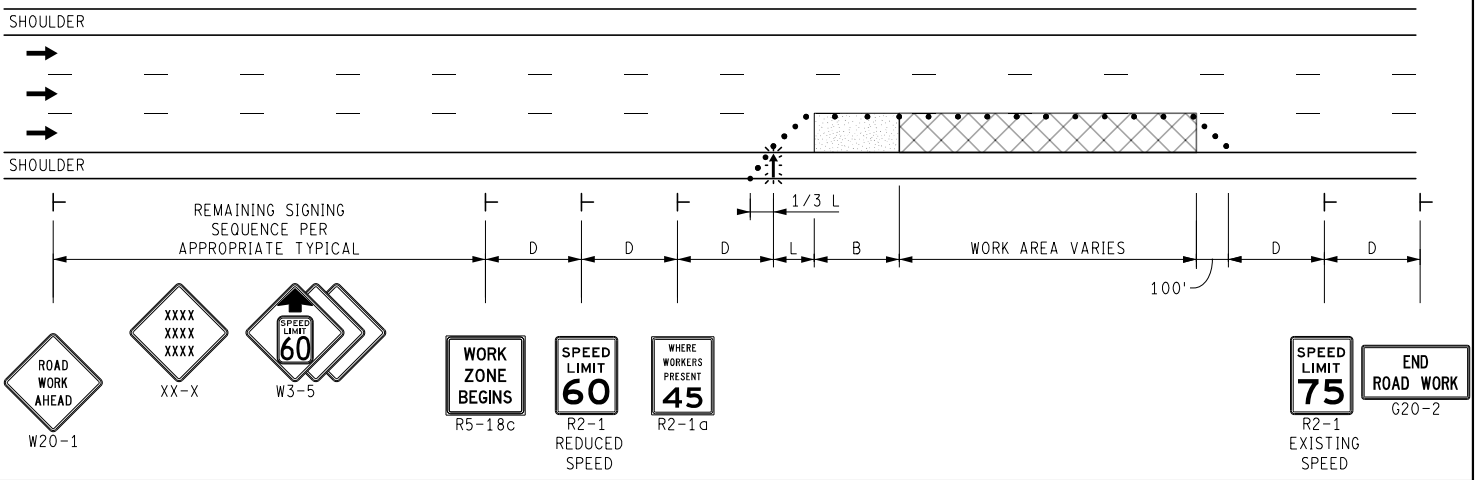
NOT TO SCALE

MDOT Michigan Department of Transportation	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL	SPEED LIMIT LAYOUT	DATE: MAY 2021
FILE: 107-GEN-SPEED.dgn		NO: 107-GEN-SPEED		SHEET: 1 OF 2

REDUCED SPEED FROM 75 TO 60 THROUGH WORK ZONE



REDUCED SPEED FROM 75 TO 45 WWP THROUGH WORK ZONE



NOT TO SCALE

MDOT Michigan Department of Transportation	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL	SPEED LIMIT LAYOUT	DATE: MAY 2021
		NO: 107-GEN-SPEED		SHEET: 2 OF 2
FILE: 107-GEN-SPEED.dgn				

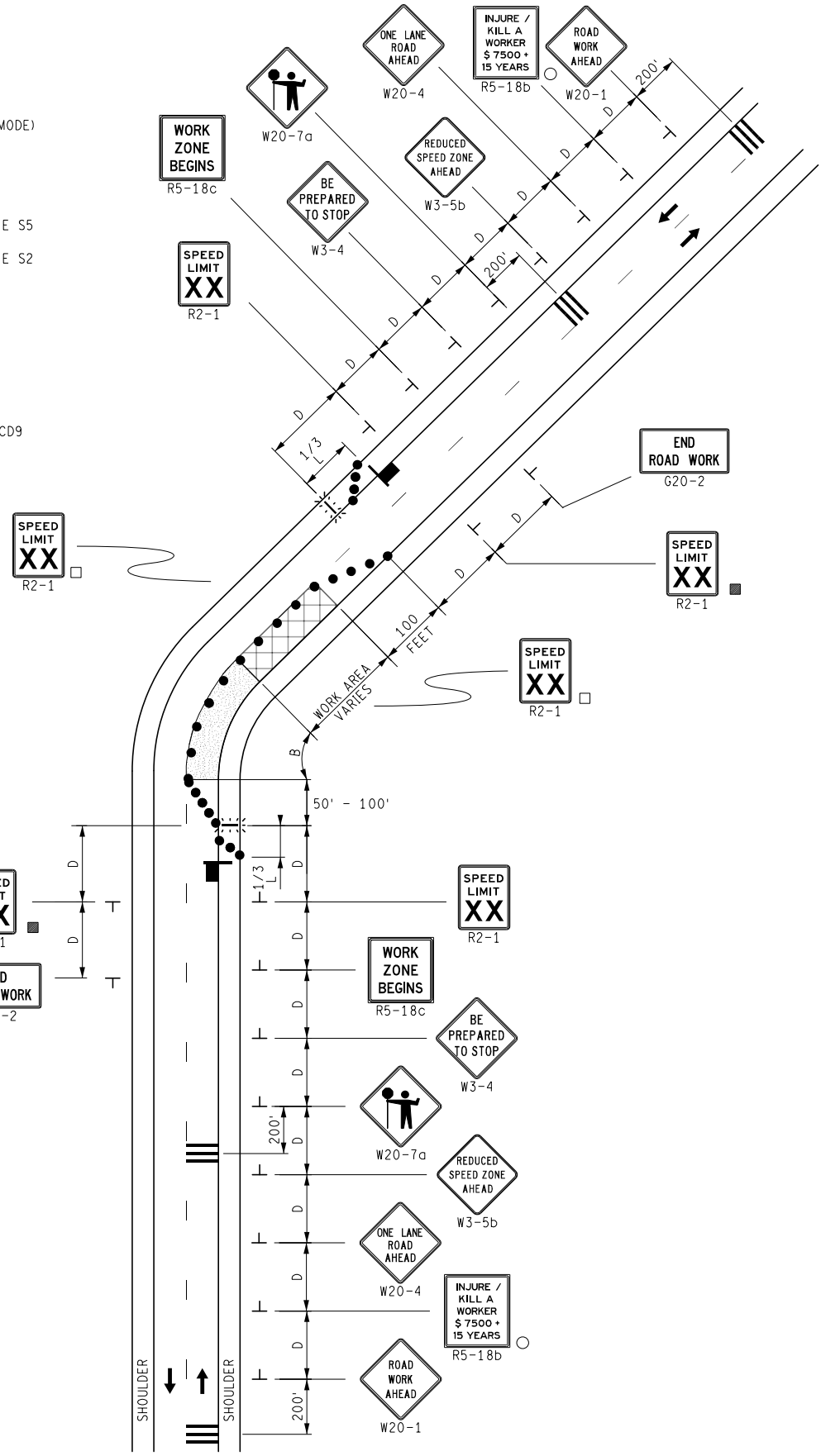
KEY

- TRAFFIC REGULATOR
- CHANNELIZING DEVICES
- LIGHTED ARROW PANEL (CAUTION MODE)
- TRAFFIC FLOW
- REFLECTS EXISTING SPEED LIMIT
- PLACE SIGN AS INDICATED IN NOTE S5
- PLACE SIGN AS INDICATED IN NOTE S2
- RUMBLE STRIPS (SEE NOTE TCD9)

STANDARD NOTES

(SEE 102-GEN-NOTES)

GENERAL: G1, G2, G3, G4
SIGNING: S1, S2, S3, S4, S5
TRAF REG: TR1, TR2
DEVICES: TCD1, TCD2, TCD6, TCD9



MDOT Michigan Department of Transportation	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL	LANE CLOSURE UTILIZING TRAFFIC REGULATORS ON A 2-LANE UNDIVIDED ROADWAY RUMBLE STRIPS	DATE: MAY 2021
FILE: 111-TR-NFW-2L-RUM.dgn		NO: 111- TR-NFW-2L-RUM		SHEET: 1 OF 1

SIGN MATERIAL SELECTION TABLE

	SIGN MATERIAL TYPE		
SIGN SIZE	TYPE I	TYPE II	TYPE III
≤ 36" X 36"		X	X
>36" X 36" ≤ 96" TO WIDE		X	
> 96" WIDE TO 144" WIDE	X	X	
> 144" WIDE	X		

TYPE I ALUMINUM EXTRUSION
TYPE II PLYWOOD
TYPE III ALUMINUM SHEET

ROUNDING OF CORNERS IS NOT REQUIRED FOR TYPE I OR II SIGNS.
VERTICAL JOINTS ARE NOT PERMITTED.
HORIZONTIAL JOINTS THROUGH SIGN LEGEND OR SYMBOLS ARE NOT PERMITTED.

POST SIZE REQUIREMENTS TABLE

	POST TYPE		
SIGN AREA (ft^2)	U-CHANNEL STEEL	SQUARE TUBULAR STEEL	WOOD
≤9	1 - 3 lb/ft*	1 - 2" 12 or 14 GA*	N/A
9 ≤ 20	2 - 3 lb/ft	2 - 2" 12 or 14 GA	1 - 4" X 6"*
> 20 ≤ 30	N/A	N/A	2 - 4" X 6"
> 30 ≤ 60	N/A	N/A	2 - 6" X 8"
> 60 ≤ 84	N/A	N/A	3 - 6" X 8"

*SIGNS 4 FEET AND GREATER IN WIDTH REQUIRE 2 POSTS.
SIGNS GREATER THAN 8 FEET IN WIDTH REQUIRE 2 OR 3 WOOD POSTS DEPENDING ON AREA OF SIGN.
A MAXIMUM OF 2 POSTS WITHIN A 7' PATH IS PERMITTED.

MDOT Michigan Department of Transportation

PREPARED BY DESIGN DIVISION

DRAWN BY: CON/ECH

CHECKED BY: AUG

DEPARTMENT DIRECTOR
Kirk T. Steudle

APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES

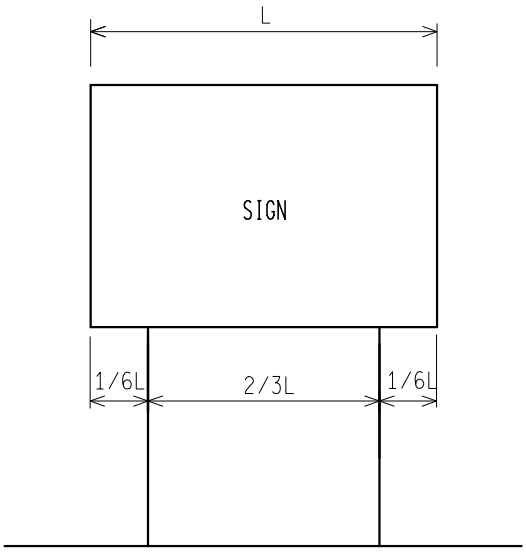
APPROVED BY: _____
DIRECTOR, BUREAU OF DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

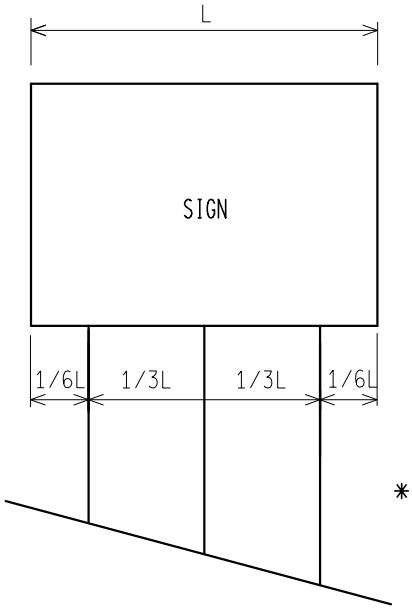
GROUND DRIVEN SIGN SUPPORTS FOR TEMP SIGNS

F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 1 OF 11

2 POST SIGN SUPPORT SPACING

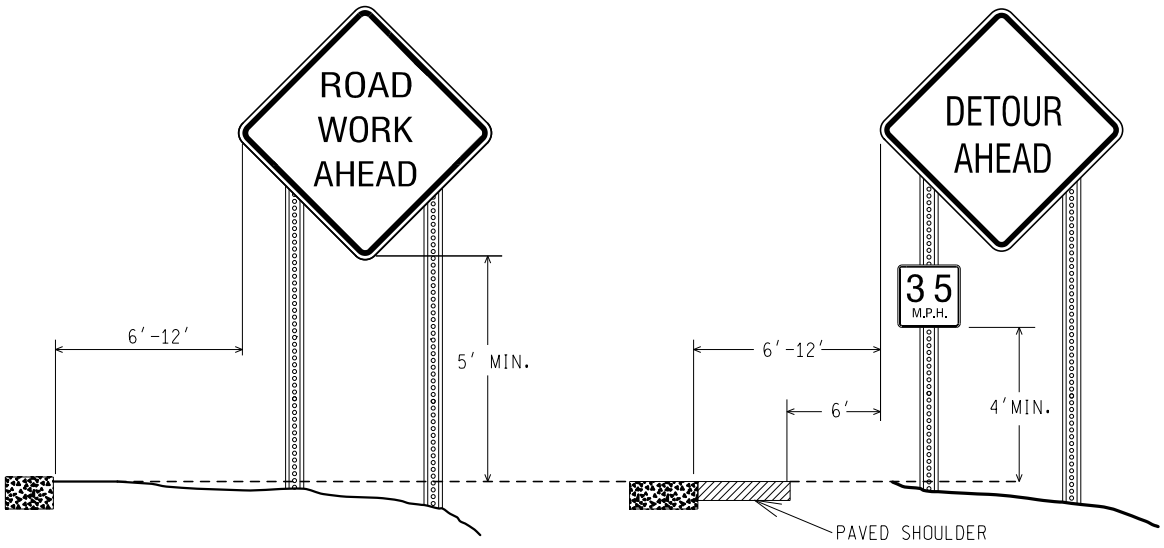


3 POST SIGN SUPPORT SPACING



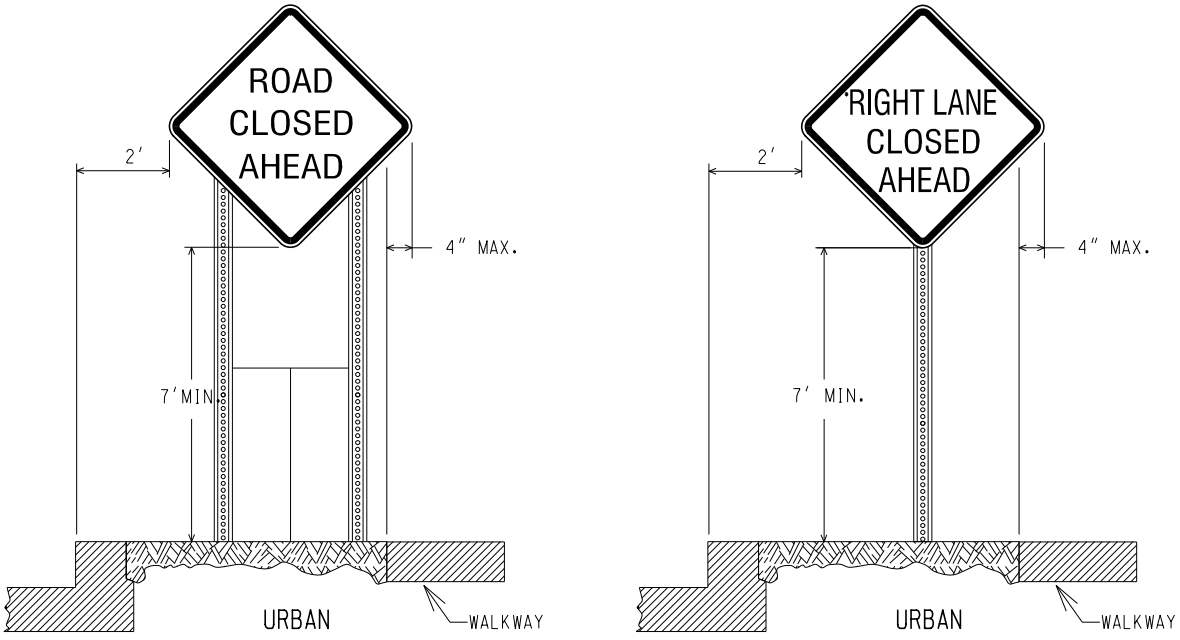
* FOR ALL 11' AND 12' LONG SIGNS ON 3 WOOD SUPPORTS, SPREAD POSTS SO AS TO HAVE A 8' MIN. TO 9' MAX. DISTANCE BETWEEN OUTSIDE POSTS.

NOT TO SCALE



RURAL

RURAL WITH ADVISORY
SPEED PLATE



(CURBED AREAS OR WHERE
WALKWAYS ARE PRESENT)

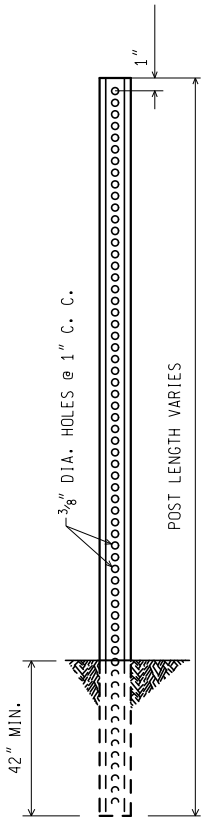
(CURBED AREAS OR WHERE
WALKWAYS ARE PRESENT)

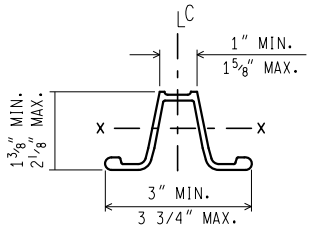
BOTTOM HEIGHT AND OFFSET

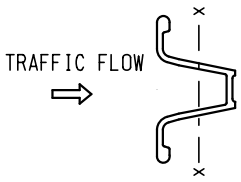
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 3 OF 11

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







WEIGHT = 3 lbs/ft
SECT. MOD. X.-X. = 0.31 CUBIC INCHES MIN.

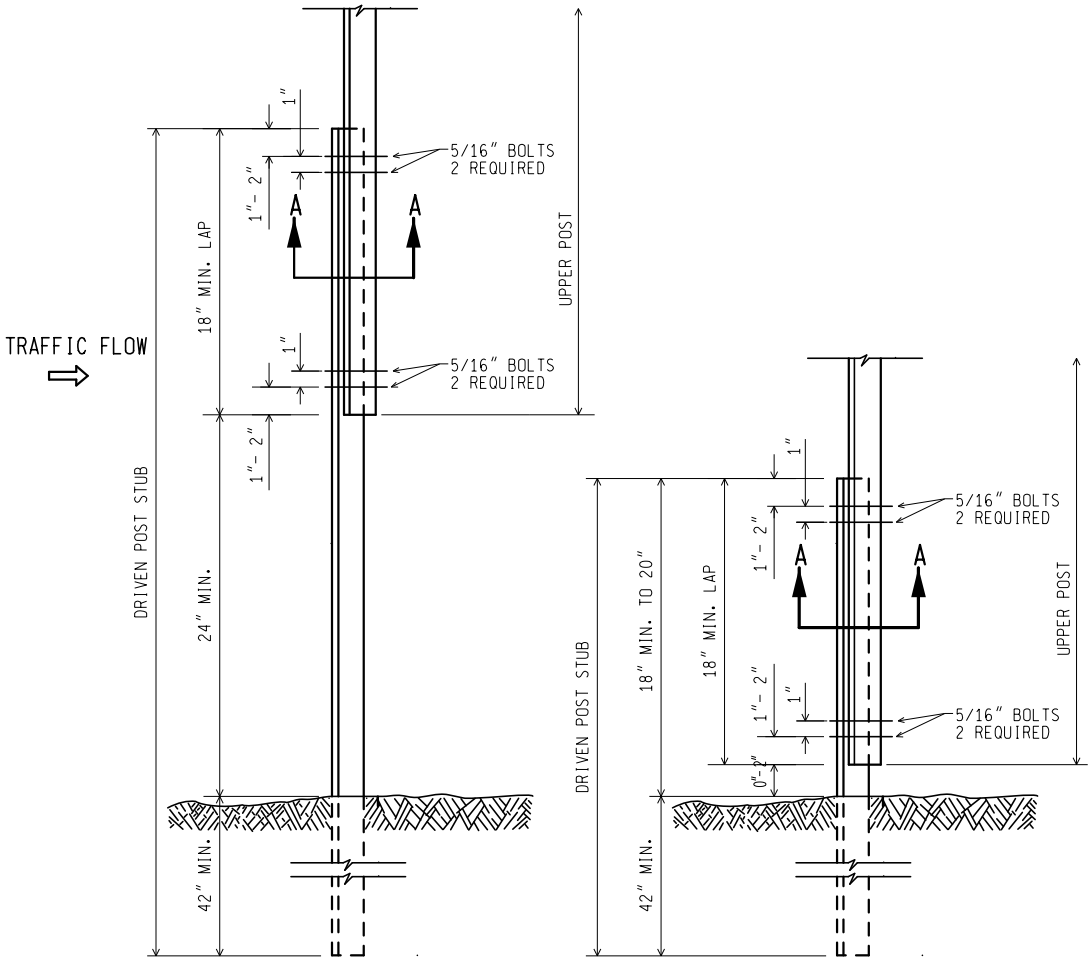
3 lb. U - CHANNEL STEEL POST
(NO SPLICE)

MOUNT SIGN ON OPEN FACE OF
U - CHANNEL STEEL POST

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 4 OF 11

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



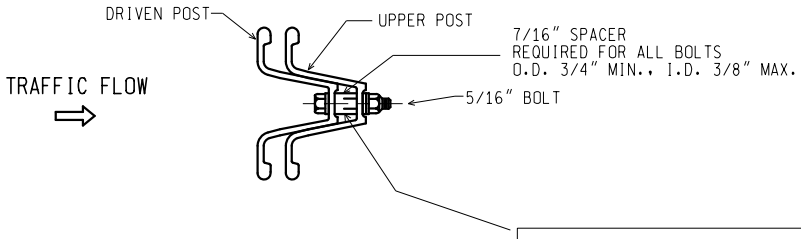
UPPER SPLICE

LOWER SPLICE

3 lb. U - CHANNEL STEEL POST
(WITH SPLICE)

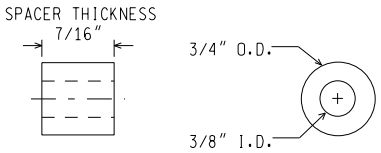
MOUNT SIGN ON OPEN FACE OF
UPPER U - CHANNEL STEEL POST

NOT TO SCALE



SECTION A-A

SPACER DETAIL



NOTES:

1. THE SPACER THICKNESS SHALL BE 1/16" LESS THAN THE GAP BETWEEN THE POST WHEN POSITIONED IN THE UNBOLTED CONFIGURATION.

2. THE EXTERIOR BOLT (CLOSEST TO LAP), SPACER, WASHER, AND NUT SHALL BE INSTALLED IN A PREPUNCHED HOLE 1" to 2" FROM THE END OF THE LAP.

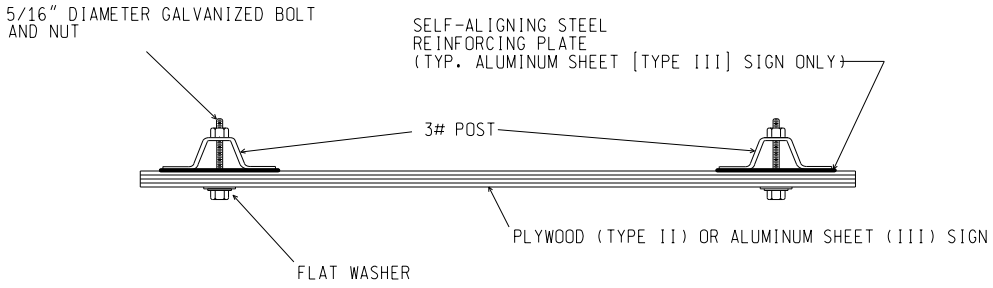
3. THE INTERIOR BOLT (FARTHEST FROM LAP), SPACER, WASHER, AND NUT SHALL BE INSTALLED IN THE NEXT PREPUNCHED HOLE.

4. THE DRIVEN POST SHALL ALWAYS BE MOUNTED IN FRONT OF THE UPPER POST WITH RESPECT TO THE ADJACENT ONCOMING TRAFFIC, REGARDLESS OF THE DIRECTION THE SIGN IS FACING.

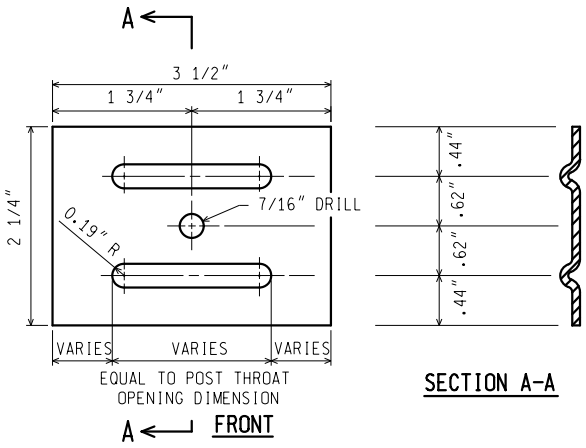
5. THE SPLICE LAP SHALL BE FASTENED BY FOUR-5/16" DIA. GALVANIZED A449 BOLTS (SAE J429 GRADE 5) OR GALVANIZED A325 BOLTS.

3 lb. U - CHANNEL STEEL POST
(WITH SPLICE)

NOT TO SCALE



SIGN TO 3 lb. POST CONNECTION



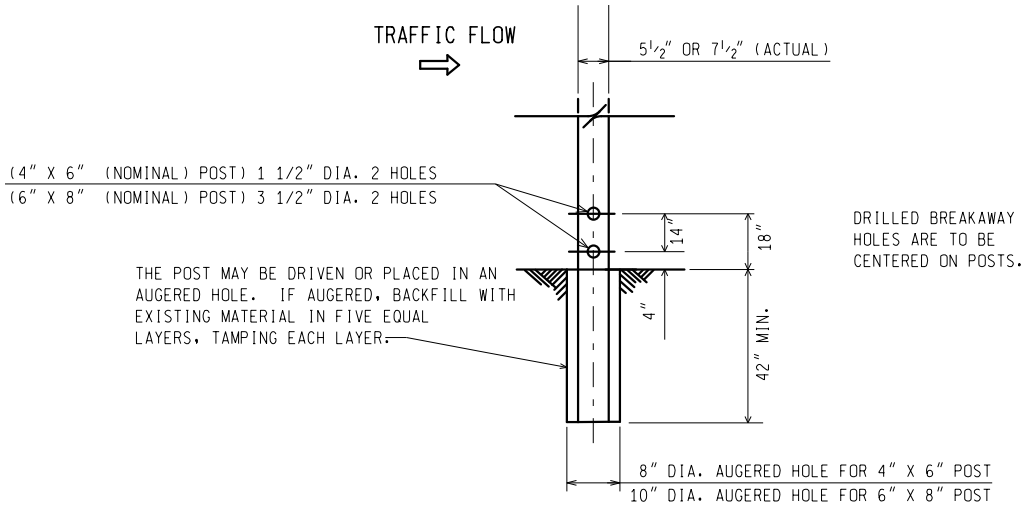
NOTES: (FOR STEEL SIGN REINF' PLATE)

1. MATERIAL: 12 GAUGE CARBON STEEL.
2. TOLERANCE ON ALL DIMENSIONS ± 0.0625"
3. FINISH-AFTER STAMPING AND PUNCHING, GALVANIZE ACCORDING TO CURRENT SPECIFICATIONS FOR ZINC (HOT GALVANIZE) COATINGS ON PRODUCTS FABRICATED FROM PLATES OR STRIPS

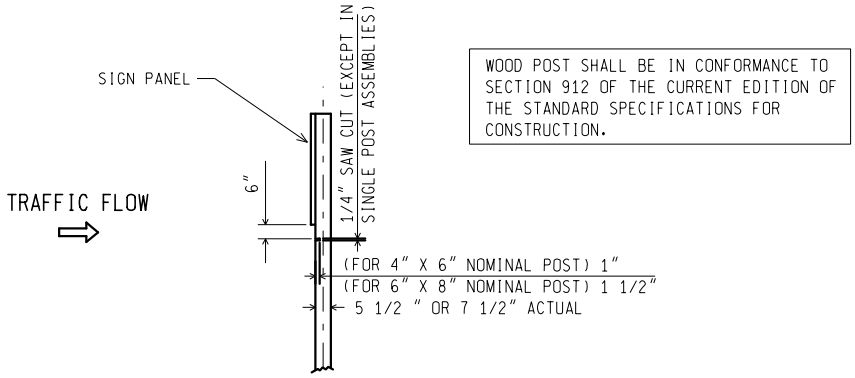
STEEL SIGN REINFORCING PLATE
REQUIRED FOR TYPE III SIGNS ONLY

3 lb. U - CHANNEL STEEL POST SIGN CONNECTION

NOT TO SCALE



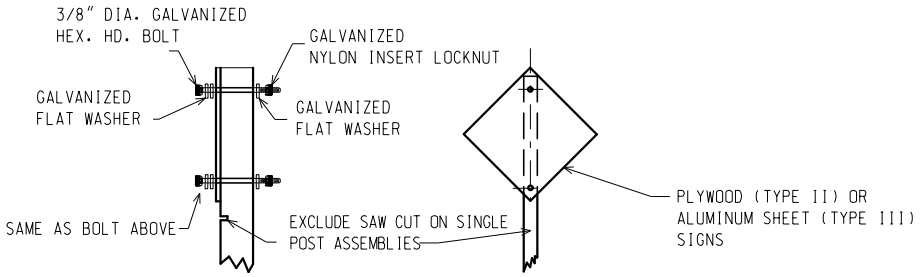
WOOD POST BREAKAWAY HOLES/ DIRECT EMBEDMENT DETAILS



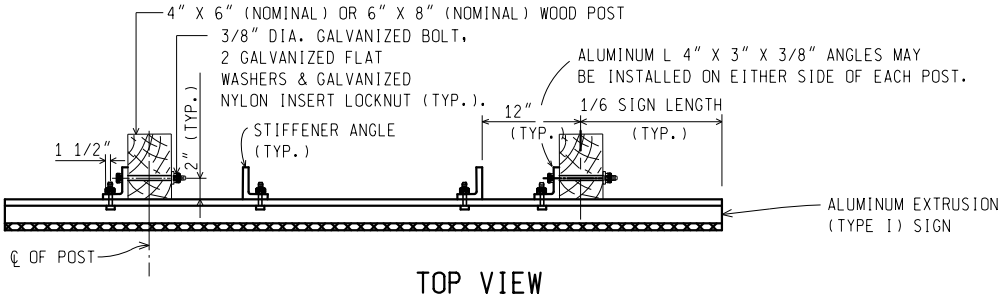
SAW CUT DETAIL (MULTIPLE POST INSTALLATIONS)

WOOD POST DETAILS

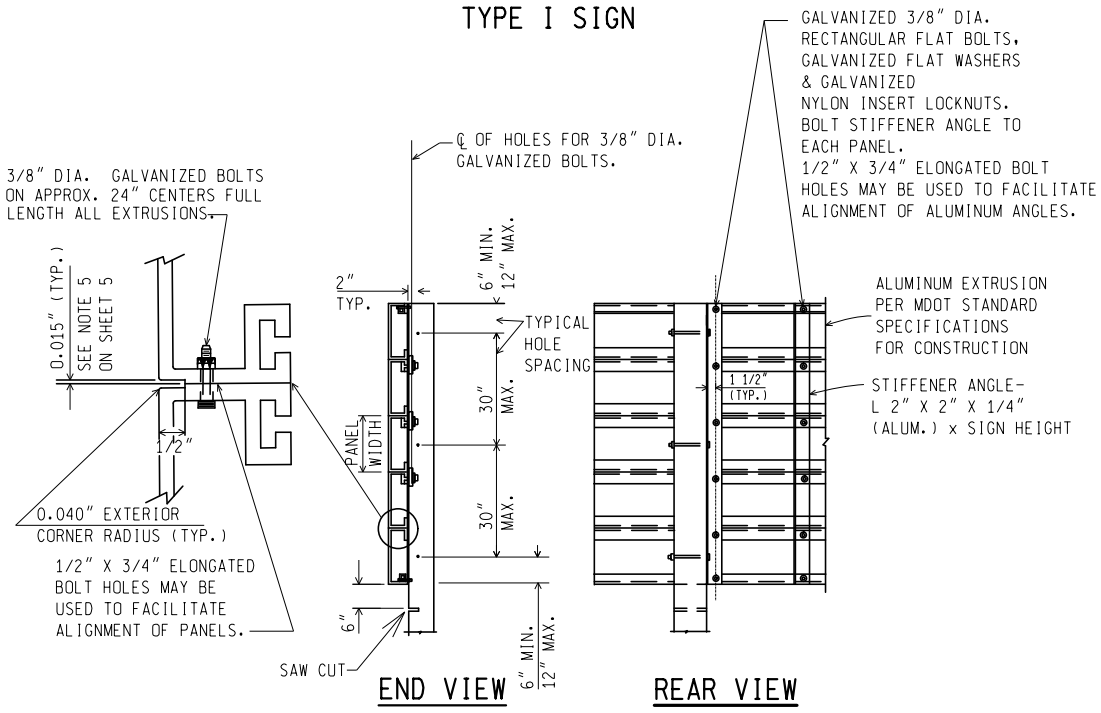
NOT TO SCALE



TYPE II AND TYPE III SIGNS



TOP VIEW
TYPE I SIGN



END VIEW

REAR VIEW

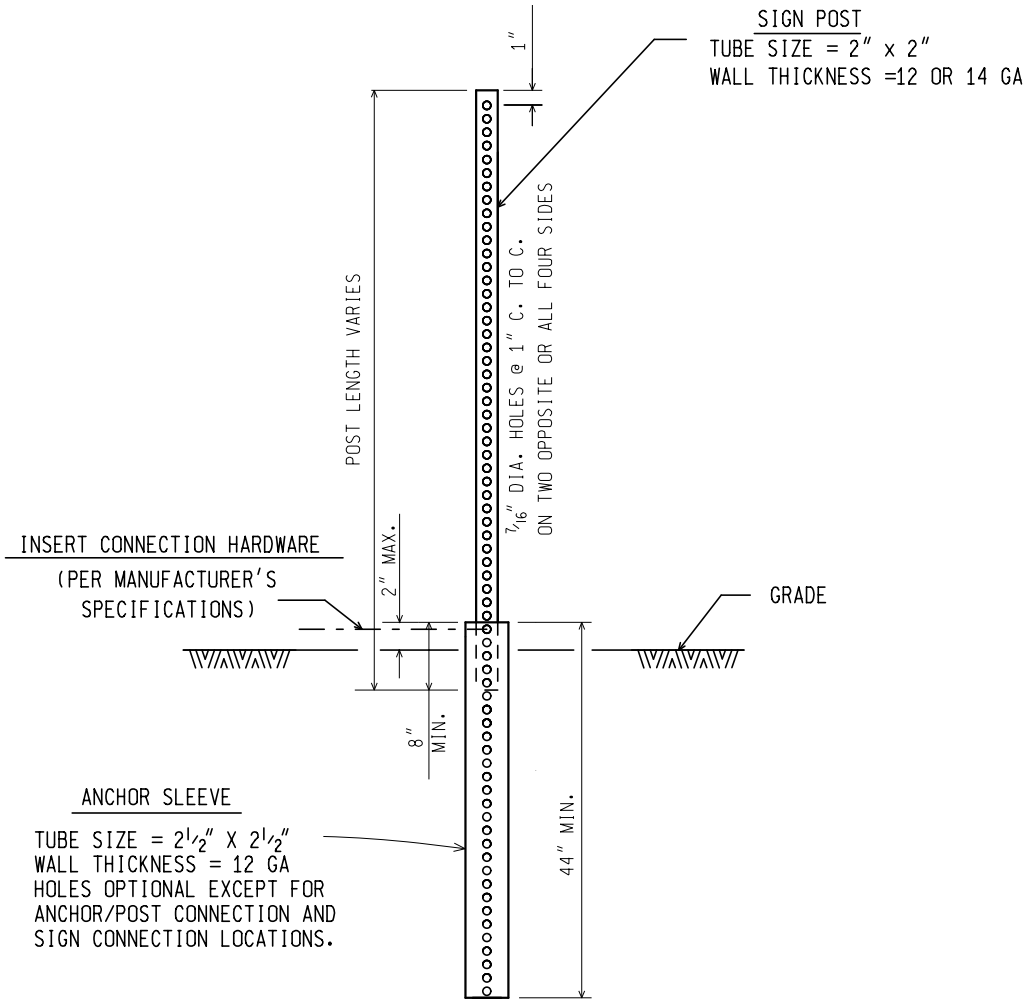
TYPE I SIGN - ERECTION DETAILS

WOOD POST CONNECTIONS

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 9 OF 11

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



SQUARE TUBULAR STEEL POST

NOT TO SCALE

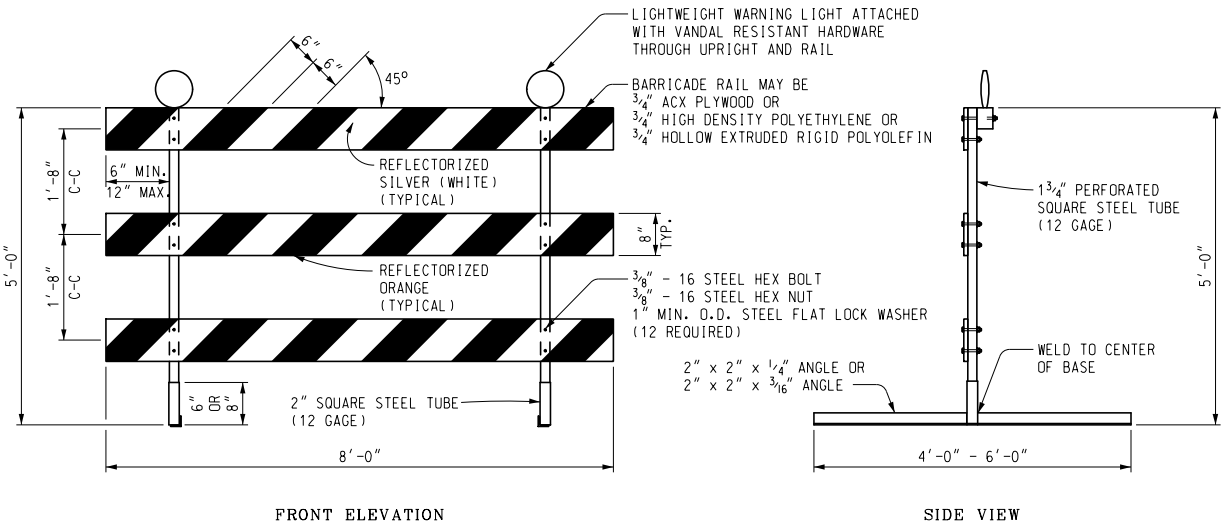
MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 10 OF 11

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

GENERAL NOTES:

1. A MAXIMUM OF TWO POSTS WITHIN A 7 FOOT PATH IS PERMITTED.
2. ALL SIGN POSTS SHALL COMPLY WITH NCHRP 350.
3. ALL POSTS SHALL BE EMBEDDED A MINIMUM OF 42".
4. BRACING OF POST IS NOT PERMITTED.
5. SIGN SHALL BE LEVEL, AND UPRIGHT FOR THE DURATION OF INSTALLATION.
6. ERECT POSTS SO THE SIGN FACE AND SUPPORTS DO NOT VARY FROM PLUMB BY MORE THAN 3/16" IN 3'. PROVIDE A CENTER-TO-CENTER DISTANCE BETWEEN POSTS WITHIN 2 PERCENT OF PLAN DISTANCE.
7. NO MORE THAN ONE SPLICE PER POST, AS SHOWN, WILL BE PERMITTED.
8. POST TYPES SHALL NOT BE MIXED WITHIN A SIGN SUPPORT INSTALLATION.
9. NO VERTICAL JOINTS ARE PERMITTED IN SIGN. NO HORIZONTIAL JOINTS THROUGH SIGN LEGEND OR SYMBOLS ARE PERMITTED IN SIGN
10. REMOVE SIGN POSTS AND/OR POST STUBS IN THEIR ENTIRETY WHEN NO LONGER REQUIRED.
11. ALL LABOR, MATERIALS, AND EQUIPMENT, INCLUDING TEMPORARY SUPPORTS REQUIRED TO INSTALL, MAINTAIN, RELOCATE, AND/OR REMOVE THE TEMPORARY SIGN, INCLUDING SUPPORTS, ARE CONSIDERED TO BE INCLUDED IN THE COST OF THE TEMPORARY SIGN.
12. SAW CUTS IN WOOD POSTS ARE TO BE PARALLEL TO THE BOTTOM OF THE SIGN.
13. POSTS SHALL NOT EXTEND MORE THAN 4" ABOVE TOP OF SIGN.
14. TEMPORARY WOOD SUPPORTS DO NOT REQUIRE PRESERVATIVE TREATMENT.

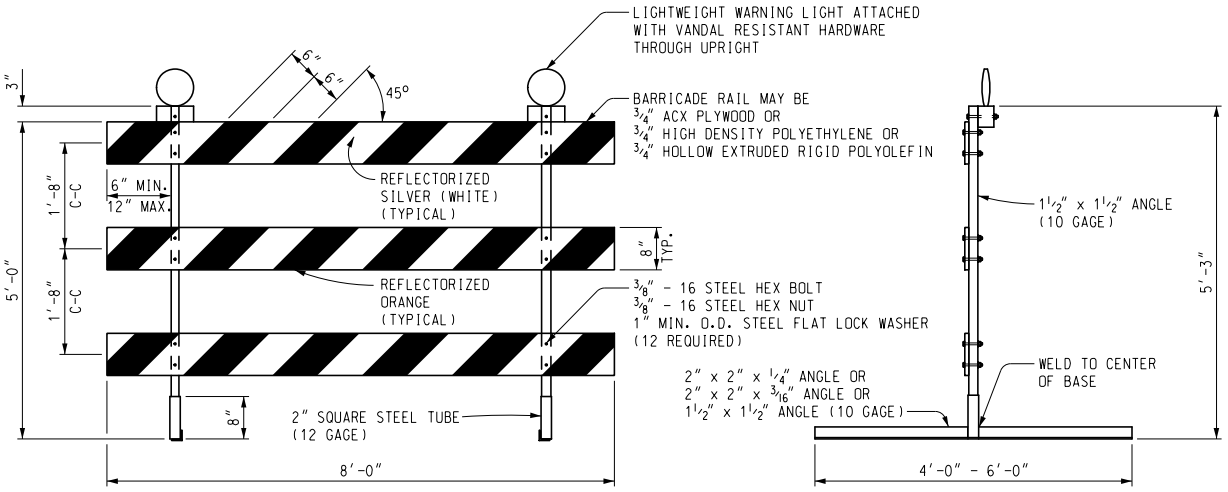
NOT TO SCALE



FRONT ELEVATION

SIDE VIEW

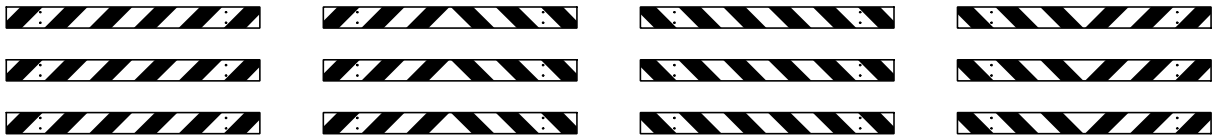
PERFORATED SQUARE STEEL TUBE OPTION



FRONT ELEVATION

SIDE VIEW

ANGLE IRON OPTION



LEFT DIRECTIONAL

BI-DIRECTIONAL

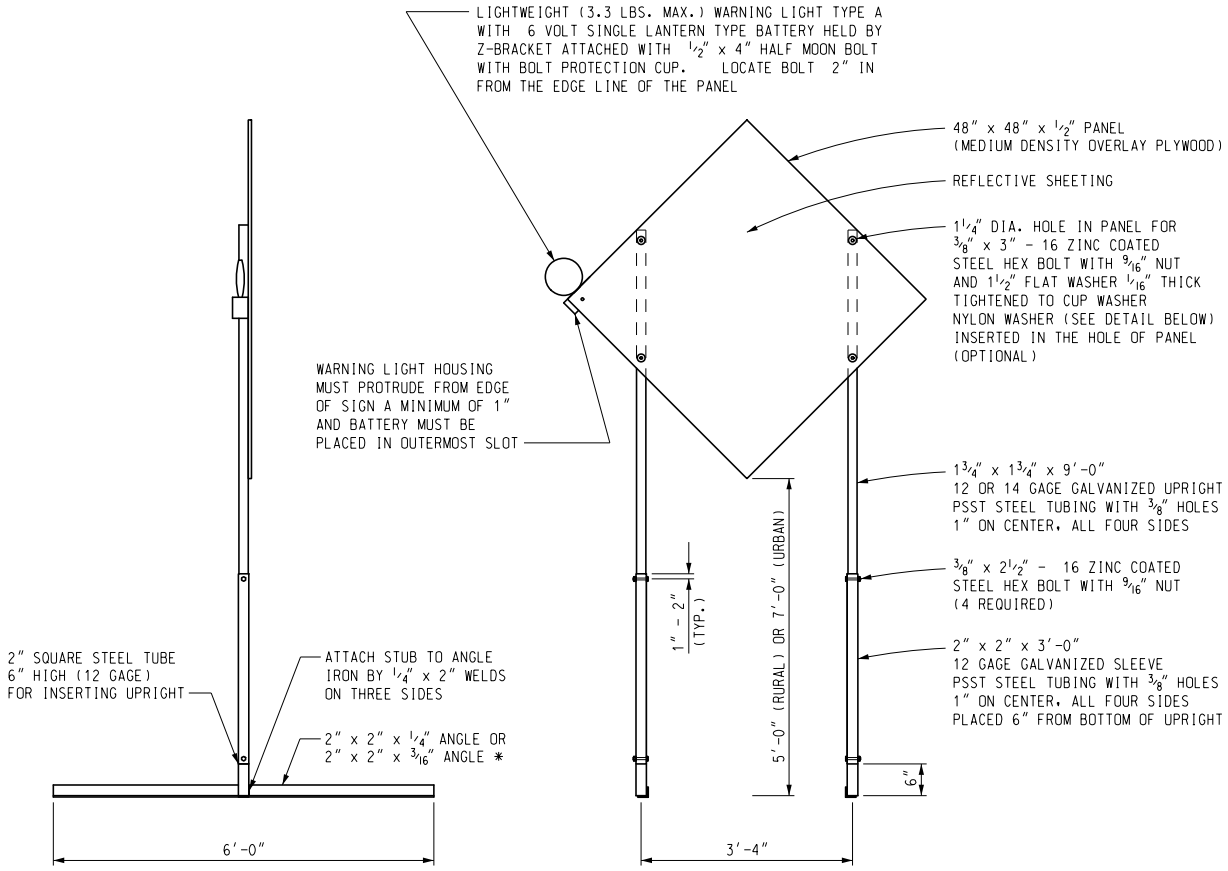
RIGHT DIRECTIONAL

CLOSURES

BARRICADE RAIL SHEETING OPTIONS
TYPE III BARRICADES

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

MDOT Michigan Department of Transportation PREPARED BY OPERATIONS FIELD SERVICES DRAWN BY: ECH CHECKED BY: MWB	DEPARTMENT DIRECTOR Paul C. Ajegba APPROVED BY: _____ DIRECTOR, BUREAU OF FIELD SERVICES APPROVED BY: (SPECIAL DETAIL) DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF FIELD SERVICES SPECIAL DETAIL FOR Temporary Traffic Control Devices	
		F.H.W.A. APPROVAL	6/16/22 PLAN DATE	WZD-125-E	SHEET 1 OF 3



SIDE VIEW

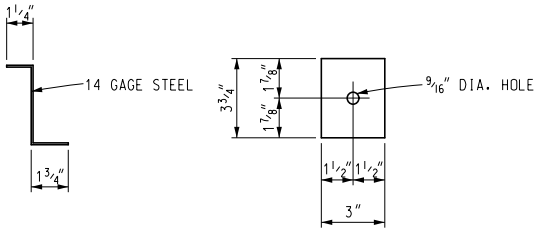
FRONT ELEVATION

TEMPORARY SIGN SUPPORT

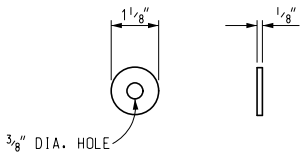
(WARNING LIGHT PLACED ON SIDE CLOSEST TO TRAFFIC)

* SIGN STAND IS BALLASTED WITH FOUR OR MORE 35 LB SANDBAGS. A MINIMUM OF ONE ON EACH END.

UPRIGHTS SHALL NOT EXTEND ABOVE THE SIGN PANEL.



Z-BRACKET DETAIL



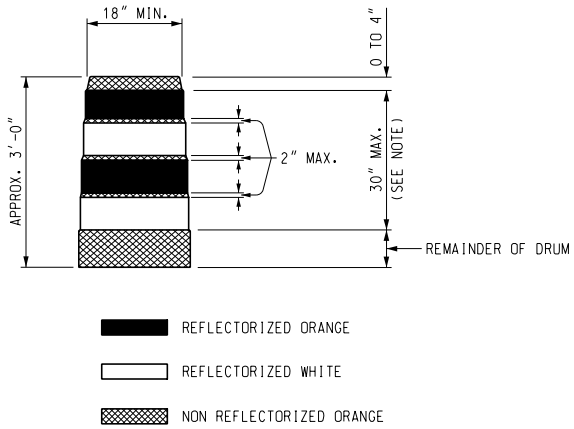
OPTIONAL NYLON WASHER

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

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF FIELD SERVICES SPECIAL DETAIL	SPECIAL DETAIL F.H.W.A. APPROVAL	6/16/22 PLAN DATE	WZD-125-E	SHEET 2 OF 3

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



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

PLASTIC DRUM

NOTES:

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

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

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

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

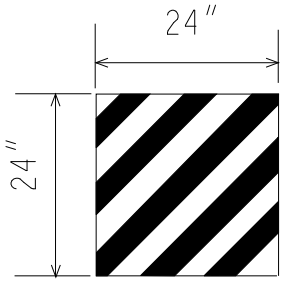
SANDBAGS SHALL BE USED WHEN SUPPLEMENTAL WEIGHTS ARE REQUIRED TO ACHIEVE STABILITY OF THE BARRICADE. THE SANDBAGS SHALL BE PLACED SO THEY WILL NOT COVER OR OBSTRUCT ANY REFLECTIVE PORTION OF THE TRAFFIC CONTROL DEVICE.

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF FIELD SERVICES SPECIAL DETAIL	(SPECIAL DETAIL) F.H.W.A. APPROVAL	6/16/22 PLAN DATE	WZD-125-E	SHEET 3 OF 3

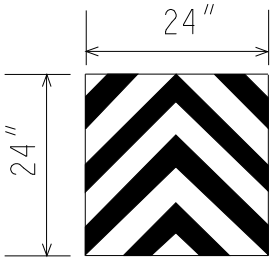
NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.

USE APPROPRIATE SIGN ACCORDING TO CONDITIONS



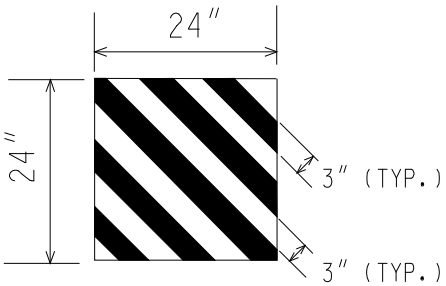
Traffic Passing on Left

OM-3La



Traffic Passing on Both Sides

OM-3Ca



Traffic Passing on Right

OM-3Ra

NOTES:

1. ALTERNATE BLACK 3-INCH AND YELLOW 3-INCH STRIPES AT A 45-DEGREE ANGLE.

2. THE YELLOW STRIPES SHALL MEET ASTM D4956 SPECIFICATIONS FOR TYPE IX RETROREFLECTIVE SHEETING.

3. THE OBJECT MARKER SHALL BE MADE OF 0.040-INCH THICK ALUMINUM.

4. ATTACH OBJECT MARKER TO ATTENUATOR NOSE WITH TWO 5/16-INCH DIAMETER HEX BOLTS, NUTS AND WASHERS (PREFERRED METHOD) OR OTHER METHOD APPROVED BY THE ATTENUATOR MANUFACTURER.

NOT TO SCALE

File: PW:DOC/RD/TS/TYP/SIGNS/WORK ZONE/WZD-150-A.dgn Rev. 10/21/2008 JT

MDOT Michigan Department of Transportation

PREPARED BY TRAFFIC AND SAFETY

DRAWN BY: SCT

CHECKED BY: CT

ENGINEER OF DELIVERY

ENGINEER OF DEVELOPMENT

(SPECIAL DETAIL)

FHWA APPROVAL DATE

BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR

IMPACT ATTENUATOR OBJECT MARKER

09/21/08 PLAN DATE

WZD-150-A

SHEET 1 of 1

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