MICHIGAN DEPARTMENT OF TRANSPORTATION

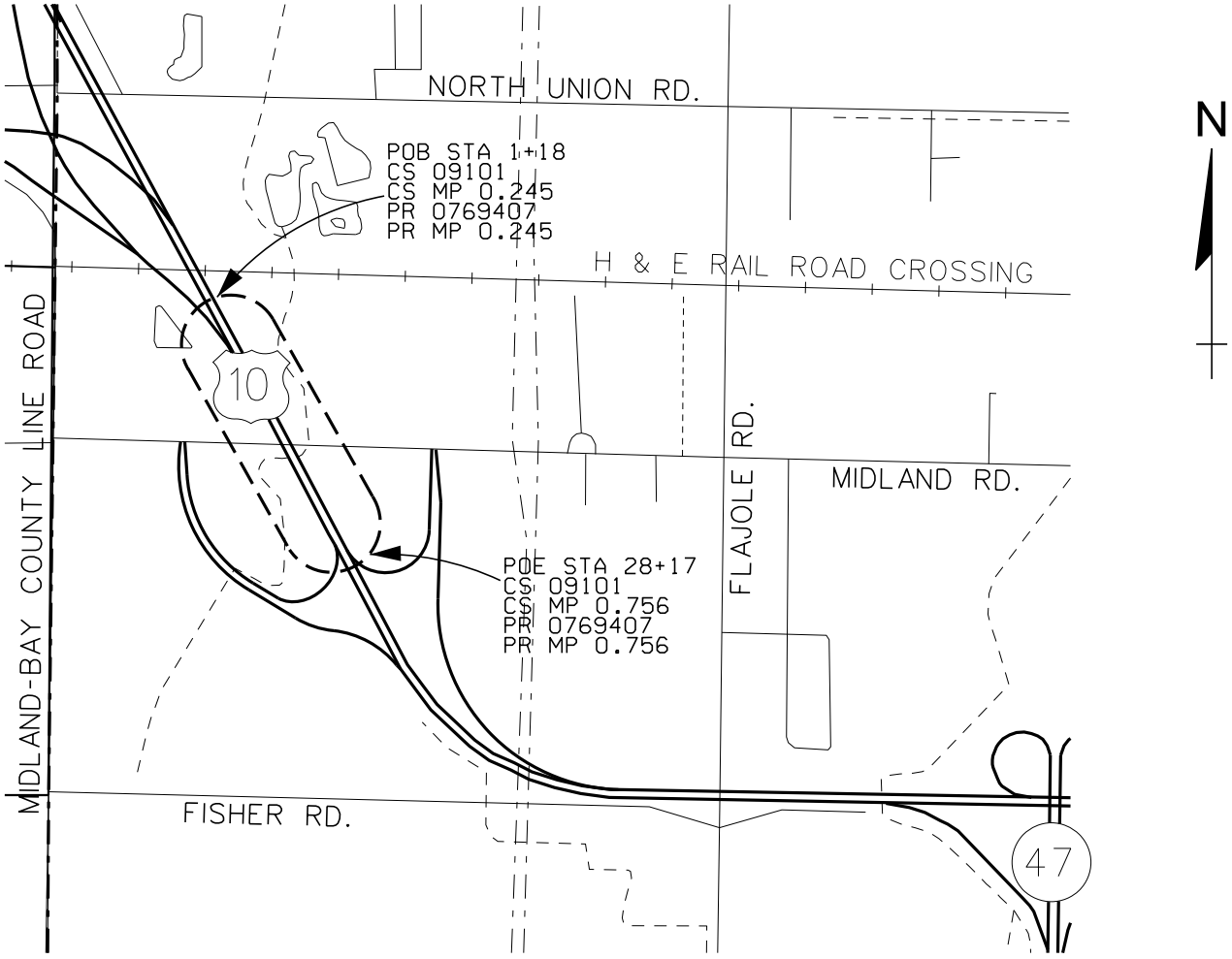
ROUTE: US-10
BAY COUNTY

COUNTY KEY

SECTION	CONTROL SEC	JOB NO.	FED AID PROJ
1	09101		NO

TRAFFIC DATA

ROAD	YEAR	ADT	DHV	COMM	SPEED DATA DESIGN	POSTED	LIMITS
US-10	2024	40279		2859	75	75	POB TO POE



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: 0.51

CONTRACT FOR:
HMA OVERLAY AND PERMANENT PAVEMENT MARKINGS

BRADLEY C. WIEFERICH, P.E. - DIRECTOR

MDOT Michigan Department of Transportation	NO SCALE	DESIGN UNIT: MATULA	TSC: BAY CITY	DATE: 4-14-26
		CS: 09101	US-10 EB (RR TRACKS TO EAST OF EXIT #129)	DRAWING: SHEET
		JN:	HMA OVERLAY	US-10 TITLE 01 / SECT 1
FILE: TITLE SHEET.DGN			TITLE SHEET	

MDOT Maintenance Project Log

General:

This project is a Maintenance funded project, which means that there will be absolutely no overpayment or extras. All material, labor and mobilization shall be included in the bid.

MDOT will have the low bid reviewed and approved for funding. MDOT reserves the right to reject any bid that appears to be unqualified. Before award, MDOT may request a site plan review meeting with the low bid contractor.

All work will be done in accordance with the *Michigan Department of Transportation 2020 Standard Specifications for Construction.*

Project Location:

On Eastbound US-10, from the bridge abutment joint of the Huron & Eastern Railway overpass to the concrete/HMA joint approximately 238 feet past the exit 129 gore point on Eastbound US-10 and including the ramp lane of exit 129 up to the gore point of exit 129, (Bay City Road exit) 0.51 miles in Williams Township, Bay County.

POB (Station 1+18) – approximately 118 feet east of railway centerline (east bridge abutment)

POE (Station 28+17) – approximately 67 feet east of the concrete/HMA joint on EB US-10

Stationing Information:

All stationing information is approximate.

Station 0+00	Centerline of EB US-10 over centerline of railroad tracks.
Station 25+12	Gore 22-foot point of Bay City Road off ramp (exit 129) concrete/HMA joint.
Station 27+50	EB US-10 at concrete/HMA joint past gore 22-foot point area of exit 129.

Project Schedule:

A preconstruction meeting with the contractor will be required at the MDOT Bay City TSC office.

HMA paving work must start on Saturday, June 20, 2026 and be completed by the end of the day on Sunday, June 21, 2026. Work will be done during daylight hours from sunrise to sunset on Saturday and Sunday. Night work will be at Engineer's discretion.

If inclement weather prevents the work from being performed on Saturday, June 20, 2026 and Sunday, June 21, 2026, the alternate dates for the work will be

Saturday, July 25, 2026 and Sunday, July 26, 2026.

Notice must be provided to Dan Senske at 989-233-1053 a minimum of three (3) calendar days prior to beginning work.

Temporary pavement markings will be placed at the end of the day's work, prior to opening to traffic.

Permanent pavement markings must be completed within 7 days of completion of the HMA paving.

Permanent pavement markings must be completed by Monday, June 29, 2026 or Monday, August 3, 2026 based on when the HMA paving takes place.

Description of work:
The work will be a 2" HMA overlay on the existing concrete pavement lanes and shoulders as follows:

1) The three (3) eastbound travel lanes and shoulders of US-10, entire length of the project.

2) One (1) additional ramp lane and shoulder for the eastbound exit ramp 129 (Bay City Road), approximately 1,143 feet.

3) The gore area between the three (3) eastbound US-10 lanes and the exit ramp 129 lane, approximately 645 feet.

An HMA safety edge will be installed next to all gravel shoulders.

Shoulder areas will be swept clean and gravel leveled prior to placement of HMA.

Construction of the butt joints will be placed at the following locations:

1) Between station 1+18 (POB) to 2+18)

2) Bay City Road exit ramp 129, between station 25+12 to 25+79. (approximately 67 feet beyond the concrete/HMA joint)

3) Between station 27+50 to 28+17 (POE) (approximately 67 feet beyond the concrete/HMA joint)

Permanent pavement markings will be installed per section 811 of the *2020 Standard Specifications for Construction* and the attached pavement marking typicals.

Maintaining Traffic:
All traffic control will be provided by MDOT.

Estimated Quantities:

Pay Item	Quantity	Unit	Price/Unit	Cost
Pavt for Butt Joints, Rem	1,069	Syd	_____	_____
HMA, 5EML, High Stress	2,622	Ton	_____	_____
Pavt Mrkg, Polyurea, Merge Arrow Sym	2	Ea	_____	_____
Recessing Pavt Mrkg, Longit	12,420	Ft	_____	_____
Recessing Pavt Mrkg, Transv	94	Sft	_____	_____
Pavt Mrkg, Wet Reflective Sprayable Thermopl, 6 inch, White	1,327	Ft	_____	_____
Pavt Mrkg, Wet Reflective Waterborne, 6 inch, White	3,288	Ft	_____	_____
Pavt Mrkg, Wet Reflective Waterborne, 12 inch, White	2,278	Ft	_____	_____
Pavt Mrkg, Wet Reflective Waterborne, 6 inch, Yellow	3,249	Ft	_____	_____
Pavt Mrkg, Waterborne, 2nd Application, 6 inch, White	3,288	Ft	_____	_____
Pavt Mrkg, Waterborne, 2nd Application, 6 inch, Yellow	3,249	Ft	_____	_____
Pavt Mrkg, Waterborne, 2nd Application, 12 inch, White	2,278	Ft	_____	_____
Pavt Mrkg, Wet Reflective, Type R, Tape, 6 inch, White, Temp	2,700	Ft	_____	_____
Pavt Mrkg, Wet Reflective, Type R, Tape, 6 inch, Yellow, Temp	3,252	Ft	_____	_____
Pavt Mrkg, Wet Reflective, Type R, Tape, 12 inch, White, Temp	1,600	Ft	_____	_____

Total Cost _____

Signature_____ Date _____

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
NON-COMPLIANCE WITH CONTRACT REQUIREMENTS

CFS:LLR 1 of 2 APPR:JJG:LFS:05-23-23
FHWA:APPR:06-15-23

Delete subsection 102.19, on page 1-31 of the Standard Specifications for Construction, in its entirety and replace with the following:

102.19. Contract Non-Compliance

The Engineer will issue non-compliance notices (form 1165) to the Contractor when contract requirements have not been met. Non-compliance notices may be issued at any time during the course of the contract. Notices of non-compliance may include, but are not limited to, the following criteria.

A. Jobsite Safety

B. Prevailing Wage

C. Subcontract

D. Prompt Payment

E. Disadvantaged Business Enterprise

F. Soil Erosion and Sedimentation Control

G. Plans and Specifications

H. Prosecution and Progress

I. Submittals (material testing, certifications, shop drawings, etc.)

J. Work Zone Safety and Mobility

Non-compliance notices may be used as a basis for modifying the prequalification ratings of the Contractor and any tier subcontractor. Any action to modify the Contractor's prequalification ratings will be taken in accordance with the duly promulgated administrative rules for prequalification.

If a Contractor and or any tier subcontractor fails to honor a request by the Engineer to submit a performance improvement plan or to meet to discuss the plan, or if a Contractor or subcontractor at any tier fails to carry out an approved performance improvement plan, that failure may be used as a basis for modifying the prequalification ratings of the Contractor or subcontractor at any tier as applicable. Any action to modify the

Contractor’s prequalification ratings will be taken in accordance with the duly promulgated administrative rules for prequalification.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
SWEEPING

DES:DBP 1 of 1 APPR:MRB:JJG:03-31-20
FHWA:APPR:04-03-20

a. Description. This work consists of sweeping pavements in the construction area, including service roads and cross streets, as directed by the Engineer.

b. Equipment. Provide a self-propelled or towed street sweeper equipped with pickup attachments and curb brushes.

c. Sweeping. Sweep paved surfaces as often as necessary as directed by the Engineer.

Ensure paved roadbeds are given a final cleaning within 5 working days prior to opening the pavement surface to traffic or notification by the Contractor that the work is completed, whichever occurs first.

d. Measurement and Payment. The work of sweeping will not be paid for separately, but payment will be considered as having been included in other pay items in the contract.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
PROMPT PAYMENT

CFS:JJG 1 of 4 APPR:LFS:DBP:03-27-20
FHWA:APPR:03-30-20

Add the following subsection to section 109, of the Standard Specifications for Construction:

109.08 Prompt Payment.

A. **Definitions.**

Lower-tier subcontract. An agreement between a subcontractor of any tier and any individual or legal entity to perform a part of the subcontract work.

Lower-tier subcontractor. The individual or legal entity that performs part of the subcontract work through a lower-tier subcontract with a subcontractor.

Supplier. The individual or legal entity that agrees to provide materials or services to the prime Contractor, a subcontractor, or a lower-tier subcontractor for the performance of their contract work.

Sworn Statement. A written verification under oath reflecting all persons or entities, which have furnished labor, equipment, services or materials to a subcontractor or lower-tier subcontractor for performance of work on the project. The written verification includes union fringe benefit funds, original contract amount, current amount due, amounts paid to date and balance to finish the work for each person or entity.

Waiver of Lien. A written release and waiver of any claim or right to payment for payments actually received for labor, equipment, services or materials furnished for performance of work on the project.

The sworn statement and waiver of lien documents are used by the prime Contractor and its subcontractors for verifying payments made to lower-tier subcontractors/suppliers and are not to be submitted to the Engineer unless requested as an aid in determining an alleged prompt payment violation. These documents can be found at the following website.

https://mdotjboss.state.mi.us/webforms/WebFormsHome.htm

B. **Progress Payments.** For the first payment, or for a one time payment, the prime Contractor agrees to pay each subcontractor for the work associated with their subcontract no later than 10 calendar days from the date the prime Contractor receives payment from the Department.

For the second and subsequent payments, the prime Contractor agrees to pay each

subcontractor for the work associated with their subcontract no later than 10 calendar days from the date the prime Contractor receives payment from the Department.

The Contractor is required to provide payment information for previous payments made to all first tier subcontractors and all DBE companies (sub-subcontractors, suppliers, truckers, etc.) at any tier before the Engineer will release the third and subsequent estimates. For all subsequent progress pay estimates if 1) the Engineer payment does not include any first tier subcontractors or any DBE company payments at any tier, and 2) the previously submitted payment reporting information remains unchanged, then payment reporting in the system is not required. Reporting is required when the prime Contractor makes payments to any first tier subcontractors and any DBE companies at any tier. The payment information is provided through submittal of the information via the 2124A reporting system (MERS). System information can be found at the following web link.

https://milogin.michigan.gov/eai/login/authenticate?URL=/

The prime Contractor must bring any concerns about the satisfactory completion of subcontractor or lower-tier subcontractor work items, to the Engineer's attention as soon as the concern is discovered. If the work meets the requirements of satisfactory completion and the prime Contractor has been paid for that work, the Engineer must determine whether:

1. The prime Contractor has demonstrated a valid reason for withholding payment from the subcontractor or supplier, or

2. The subcontractor has demonstrated a valid reason for withholding payment from the lower-tier subcontractor or supplier.

If the Engineer determines the reason for withholding payment is valid, the Engineer will process a negative estimate to withdraw the amount involved in the complaint. If payment has not been made for the work related to the complaint, the Engineer will not include those items of work on an estimate until the issue has been resolved.

The prime Contractor remains responsible to make prompt payments on this project to their subcontractors and suppliers except as noted in subsection 109.08.D of this special provision, even if the prime Contractor is in violation of other contractual obligations and the Department is withholding payment from the prime Contractor for those violations.

The prime Contractor must include language in all subcontracts that the Department prohibits prime Contractors from holding retainage from subcontractors. All provisions of this prompt payment subsection apply to all subcontracts, lower-tier subcontracts, and supplier agreements and must be included in each subcontract for the contract, including all lower-tier subcontracts and agreements.

This prompt payment provision is a requirement of 49 CFR 26.29 and does not confer third-party beneficiary rights or other direct rights to a subcontractor against the Department. This provision applies to both DBE and non-DBE subcontractors/suppliers at all tiers.

C. **Satisfactory Completion.** Progress and partial payments for contract work are issued based on the satisfactory completion of work. Satisfactory completion, for purposes of this prompt payment provision, is defined as:

1. Upon preliminary review, the Engineer finds the work completed in accordance with the contract, plans, and specifications; and,

2. Required documentation, including material certifications, payrolls, submission of 2124A, etc., has been received and reviewed and found to be acceptable by the Engineer; and,

3. Required subcontractor sworn statements and waivers of lien have been provided to the prime Contractor. The prime Contractor must provide notice to the Engineer if sworn statements and waivers of lien have not been received for completed work.

The Engineer will determine if the work meets the standards of satisfactory completion.

D. **Less than full payment release.** The Engineer may give written approval to:

1. Delay or postpone payment from the time frames specified herein,

2. Process partial payment from the prime Contractor to a subcontractor or supplier,

3. Process partial payment from a subcontractor to a lower-tier subcontractor or supplier.

The unpaid portion will be held by the Department.

The parties may initiate whatever dispute resolution procedure is specified in their agreement or is available under Michigan law. If dispute resolution or litigation is selected, the actions by both parties must proceed in a timely manner. The result of the dispute resolution proceeding or litigation must be provided to the Engineer promptly upon the conclusion of the proceeding. The Engineer will release the disputed payment being held by the Department in accordance with the outcome of the proceedings.

E. **Non-Payment Claims.** The prime Contractor, subcontractor, lower-tier subcontractor or supplier must notify the alleged offending party in writing of any prompt payment violations within 30 calendar days of the date the payment was to be received. Copies of the notifications must be provided to the Engineer and the prime Contractor (only if the prime Contractor is not the offending party).

The alleged offending party must respond in writing to the claimant within 10 calendar days of receipt of the notification of failure to meet prompt payment provisions. Provide copies of the response to the Engineer, the prime Contractor (only if the prime Contractor is not the offending party), and the Engineer of Construction Field Services. The prime Contractor, subcontractor, or supplier must also provide the required sworn statements and waivers of lien from the affected subcontractor or supplier to the Engineer within 10 days of receipt of the notification. The Department will consider the failure of the alleged offending party to respond to the notification from the claimant as an admission of the prompt pay violation which may result in sanctions.

The Engineer will review the written notice and response and will verify in writing if there is a valid prompt pay violation.

Independent of all procedures and requirements in this special provision the non-payment claimant has the additional option of submitting a lien claim to the MDOT Contract Services Division. MDOT will notify the project surety of the non-payment issue. It is the responsibility

of the surety to ensure that all legitimately due payments are made. The submission of a lien claim will not nullify or affect any other requirements, obligations or procedures in this special provision.

F. **Remedies**. When the Engineer verifies a prompt payment violation, the prime Contractor within 5 days must propose one or a combination of any of the following actions items for review and approval by the Engineer:

1. Issue payment to the subcontractor.

2. Issue payments to a subcontractor in the form of joint checks to the subcontractor and the subcontractor's lower-tier subcontractors and/or suppliers.

3. Issue payment directly to the subcontractor's lower-tier subcontractors or suppliers.

4. Request a negative estimate to withdraw the amount confirmed in the prompt payment violation.

If the prime Contractor fails to submit a timely remedy request or obtain an approved course of action within the 5 day time period, the Engineer will direct a course of action or issue a negative estimate to withdraw the amount confirmed in the prompt payment violation.

If the prime Contractor fails to fulfill the approved or directed course of action the Engineer will impose sanctions until such time as the approved or directed course of action is completed.

Any payments to a subcontractor's lower-tier subcontractor or supplier will be issued in the amounts reflected upon the subcontractor's sworn statements or in amounts independently verified by the Engineer as being due the subcontractor's lower-tier subcontractors and suppliers for work completed. Payments to a lower-tier subcontractor or supplier will be considered payment to the subcontractor directly so that payment for the same work cannot be claimed.

Any other use of joint checks must follow current Department procedures.

G. **Sanctions.** Failure to comply with any of the prompt payment requirements by the prime Contractor, subcontractor, lower-tier subcontractor, or supplier may result in sanctions against the offending party. These sanctions may include, but are not limited to: withholding of estimates on projects where prompt payment violations are confirmed; reduction or removal of prequalification; and/or suspension of bidding privileges.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
RECYCLED TIRE RUBBER MODIFIED HOT MIX ASPHALT MIXTURES
PERMISSIVE USE

CFS:KPK 1 of 2 APPR:JWB:CJB:03-04-20
FHWA:APPR:03-13-20

a. Description. Substitution of recycled tire rubber for part of the new materials required to produce the hot mix asphalt (HMA) is acceptable when done as described herein. This work consists of furnishing and placing HMA recycled tire rubber (RTR) mixture(s) using Superpave mix design methods. Furnish Superpave HMA RTR mixtures in accordance with section 501 of the Standard Specifications for Construction, except as modified herein. No deviations to acceptance test methods/procedures will be allowed. This special provision includes mix specifications for recycled tire rubber terminal blend (RTRTB). Supply a RTRTB modified binder.

b. Mix Design. Furnish an HMA mixture design for the HMA RTR mixtures specified to the Engineer and to the HMA Operations section at Construction Field Services. The submitted designs will be evaluated in accordance with the *HMA Production Manual*, Procedures for HMA Mix Design Processing. Provide the manufacturers recommended mixing temperature for the rubber modified binder.

c. Recycled Mixtures. The Contractor may substitute reclaimed asphalt pavement (RAP) for a portion of the new materials required to produce HMA mixture. RAP percentage will not exceed Tier 1. Recycled asphalt shingles (RAS) will not be allowed in HMA RTR mixtures. The mixture will be designed and produced to meet all of the criteria herein.

d. Materials. Furnish modified Superpave HMA recycled tire rubber mixtures consisting of aggregates of the highest quality available to meet the minimum specifications herein. Furnish a mix design in accordance with the standard specifications.

1. Aggregates. Furnish aggregates free of topsoil, clay, and loam for use in plant mixed HMA mixtures. For RTRTB the gradation must meet the requirements for the designated superpave mix per the standard specifications.

2. Recycled Tire Rubber. Furnish RTR composed of recycled scrap tires free from metal and other contaminants.

Furnish samples of RTRTB binders to the Engineer for performance evaluation.

A. Recycled Tire Rubber Terminal Blend (RTRTB) Method. Furnish RTRTB binder as described herein.

Furnish RTRTB modified asphalt cement binder meeting the requirements and the properties of this specification and section 904 of the Standard Specifications for Construction.

e. Quality Control, Sampling for Performance Testing, and Acceptance of Modified HMA Mixtures. The special provisions 20SP-501R - Superpave Hot Mix Asphalt Percent Within Limits and/or 20SP-501S - Superpave Hot Mix Asphalt Percent Within Limits for Capital Preventive Maintenance Mill & Resurface Projects and One Course Overlay Projects will apply except as modified herein.

Asphalt Binder Content will be determined by the ignition method. Vacuum extraction will not be allowed.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
RECYCLED HOT MIX ASPHALT AND RECYCLED ASPHALT SHINGLES IN SUPERPAVE MIXTURES

CFS:KPK 1 of 3 APPR:CJB:JWB:02-26-20
FHWA:APPR:03-02-20

Delete the first paragraph of subsection 501.02.A.2 of the Standard Specifications for Construction in its entirety and replace it with the following:

2. **Recycled Mixtures.** Substitution of reclaimed asphalt pavement (RAP) and/or recycled asphalt shingles (RAS) for part of the new materials required to produce the HMA is acceptable as described in the following subsections. Produce the mixture in accordance with subsection 501.02.C. Inclusion of RAP and/or RAS in the mixture will not change the contract unit price.

Add the following subsection to subsection 501.02.A.2 of the Standard Specifications for Construction.

c. Reclaimed Asphalt Pavement, Recycled Asphalt Shingles, and Binder Grade Selection. The method for determining the binder grade in HMA mixtures incorporating RAP and/or RAS is divided into three categories designated Tier 1, Tier 2 and Tier 3. Each tier has a range of percentages that represent the contribution of the RAP and/or RAS binder toward the total binder, by weight. The tiers identified below apply to Superpave mixtures.

Ensure Superpave mixture types EML, EML High Stress, EMH, EMH High Stress, EH, and EH High Stress used as leveling or top course are limited to a maximum of 27 percent RAP or RAP/RAS binder by weight of the total binder in the mixture.

RAP and/or RAS will not be allowed in Asphalt Stabilized Crack Relief Layer mixtures.

RAS materials must not contribute more than 17 percent by weight of the total binder content for any HMA mixture.

The Contractor may substitute RAP and/or RAS for a portion of the new materials required to produce HMA mixture. RAS are defined as processed asphalt shingle material from manufacturing of asphalt roofing shingles or from tear-off shingles from residential structures. Use of post-manufacture RAS or post-consumer RAS is permitted. “Post-consumer RAS”, or “tear-offs”, are processed shingle scrap removed from residential structures. RAS must comply with all regulatory requirements. Ensure RAS is stockpiled separately from other materials and is separated into post-consumer RAS and post-manufacture RAS stockpiles. RAS may be blended with up to 20 percent fine aggregate during processing as shown on the mix design to avoid clumping and allow proper metering of the material from feed bins. Blended RAS and fine aggregate will be

considered the final RAS product and not a fine aggregate product. Process the RAS by ambient grinding or granulating such that 95-100 percent of the particles pass the 3/8 inch size sieve and 90-100 percent of the particles pass the No. 4 sieve.

RAP and/or RAS may be used as a substitute for a portion of the new materials required to produce HMA mixtures in accordance with contract. When using RAS the percent of AC in the RAS will be determined by solvent vacuum extraction and the frequency of QC testing will be one test per 250 tons. Ensure the percentages of RAP and/or RAS are as specified on the Mix Design and Job Mix Formula.

RAS must not contain extraneous waste materials. Ensure extraneous materials including, but not limited to, asbestos, metals, glass, rubber, nails, soil, brick, tars, paper, wood, cellulose mat, and plastics are removed by hand and must not exceed 1.5 percent by weight as determined on material retained on the No. 8 sieve. To conduct deleterious material testing, a representative 500-700 gram sample of processed shingle material is sieved on the No. 8 sieve and any extraneous waste material retained on the No. 8 sieve is picked and weighed. (If RAS is processed to pass the No. 8 Sieve a visual inspection of the raw material may be used to determine if extraneous material exists. Any raw material pile found to have any extraneous material will be rejected. The rejected pile may be used for processing provided the extraneous material is completely removed and re-inspected before further processing.) The frequency of QC testing will be one test per 250 tons of shingles. The percent extraneous is based on the total sample weight. RAS must contain less than the maximum percentage of asbestos fibers based on testing procedures and frequencies established by state or federal environmental regulatory agencies.

Ensure RAP and RAS are stockpiled separately and fed to the plant by separate feed systems capable of metering at the design rate.

- **Tier 1 (0 percent to 17 percent RAP and/or RAS binder by weight of the total binder in the mixture).** No binder grade adjustment is required to compensate for the stiffness of the asphalt binder in RAP and/or RAS. The asphalt binder grade can be selected using a blending chart for high and low temperatures. Supply the blending chart used in determining the binder selection according to *AASHTO M323*.

- **Tier 2 (18 percent to 27 percent RAP or RAP/RAS binder by weight of the total binder in the mixture).** Ensure when incorporating only RAP, the required asphalt binder grade is at least one grade lower for the low temperature than the design binder grade required for the specified project mixture type. Lowering the high temperature of the binder one grade is optional. For example, if the design binder grade for the mixture type is PG 58-22, the required grade for the binder in the HMA mixture containing RAP would be a PG 52-28 or a PG 58-28.

No binder grade change will be required in Tier 2 for all shoulder and temporary road mixtures.

No binder grade change will occur for Tier 2 EL mixtures used as leveling or top course.

When incorporating RAS the asphalt binder grade will be selected using a blending chart for high and low temperatures. The Contractor must supply the blending chart used in determining the binder selection according to *AASHTO M323* and the *HMA Production Manual*.

When incorporating only RAP the asphalt binder grade can also be selected using a blending chart for high and low temperatures. The Contractor must supply the blending chart used in determining the binder selection according to *AASHTO M323*.

- **Tier 3 (≥ 28 percent RAP or RAP/RAS binder by weight of the total binder in the mixture).** The binder grade for the asphalt binder is selected using a blending chart for high and low temperatures. The Contractor must supply the blending chart and the RAP/RAS test data used in determining the binder selection according to *AASHTO M323* and the *HMA Production Manual*.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
SAFETY EDGE

CFS:KPK 1 of 2 APPR:NDM:CRB:02-13-24
FHWA:APPR:02-27-24

a. Description. This work consists of providing a safety edge for either HMA or concrete shoulders as required on the plans and as shown on Standard Plan R-110 Series.

b. Materials. Furnish materials meeting the requirements of the following sections of the standard specifications:

Hot Mix Asphalt 501
Concrete Pavement.....602

c. Construction.

1. HMA. Construct the safety edge in accordance with subsection 501.03.F.5.

2. Concrete. Construct the safety edge on the shoulders at locations as shown on the plans. The finished shape of the safety edge will be in accordance with Standard Plan R-110 Series. Ensure the safety edge is constructed monolithically with the shoulder and is of the same material type. Prior to placing concrete shoulder overlays, prepare the existing shoulder material to provide a smooth and uniform paving surface. Excavate, trench and/or shape the existing shoulder material in order that the safety edge may be placed as required on the plans. Ensure the existing material does not impede the paving equipment and placement of concrete material. For new or reconstructed shoulders prepare base materials in accordance with the plans.

Ensure the paver screed is modified or equipped to create a finished sloped wedge in accordance with the contract typical details. Hand work may be allowed for short distances when use of production equipment is not possible.

d. Measurement and Payment.

Delete subsection 501.04.J, on page 5-25 of the Standard Specifications for Construction in its entirety and replace with the following:

J. **Safety Edge**. All costs associated with providing a safety edge as described in this special provision and the contract including base preparation and additional equipment or modification to existing equipment will be included in the applicable unit prices for the related HMA shoulder mixture pay items. If the corresponding shoulder pay item is paid for in tons, the additional quantity placed for the safety edge should be paid in tons. If the corresponding shoulder pay item is paid for in square yards, the additional quantity for the safety edge should be paid for using the corresponding shoulder pay item with no reduction in pay for the decreased thickness of the safety edge (The unpaved triangular area above the safety edge

slope, from the outer edge of the paved shoulder to the outer edge of the safety edge, will be included in this payment). Area payment limits extend to the outer edge of the safety edge.

Add the following subsection 602.04.G, on page 6-26 of the Standard Specifications for Construction.

G. **Safety Edge**. All costs associated with providing a safety edge as described in this special provision and the contract including base preparation and additional equipment or modification to existing equipment will be included in the applicable unit prices for the related concrete shoulder pay items. If the corresponding shoulder pay item is paid for in cubic yards, the additional quantity placed for the safety edge should be paid in cubic yards based on the actual volume placed. If the corresponding shoulder pay item is paid for in square yards, the additional quantity for the safety edge should be paid for using the corresponding shoulder pay item with no reduction in pay area for the decreased thickness of the safety edge (The unpaved triangular area above the safety edge slope, from the outer edge of the paved shoulder to the outer edge of the safety edge, will be included in this payment). Area payment limits extend to the outer edge of the safety edge.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
WET REFLECTIVE WATERBORNE AND WET REFLECTIVE SPRAYABLE THERMOPLASTIC

PMK:MKB 1 of 2 APPR:GJD:KJK:03-17-25
FHWA:APPR:03-17-25

a. Description. This work consists of furnishing and installing wet reflective (WR) optics and liquid applied pavement marking materials.

b. Materials.

1. WR Optics. Select WR optics from the Qualified Products List (QPL) (920.03) or a Department approved alternative that meets the requirements in Table 1:

Table 1: WR Markings

Average Initial Retroreflectivity at 30 meter geometry in mcd/lux/m^2		
Test Method	Color	
	White	Yellow
Dry (*ASTM E1710*)	700	500
Wet Recovery (*ASTM E2177*)	300	225
Wet Continuous (*ASTM E2832*)	250	200

Ship the material to the job site in sturdy containers marked in accordance with subsection 920.01.A of the Standard Specifications for Construction.

Prior to the start of work, submit to the Engineer certification from the Manufacturer that when applied in accordance with their application recommendations the WR optics meet the requirements shown in Table 1 above.

2. Binder. Furnish a liquid pavement marking product of the binder type specified in the contract from section 811 of the QPL or as specified by special provision, or use an alternative binder as approved by the Engineer.

c. Construction. For WR waterborne, place the binder material at a thickness of 18 mils while driving at a maximum rate of 8 mph. When a double drop is used, drop WR optics from the forward-most bead applicator gun and drop standard glass beads from the rear bead applicator gun as directed by the Manufacturer to achieve the values in Table 1. If a single drop is used, the optic may be a blend of optics or a single optic. Drop the single optic from the forward-most bead applicator gun at a rate directed by the Manufacturer to achieve the values in Table 1.

For WR sprayable thermoplastic, place the binder material at a thickness of 60 mils while driving at a maximum rate of 10 mph. When a double drop is used, drop WR optics from the forward-most bead applicator gun and drop standard glass beads from the rear bead applicator gun as

directed by the Manufacturer to achieve the values in Table 1. If a single drop is used, the optic may be a blend of optics or a single optic. Drop the single optic from the forward-most bead applicator gun at a rate directed by the Manufacturer to achieve the values in Table 1. While placing the WR sprayable thermoplastic, another follow truck is needed in addition to what is shown on the Pavement Marking Convoy Typicals.

d. Measurement and Payment. The completed work, as described, will be measured and paid for per subsection 811.04 of the Standard Specifications for Construction.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
PAVEMENT MARKING EQUIPMENT

PMK:MKB 1 of 2 APPR:MWB:DBP:06-07-23
FHWA:APPR:06-20-23

Delete subsection 811.03.A on page 623 of the Standard Specifications for Construction in its entirety and replace it with the following:

A. **Equipment.** Provide self-propelled equipment certified by the Department in accordance with MDOT's *Equipment Certification Guidelines – Pavement Markings* for longitudinal striping on roadways. Certification is effective for 2 years. The Engineer may approve other equipment for special markings, parking lots, or areas inaccessible to self-propelled pavement marking equipment.

Apply longitudinal lines using certified self-propelled pavement marking equipment equipped with at least two binder tanks (plus a third catalyst tank for plural component materials) each having a capacity of at least 100 gallons and, if a double drop of two different optics is required, at least two optics tanks that may be utilized at the same time and have enough capacity to match the operating duration of 100 gallon binder tanks. Operate marking equipment at no greater than the certified speed. The Engineer will assume that a striper operating above the certified working speed has operated at that speed for the entire day.

The Department may inspect the equipment at any time.

Use equipment capable of uniformly applying material to the required length and width.

Combination lines (double solid, solid and broken, double broken) must be placed in a single pass utilizing a multi-gun system. If the project calls for 4-inch width centerlines, provide equipment for placing centerlines equipped to apply three 4-inch-minimum-width lines on a two-lane road in one pass. If applying multiple centerlines, use three spray guns positioned 6 inches on center. If the project calls for 6-inch width centerlines, provide equipment for placing centerlines equipped to apply two 6-inch-minimum-width lines on a two-lane road in one pass. If applying multiple centerlines, use two spray guns positioned 10 inches on center. For two-lane freeways, apply the lane line from the left lane. For freeways with at least three lanes, apply the right lane line with the right edgeline when the right lane line and edgeline are the same material.

Use an easily adjusted, dashing mechanism to retrace existing lane or centerline markings.

Use a self-propelled pavement marker equipped to mark pavement in either direction on a roadway. Provide equipment setup to apply markings off both sides of the truck simultaneously when not striping in a recess. The driver's side carriage must be equipped with a dedicated white gun along with the yellow guns. The truck must also be

equipped with blowers in front of the gun carriages with the air supply produced by a minimum 185 cfm compressor. If striping contraflow to traffic, a lane closure must be utilized. Use a continuous skip cycle. Do not zero or return the cycle control unit to the beginning or start of a new cycle.

Provide a distance meter to measure the length of each line.

The Engineer may check the calibration of metering devices at any time. If the Engineer determines that the equipment is unsatisfactory, use other methods approved by the Engineer.

Use equipment for placing hot-applied thermoplastic and sprayable thermoplastic material that can maintain the temperature recommended by the material manufacturer.

Allow time for the Engineer to inspect traffic control devices as shown in MDOT's *Pavement Marking Convoy Typicals* or the project plans prior to marking applications and make any corrections as directed by the Engineer before continuing. If applying markings on a roadway closed to traffic, the traffic control devices specified in MDOT's *Pavement Marking Convoy Typicals* are not required, unless otherwise directed by the Engineer.

The equipment must have the following minimum safety equipment: a backup camera; strobes on the front, rear and midpoint of the truck bed; flood lights for night work; and flashers on the gun carriages.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
RECESSED PAVEMENT MARKINGS

PMK:MKB 1 of 1 APPR:MWB:DBP:11-09-23
FHWA APPR:11-20-23

Delete subsection 811.03.G.1 on page 8-69 of the Standard Specifications for Construction in its entirety and replace it with the following:

1. **Grooving Concrete and Hot Mix Asphalt Pavement.** If there are no markings on the pavement, it is the Contractor's responsibility to layout and groove exactly where the permanent markings will be placed. If there are temporary painted pavement markings in the correct location, use these lines as a template for the grooving operation. If there are existing permanent pavement markings in place, remove them in accordance with subsection 812.03.F prior to grooving operations. The removal of any existing pavement markings will be paid for separately.

   Use equipment and methods approved by the manufacturer of the pavement marking material to be recessed for forming grooves in pavement surfaces. Dry-cut the grooves in a single pass using self-vacuuming equipment capable of producing a finished groove ready for pavement marking material installation. Utilize stacked diamond cutting heads on all new HMA and PCC surfaces. Substituting polycrystalline diamond (PCD) cutting heads is allowable for HMA and PCC pavements that have been in place for over 1 year and on high friction surfacing installations of any age.

   Ensure that the bottom of the groove has a fine corduroy finish. If a coarse tooth pattern results, increase the number of blades and decrease the spaces on the cutting head until the required finish is achieved.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
WET REFLECTIVE PAVEMENT MARKINGS

PMK:MKB 1 of 1 APPR:MWB:DBP:11-09-23
FHWA:APPR:11-20-23

Delete subsection 920.02.C on page 9-170 of the Standard Specifications for Construction in its entirety and replace it with the following:

C. **General Requirements for Wet Reflective Optics.** For surface applications or retracing over existing pavement markings select wet reflective optics from the Qualified Products List or a Department-approved alternative that meets or exceeds the retroreflectivity requirements specified in Table 920-3. When installing wet reflective pavement markings in a new recess, select wet reflective optics from one of the below products.

3M, Connected Roads All Weather Elements Series 50/51
3M, Reflective Elements Series All Weather 50/51

Prior to application, submit certification from the wet reflective optics manufacturer that when applied according to the manufacturer's application recommendations, the wet reflective optics meet the requirements in Table 920-3.

Table 920-3:
General Wet Reflective Requirements: Average Initial Retroreflectivity at 30-meter Geometry in mcd/lux/m2

Test Method	Color	
	White	Yellow
Dry (*ASTM E1710*) for cold plastic, polyurea, waterborne, regular dry, and sprayable thermoplastic	700	500
Dry (*ASTM E1710*) for all other materials	550	350
Wet Recovery for all materials (*ASTM E2177*)	300	225
Wet Continuous for all materials (*ASTM E2832*)	250	200

Initial retroreflectivity is defined as readings taken no earlier than 7 days and no later than 30 days after material placement.

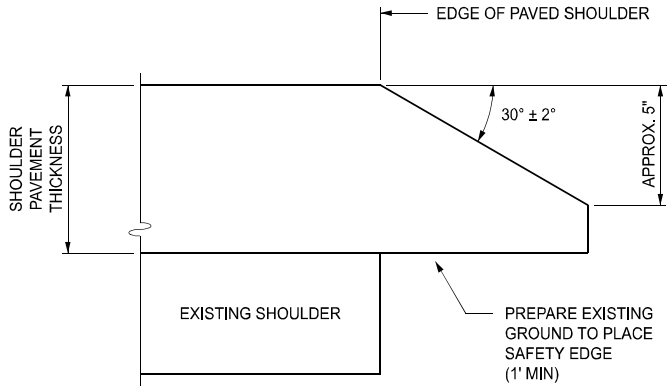
MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
PAVEMENT MARKING SHELF LIFE

PMK:MKB 1 of 1 APPR:GJD:KK:04-05-24
FHWA:APPR:04-08-24

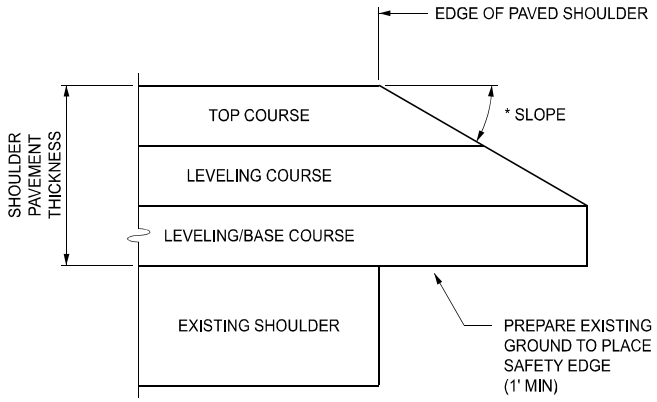
Delete the fourth paragraph of section 920.01 on page 9-168 of the Standard Specifications for Construction, in its entirety and replace it with the following:

Use both liquid and solid applied pavement marking materials within the shelf life directed by the manufacturer. Provide certification that liquid and solid applied pavement marking materials have been stored per the manufacturer's requirements. Materials not in compliance will be rejected and removed at the Contractor's expense.

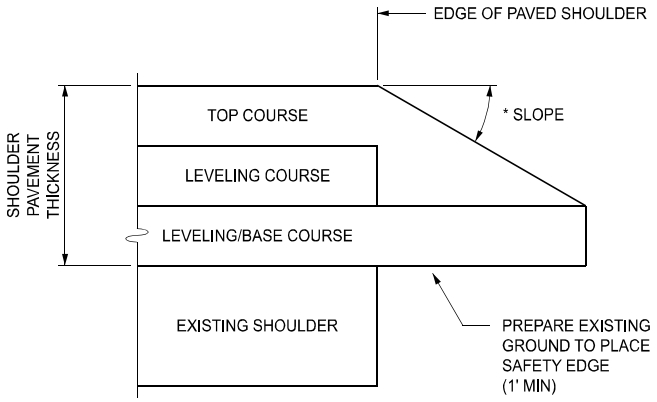


SAFETY EDGE FOR CONCRETE PAVEMENT

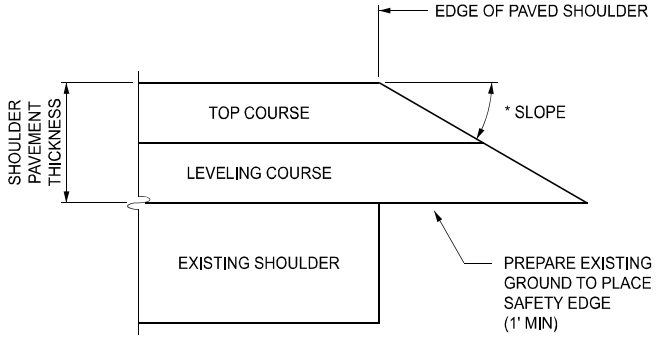
OVERLAY



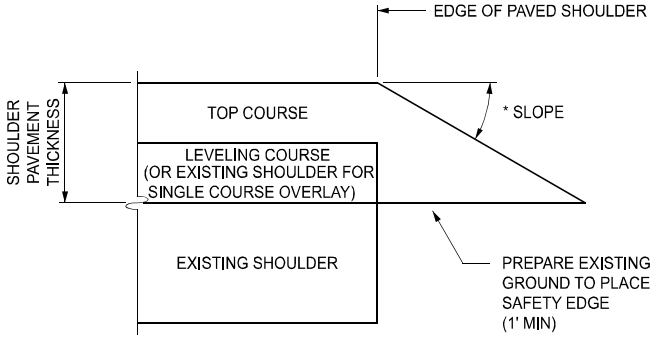
CONFIGURATION 1 FOR
PAVEMENT THICKNESS GREATER THAN 5"



CONFIGURATION 2 FOR
PAVEMENT THICKNESS GREATER THAN 5"



CONFIGURATION 1 FOR
PAVEMENT THICKNESS 5" OR LESS



CONFIGURATION 2 FOR
PAVEMENT THICKNESS 5" OR LESS

* THE RANGE FOR SLOPE IS:
29° MINIMUM
30° DESIREABLE
40° MAXIMUM

SAFETY EDGE FOR HMA PAVEMENT

OVERLAY

APPROVED BY: E-SIGNED by JASON GUTTING on 2024-09-24 12:56:51 EDT
DIRECTOR, BUREAU OF FIELD SERVICES

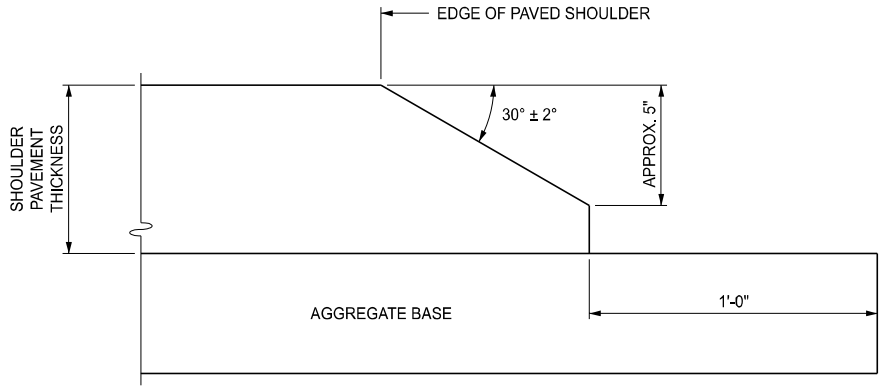
APPROVED BY: E-SIGNED by Demetrius Parker on 2024-09-24 09:52:12 EDT
DIRECTOR, BUREAU OF DEVELOPMENT

MDOT Michigan Department of Transportation

DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

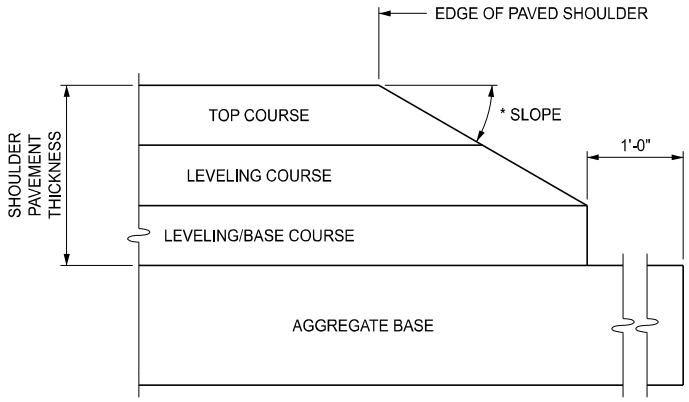
STANDARD PLAN FOR
PAVEMENT SAFETY EDGE

12/18/2024	04/30/2024	R-110-B	SHEET
FHWA APPROVAL	PLAN DATE		1 OF 3



SAFETY EDGE FOR CONCRETE PAVEMENT

NEW CONSTRUCTION / RECONSTRUCTION



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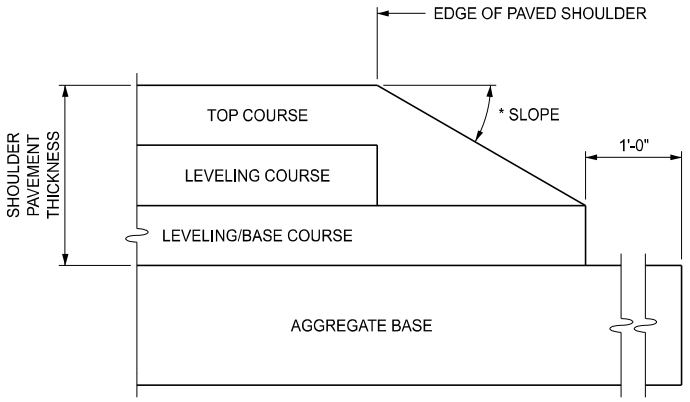
PAVEMENT THICKNESS GREATER THAN 5"



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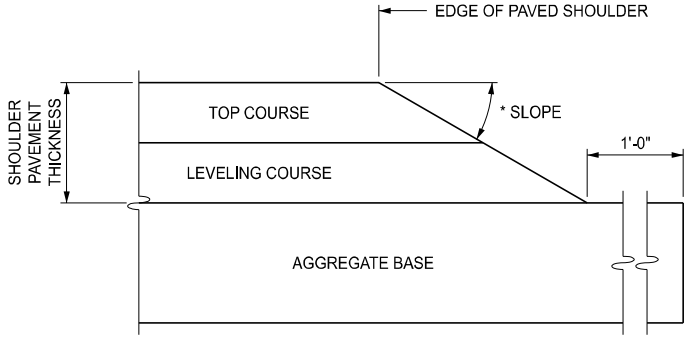
PAVEMENT THICKNESS GREATER THAN 5"



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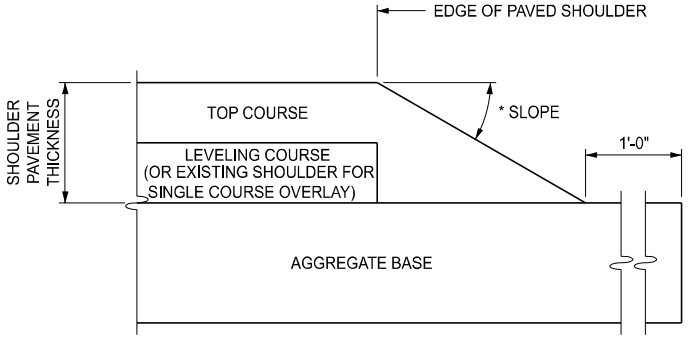
PAVEMENT THICKNESS 5" OR LESS



CONFIGURATION 2 FOR
PAVEMENT THICKNESS 5" OR LESS

* THE RANGE FOR SLOPE IS:
29° MINIMUM
30° DESIREABLE
40° MAXIMUM

SAFETY EDGE FOR HMA PAVEMENT

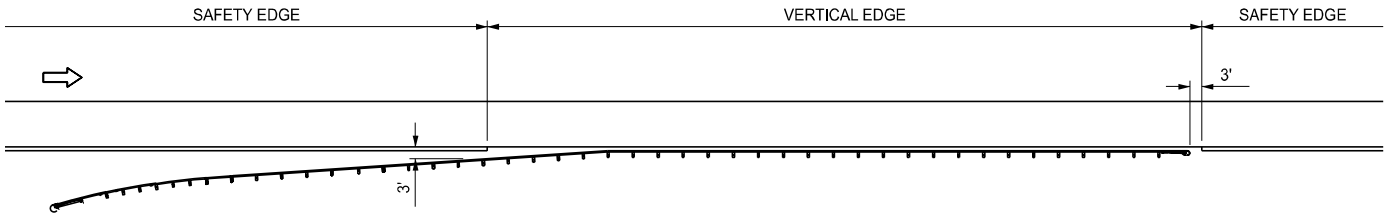
NEW CONSTRUCTION / RECONSTRUCTION

MDOT
Michigan Department of Transportation

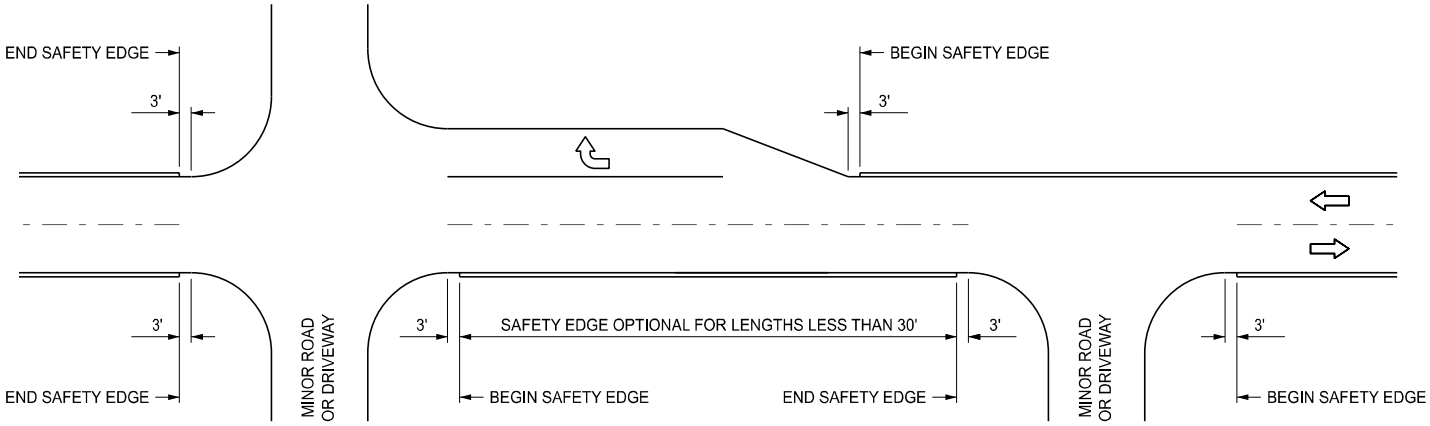
DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

STANDARD PLAN FOR
PAVEMENT SAFETY EDGE

12/18/2024	04/30/2024	R-110-B	SHEET
FHWA APPROVAL	PLAN DATE		2 OF 3



SAFETY EDGE TREATMENT AT GUARDRAIL



SAFETY EDGE TREATMENT AT INTERSECTIONS AND DRIVEWAYS

NOTES:

TERMINATE SAFETY EDGE ON OUTSIDE FREEWAY SHOULDERS PRIOR TO RAMP SHOULDER TRANSITIONS AND CONTINUE WHERE FULL MAINLINE SHOULDER RESUMES.

MDOT
Michigan Department of Transportation

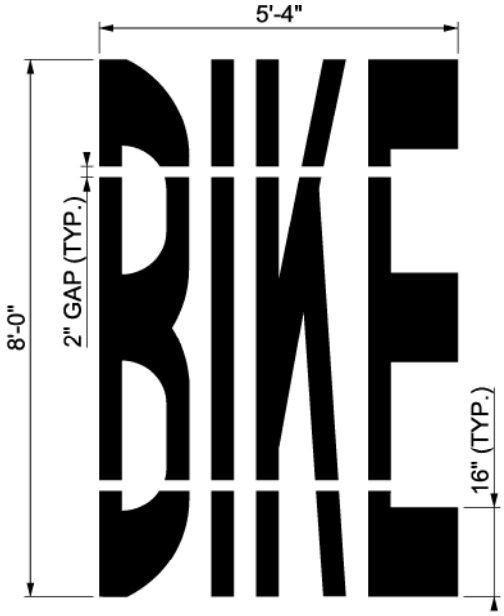
DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

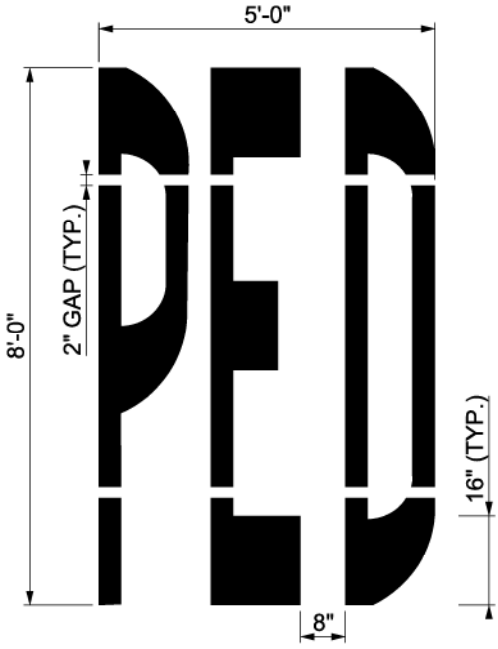
STANDARD PLAN FOR
PAVEMENT SAFETY EDGE

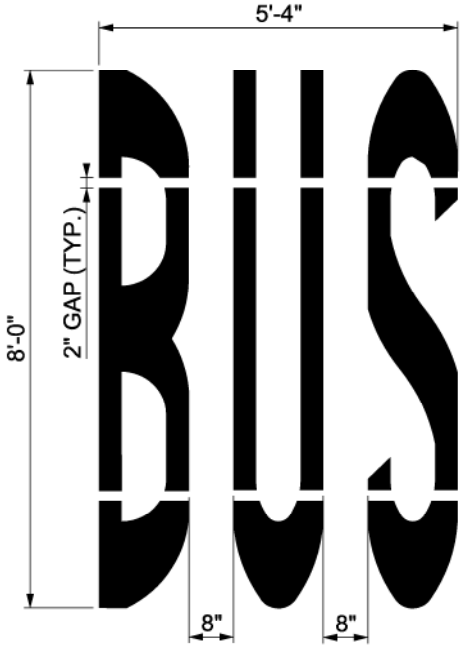
12/18/2024	04/30/2024	R-110-B	SHEET
FHWA APPROVAL	PLAN DATE		3 OF 3

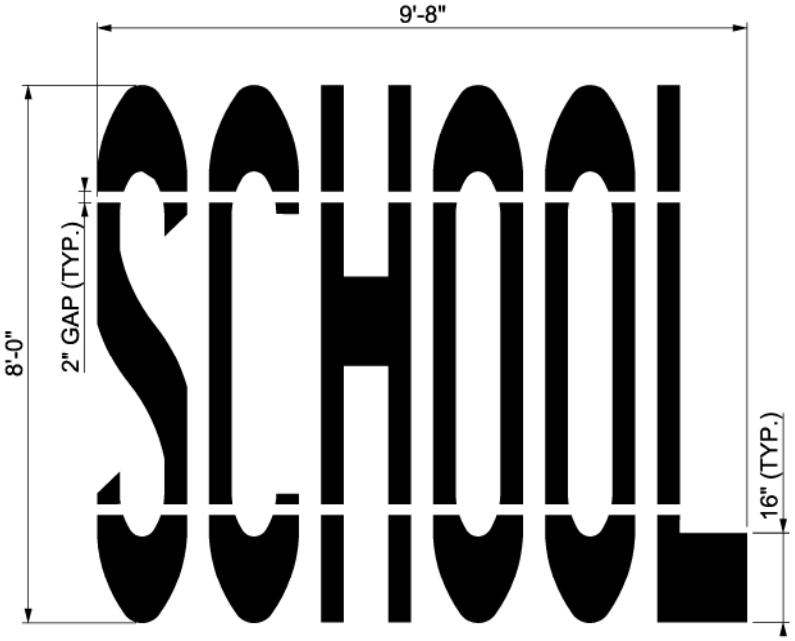
NOTES:

1. ALL LETTERS ARE 16 INCHES WIDE UNLESS NOTED OTHERWISE.
2. ALL GAPS BETWEEN LETTERS ARE 4 INCHES UNLESS NOTED OTHERWISE.
3. WHEN PLACED ON A SHARED-USE PATH, REDUCE ALL VERTICAL DIMENSIONS (EXCEPT 2" LIQUID TEMPLATE GAPS) BY HALF.
4. 2" GAPS SHOWN ARE FOR LIQUID TEMPLATES ONLY AND ARE NOT ALLOWED IN TAPE APPLICATIONS.









LEGEND DETAILS

APPROVED BY: E-SIGNED by JASON GUTTING on 2023-12-11 17:07:36 EST
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: E-SIGNED by Demetrius Parker on 2023-12-11 16:11:41 EST
DIRECTOR, BUREAU OF DEVELOPMENT

MDOT Michigan Department of Transportation

DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

STANDARD PLAN FOR
PAVEMENT ARROW & MESSAGE DETAILS

11/22/2023	09/13/2023	PAVE-900-H	SHEET
FHWA APPROVAL	PLAN DATE		1 OF 10

NOTES:

1. ALL LETTERS ARE 16 INCHES WIDE UNLESS NOTED OTHERWISE.
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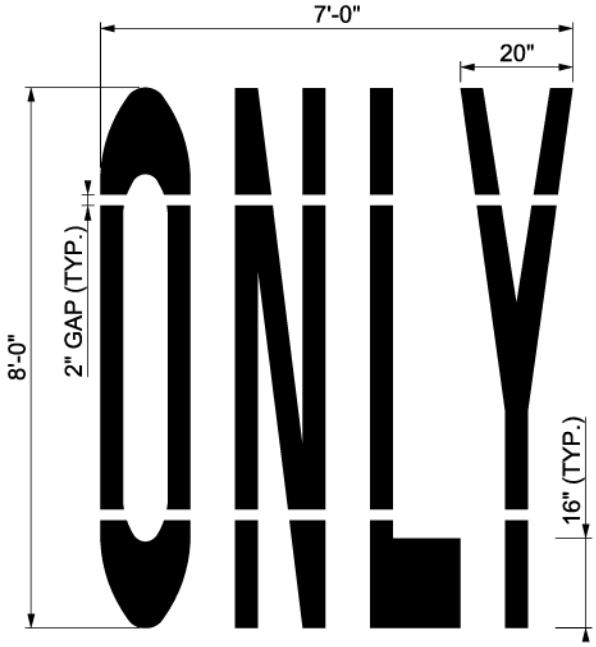

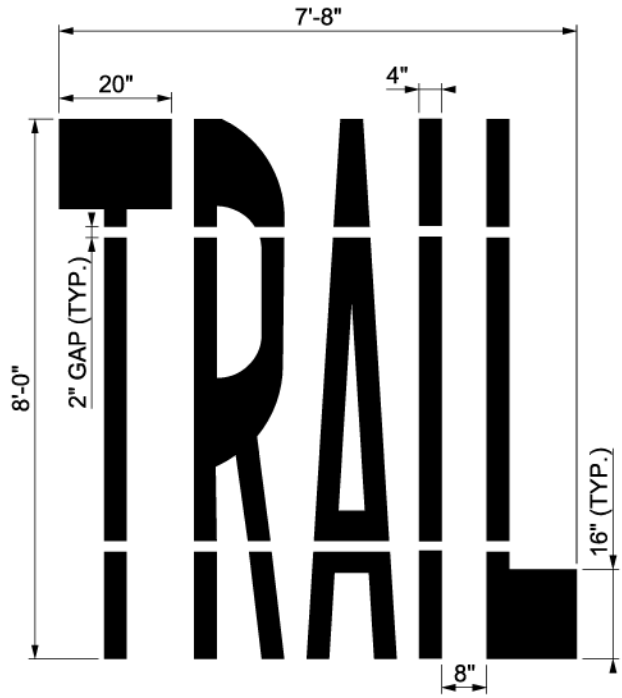

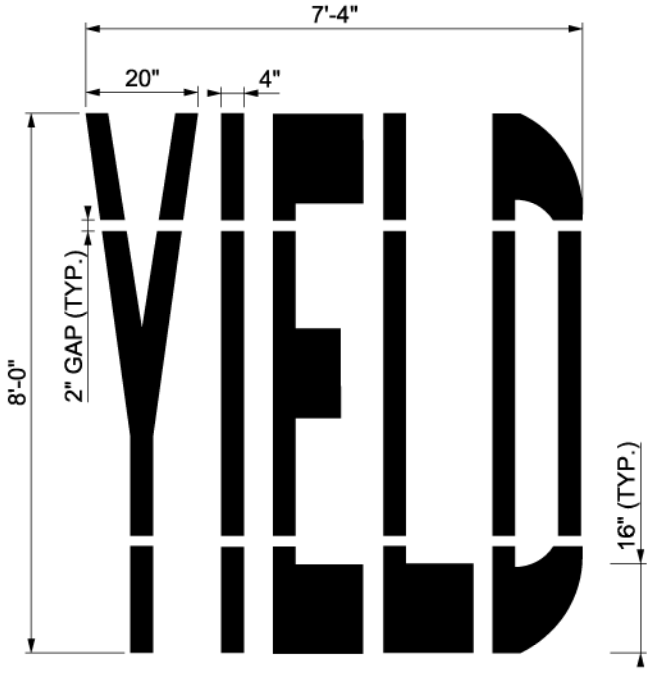

LEGEND DETAILS

MDOT Michigan Department of Transportation DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	STANDARD PLAN FOR PAVEMENT ARROW & MESSAGE DETAILS			
	11/22/2023 FHWA APPROVAL	09/13/2023 PLAN DATE	PAVE-900-H	SHEET 2 OF 10

NOTES:

1. ALL LETTERS ARE 16 INCHES WIDE UNLESS NOTED OTHERWISE.
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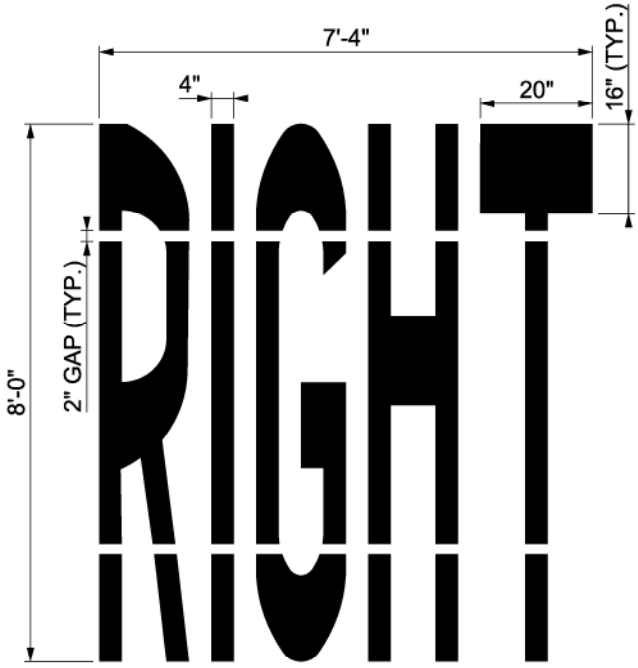

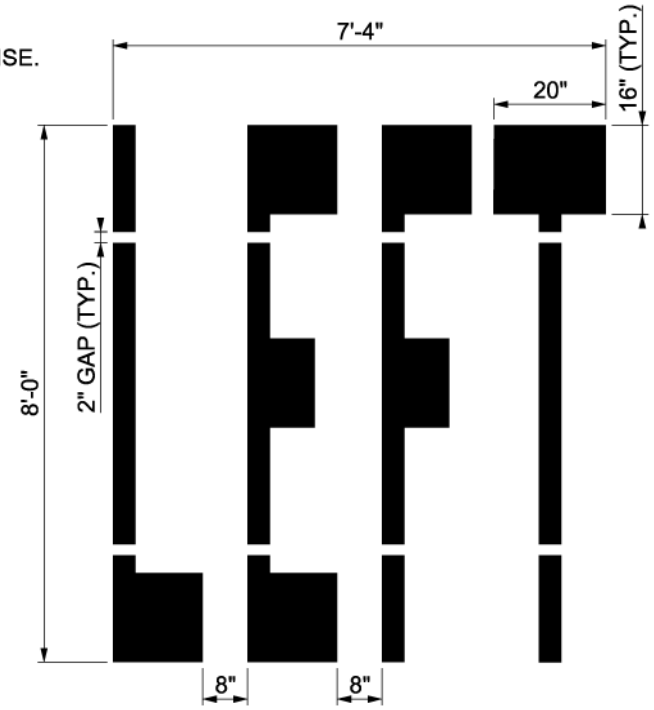

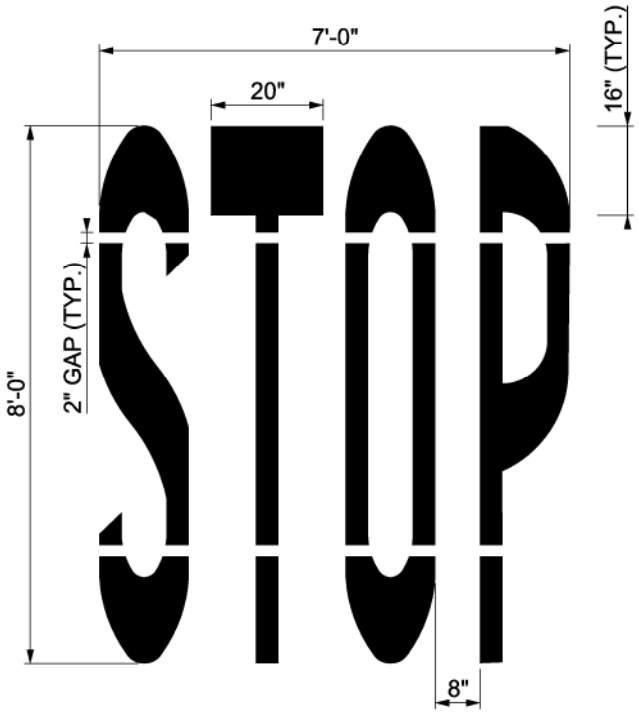

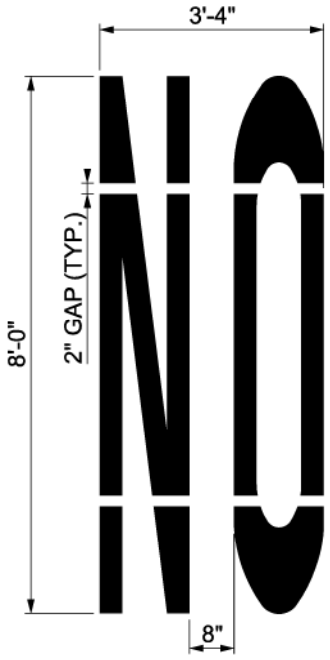

LEGEND DETAILS

MDOT Michigan Department of Transportation DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	STANDARD PLAN FOR PAVEMENT ARROW & MESSAGE DETAILS			
	11/22/2023 FHWA APPROVAL	09/13/2023 PLAN DATE	PAVE-900-H	SHEET 3 OF 10

NOTES:

1. ALL LETTERS ARE 16 INCHES WIDE UNLESS NOTED OTHERWISE.
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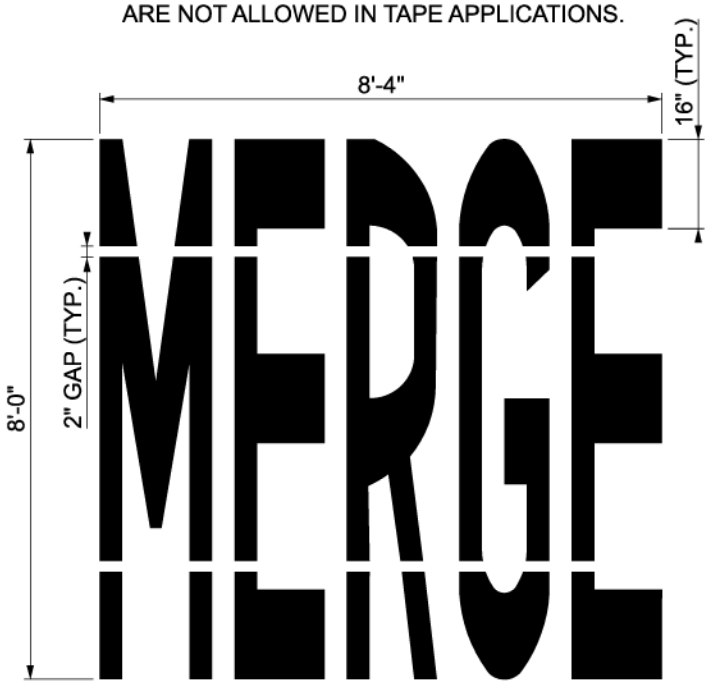

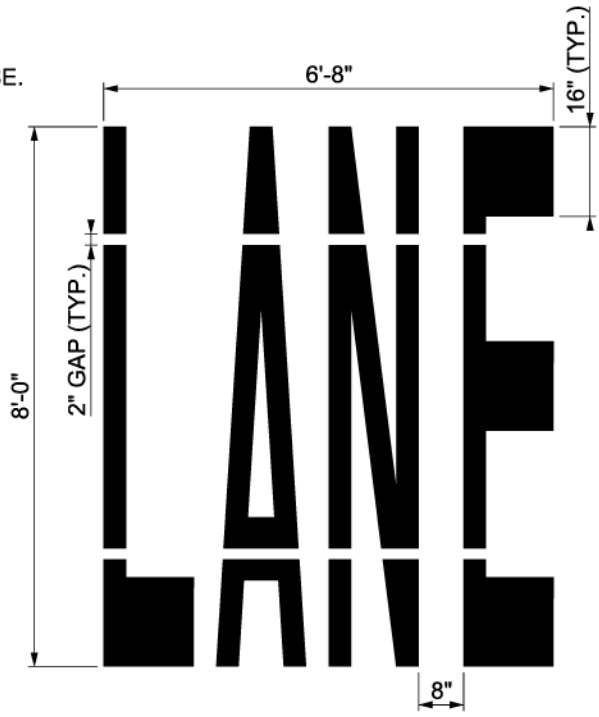

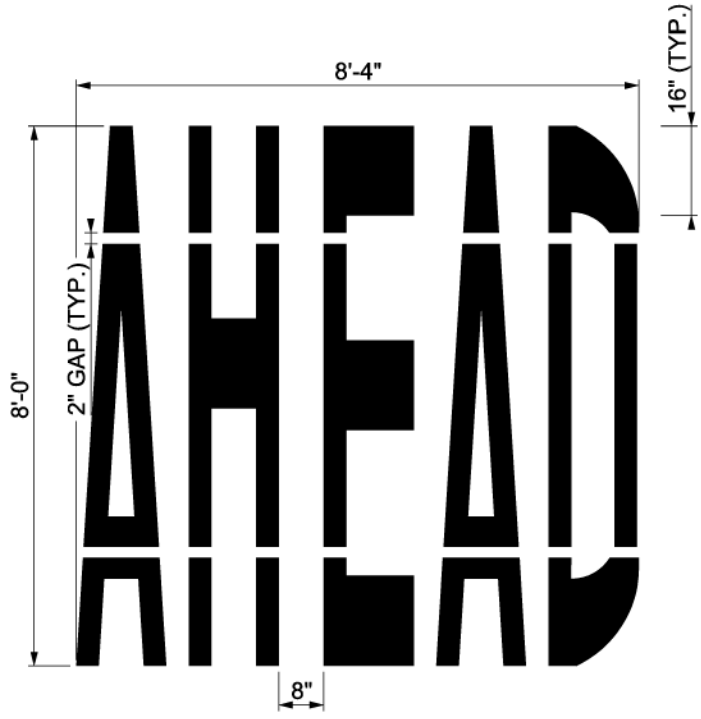

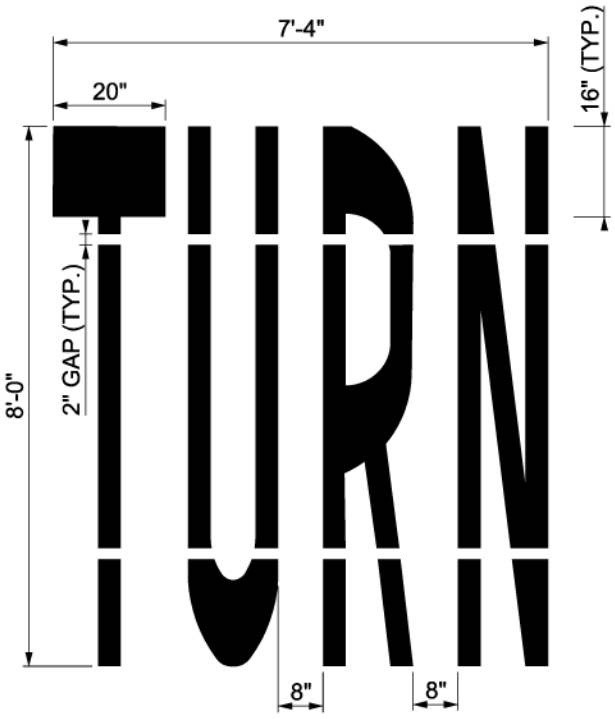

LEGEND DETAILS

MDOT Michigan Department of Transportation DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	STANDARD PLAN FOR PAVEMENT ARROW & MESSAGE DETAILS			
	11/22/2023 FHWA APPROVAL	09/13/2023 PLAN DATE	PAVE-900-H	SHEET 4 OF 10

NOTES:

1. ALL LETTERS ARE 16 INCHES WIDE UNLESS NOTED OTHERWISE.
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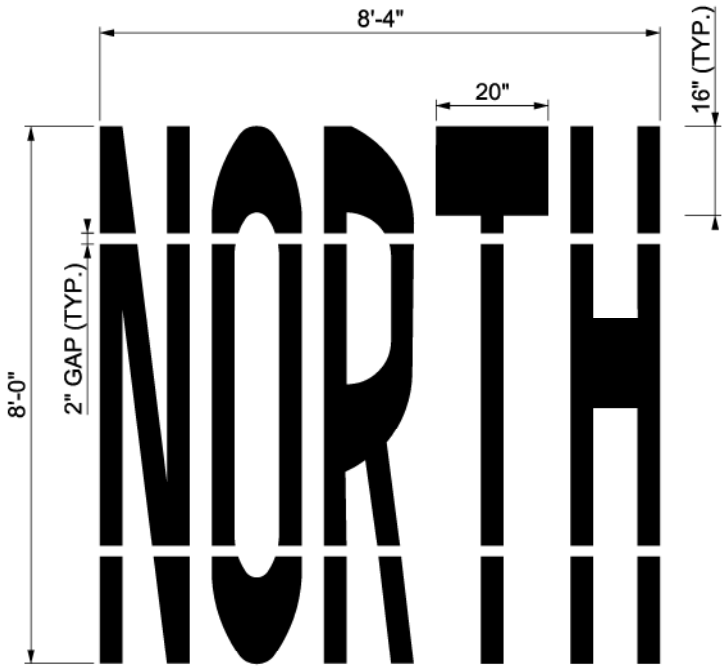
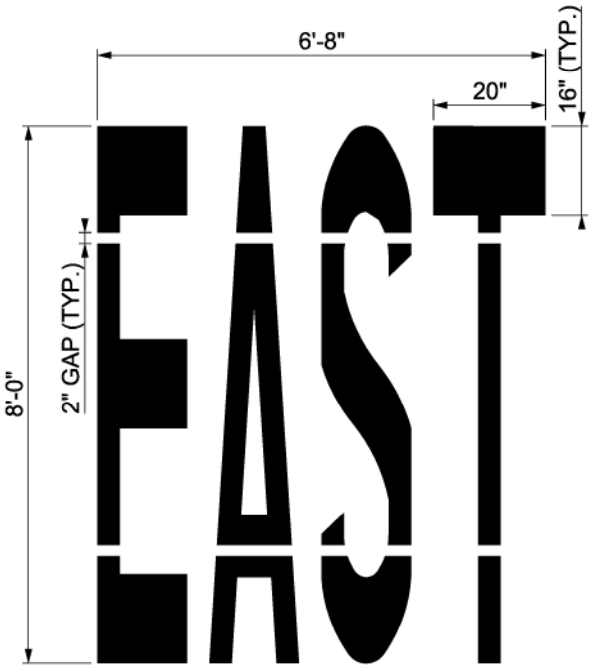
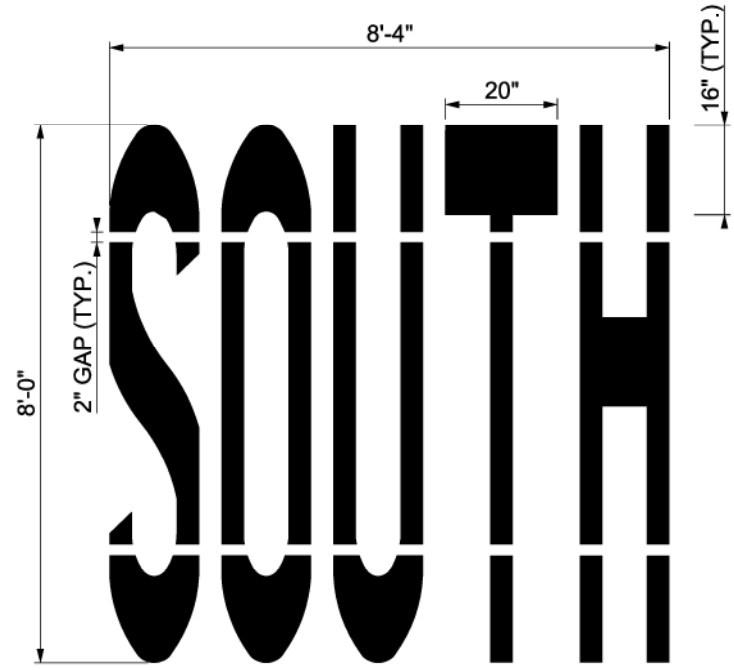
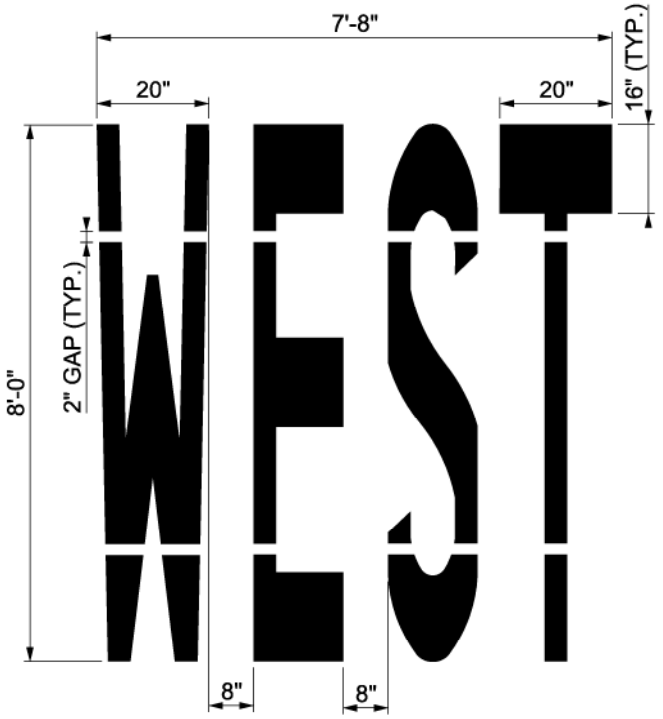
3. WHEN PLACED ON A SHARED-USE PATH, REDUCE ALL VERTICAL DIMENSIONS (EXCEPT 2" LIQUID TEMPLATE GAPS) BY HALF.
4. 2" GAPS SHOWN ARE FOR LIQUID TEMPLATES ONLY AND ARE NOT ALLOWED IN TAPE APPLICATIONS.







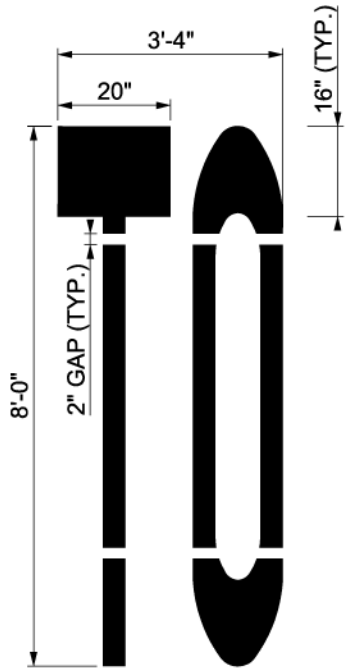


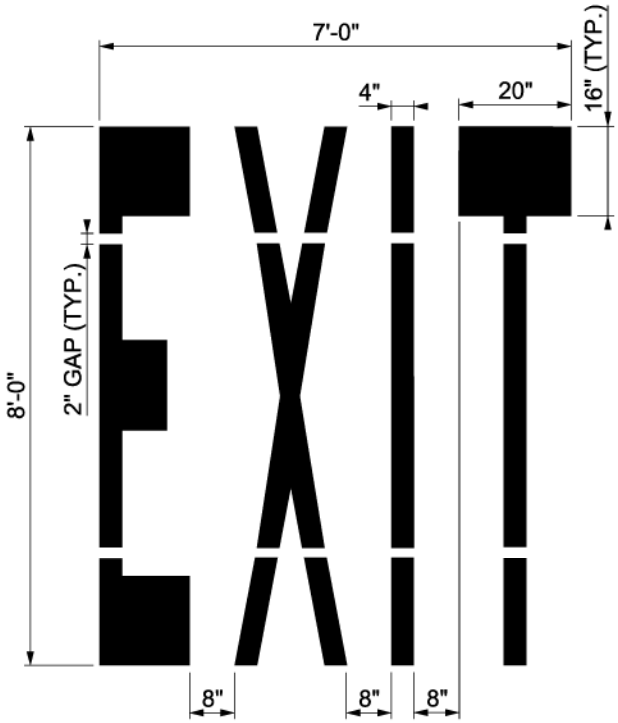
LEGEND DETAILS

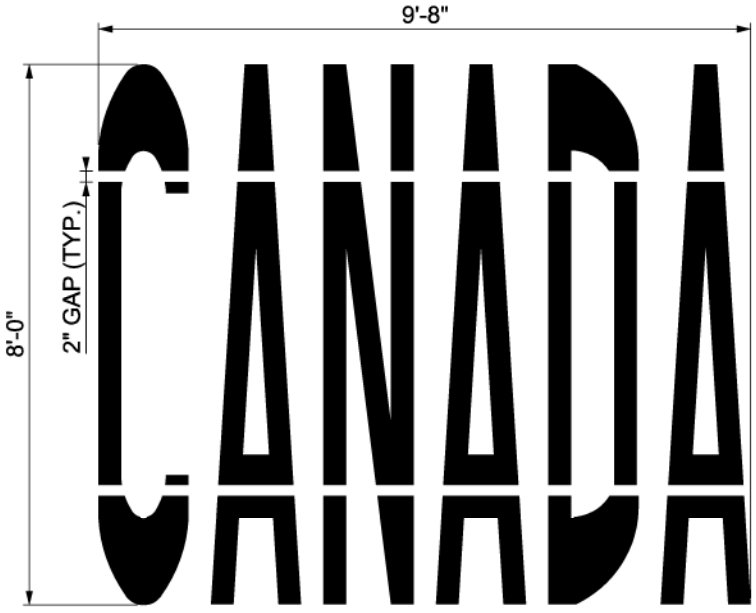
MDOT Michigan Department of Transportation DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	STANDARD PLAN FOR PAVEMENT ARROW & MESSAGE DETAILS			
	11/22/2023 FHWA APPROVAL	09/13/2023 PLAN DATE	PAVE-900-H	SHEET 5 OF 10

NOTES:

1. ALL LETTERS ARE 16 INCHES WIDE UNLESS NOTED OTHERWISE.
2. ALL GAPS BETWEEN LETTERS ARE 4 INCHES UNLESS NOTED OTHERWISE.
3. WHEN PLACED ON A SHARED-USE PATH, REDUCE ALL VERTICAL DIMENSIONS (EXCEPT 2" LIQUID TEMPLATE GAPS) BY HALF.
4. 2" GAPS SHOWN ARE FOR LIQUID TEMPLATES ONLY AND ARE NOT ALLOWED IN TAPE APPLICATIONS.

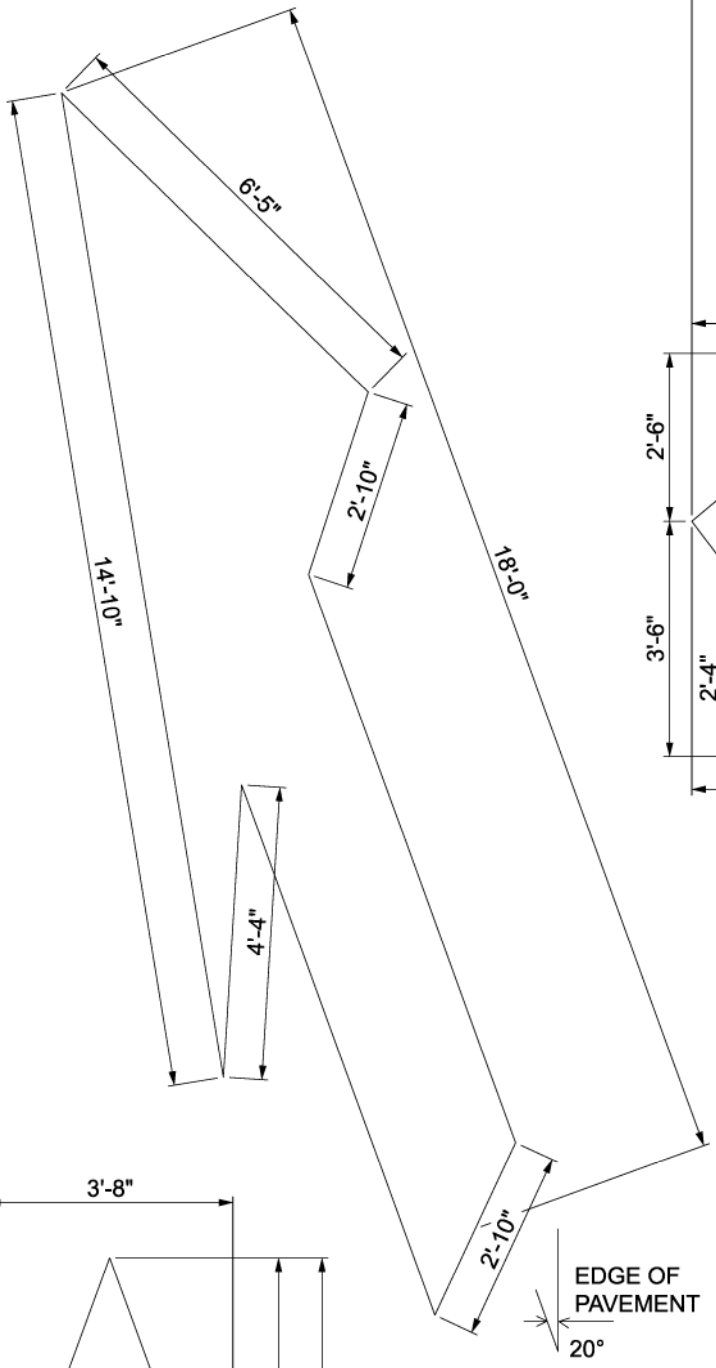




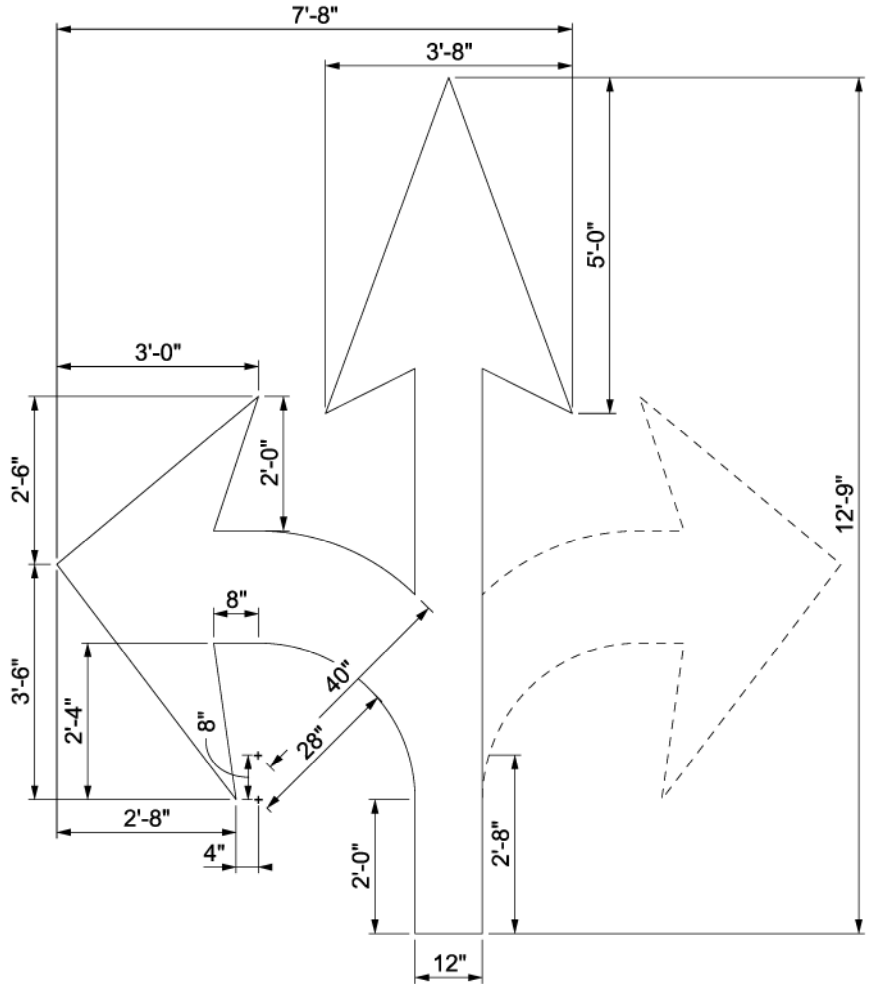


LEGEND DETAILS

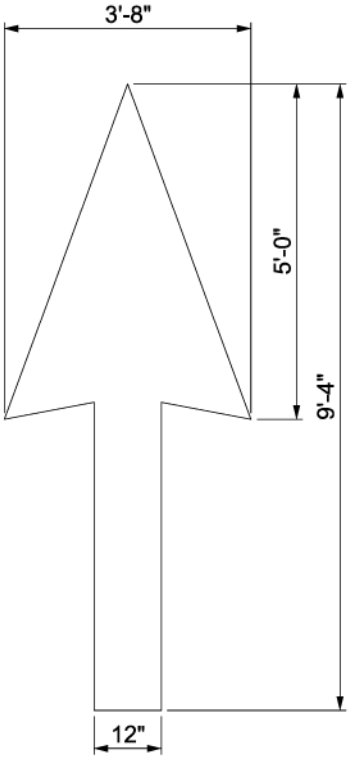
MDOT Michigan Department of Transportation DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	STANDARD PLAN FOR PAVEMENT ARROW & MESSAGE DETAILS			
	11/22/2023 FHWA APPROVAL	09/13/2023 PLAN DATE	PAVE-900-H	SHEET 6 OF 10



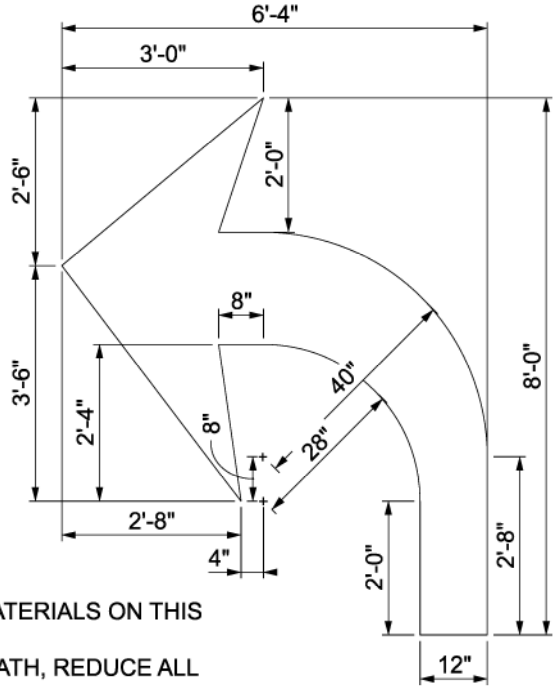
LEFT MERGE ARROW
(RIGHT TO BE REVERSED)



THRU LEFT/RIGHT ARROW



THRU ARROW



LEFT TURN ARROW
(RIGHT TO BE REVERSED)

NOTES:
1. TEMPLATES FOR LIQUID APPLIED MATERIALS ON THIS SHEET DO NOT ALLOW GAPS.
2. WHEN PLACED ON A SHARED-USE PATH, REDUCE ALL DIMENSIONS BY HALF.

ARROW DETAILS

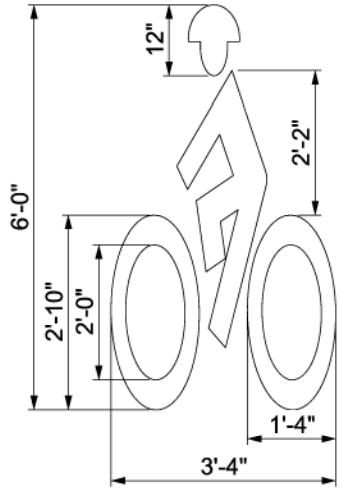
MDOT
Michigan Department of Transportation

DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

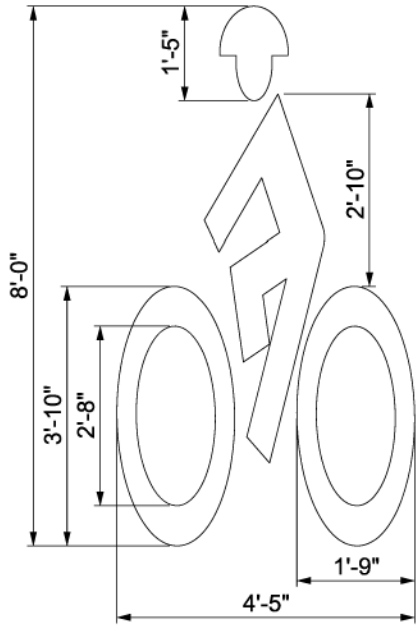
STANDARD PLAN FOR
PAVEMENT ARROW &
MESSAGE DETAILS

11/22/2023	09/13/2023	PAVE-900-H	SHEET
FHWA APPROVAL	PLAN DATE		7 OF 10

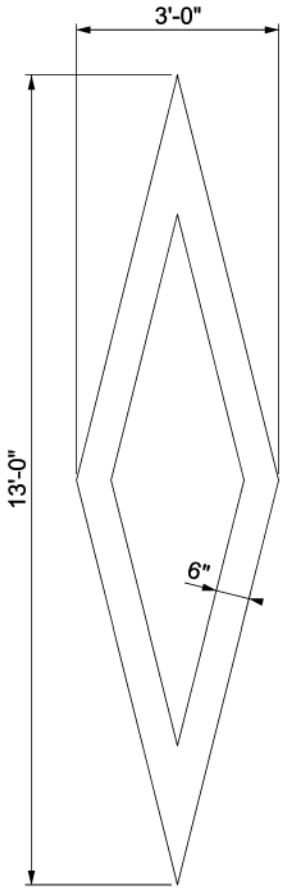
NOTES:
1. TEMPLATES FOR LIQUID APPLIED MATERIALS ON THIS SHEET DO NOT ALLOW GAPS.
2. SMALLER (BIKE LANE/PATH) BICYCLE SYMBOL IS TO BE USED IN BIKE LANES (INCLUDING BIKE LANES ON ROADWAYS), AND ON PATHS/TRAILS.
3. THE LARGER (ROAD) BICYCLE SYMBOL IS INTENDED TO BE USED IN CONJUNCTION WITH THE "XING" LEGEND IN VEHICLE TRAVEL LANES IN ADVANCE OF A BIKE PATH/TRAIL CROSSING THE ROADWAY.



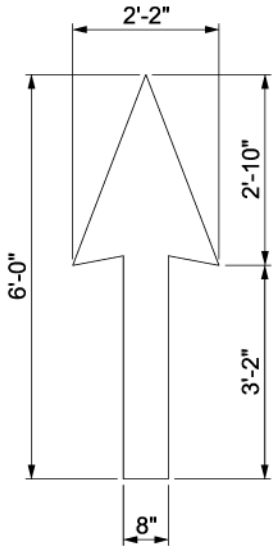
BIKE LANE/PATH SYMBOL



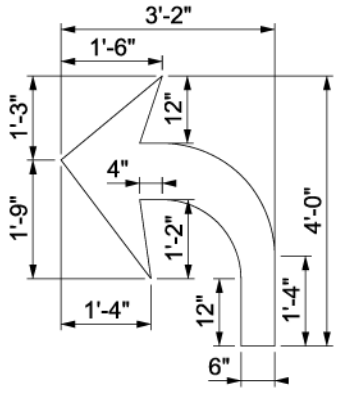
BIKE ROAD SYMBOL



DEDICATED LANE SYMBOL



THRU ARROW FOR USE WITH
BIKE LANE/PATH BICYCLE SYMBOL



LEFT TURN ARROW FOR USE WITH
BIKE LANE/PATH BICYCLE SYMBOL
(RIGHT TO BE REVERSED)

DEDICATED/BIKE LANE SYMBOLS

MDOT Michigan Department of Transportation

DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

STANDARD PLAN FOR
PAVEMENT ARROW &
MESSAGE DETAILS

11/22/2023	09/13/2023	PAVE-900-H	SHEET
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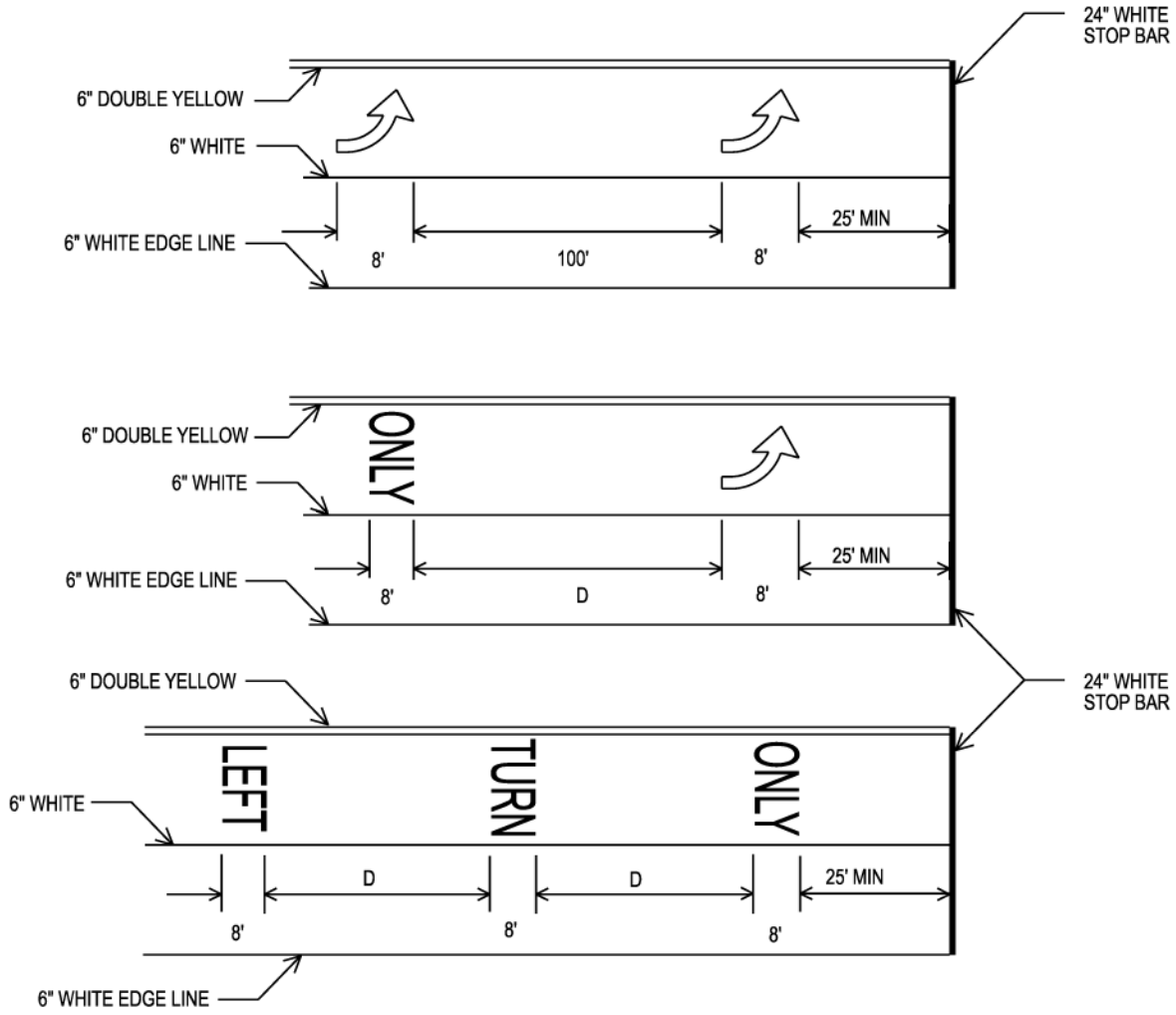
NOTES:
1. MATERIAL PLACEMENT AREAS SHOWN ARE FOR LIQUID-APPLIED SPECIAL MARKINGS, AND REFLECT THE ALLOWABLE TEMPLATE GAPS IN LEGENDS.
2. RAILROAD MARKING AREAS DO NOT INCLUDE THE STOP BAR MARKINGS.

SPECIAL MARKING AREAS (SFT)

LEGEND	REMOVAL	RECESSING	MATERIAL	SYMBOL	REMOVAL	RECESSING	MATERIAL
AHEAD	67	70	28.86	ACCESSIBLE	12	13	11.11
BIKE	43	45	22.15	BICYCLE (ROAD)	26	31	10.54
BUS	43	45	18.55	BICYCLE (LANE/PATH)	16	18	5.93
CANADA	78	81	32.87	BIKE TURN ARROW, LT OR RT	4	6	4.11
EAST	54	56	21.71	DEDICATED LANE (HOV)	11	13	10.24
EXIT	56	59	17.76	DIRECT. ARROW (BIKE)	5	7	5.07
LANE	54	56	22.30	LEFT, RIGHT ARROW	29	34	28.99
LEFT	59	62	19.11	LT ROUNDABOUT ARROW	18	23	17.48
MERGE	67	70	33.28	LT, RT, THRU ARROW	41	48	40.26
NO	27	29	12.92	MERGE ARROW	43	47	42.17
NORTH	67	70	29.53	RAILROAD	66	75	60.89
ONLY	56	59	20.90	RAILROAD-ALTERNATE	70	73	59.06
PED	40	43	17.63	RT, LT ROUNDABOUT ARROW	23	29	22.19
RIGHT	59	62	25.10	RT, THRU, LT ROUNDABOUT ARROW	29	38	28.31
SCHOOL	78	81	32.58	SHARROW	21	30	9.26
SOUTH	67	70	27.83	THRU ARROW	13	16	13.16
STOP	56	59	21.50	THRU, LT ROUNDABOUT ARROW	24	31	23.60
TO	27	29	10.43	THRU, LT TURN ARROW	29	34	28.14
TRAIL	62	64	22.10	THRU, RT TURN ARROW	29	34	28.14
TURN	59	62	23.04	TURN ARROW, LT OR RT	17	19	16.42
WEST	62	64	24.42	WRONG WAY ARROW	35	41	34.56
XING	54	56	20.13	YIELD TRIANGLE	3	4	3.00
YIELD	59	61	22.91				

REMOVAL AND PLACEMENT DETAILS



POSTED SPEED (MPH)	DISTANCE "D" (FT)
25 AND BELOW	32
30-35	48
40-45	64
50 AND ABOVE	80

NOTES:
1. ALL SPECIAL MARKINGS (ARROW, MESSAGE, AND SYMBOL) SHALL BE WHITE.
2. WHEN ARROW AND PAVEMENT MESSAGE ARE USED TOGETHER, THE ARROW SHOULD BE LOCATED DOWNSTREAM OF THE PAVEMENT MESSAGE AND SEPARATED FROM THE PAVEMENT MESSAGE BY A DISTANCE OF "D" (MEASURED FROM THE TOP OF THE MESSAGE TO THE BASE OF THE ARROW) AS SHOWN ABOVE.
3. WHEN A SERIES OF PAVEMENT MESSAGES ARE USED, THEY SHOULD BE SEPARATED BY A DISTANCE OF "D" RELATED TO THE POSTED SPEED, AS SHOWN IN THE TABLE ABOVE. ALL SYMBOLS AND LEGENDS SHALL BE POSITIONED IN THE CENTER OF THE LANE.

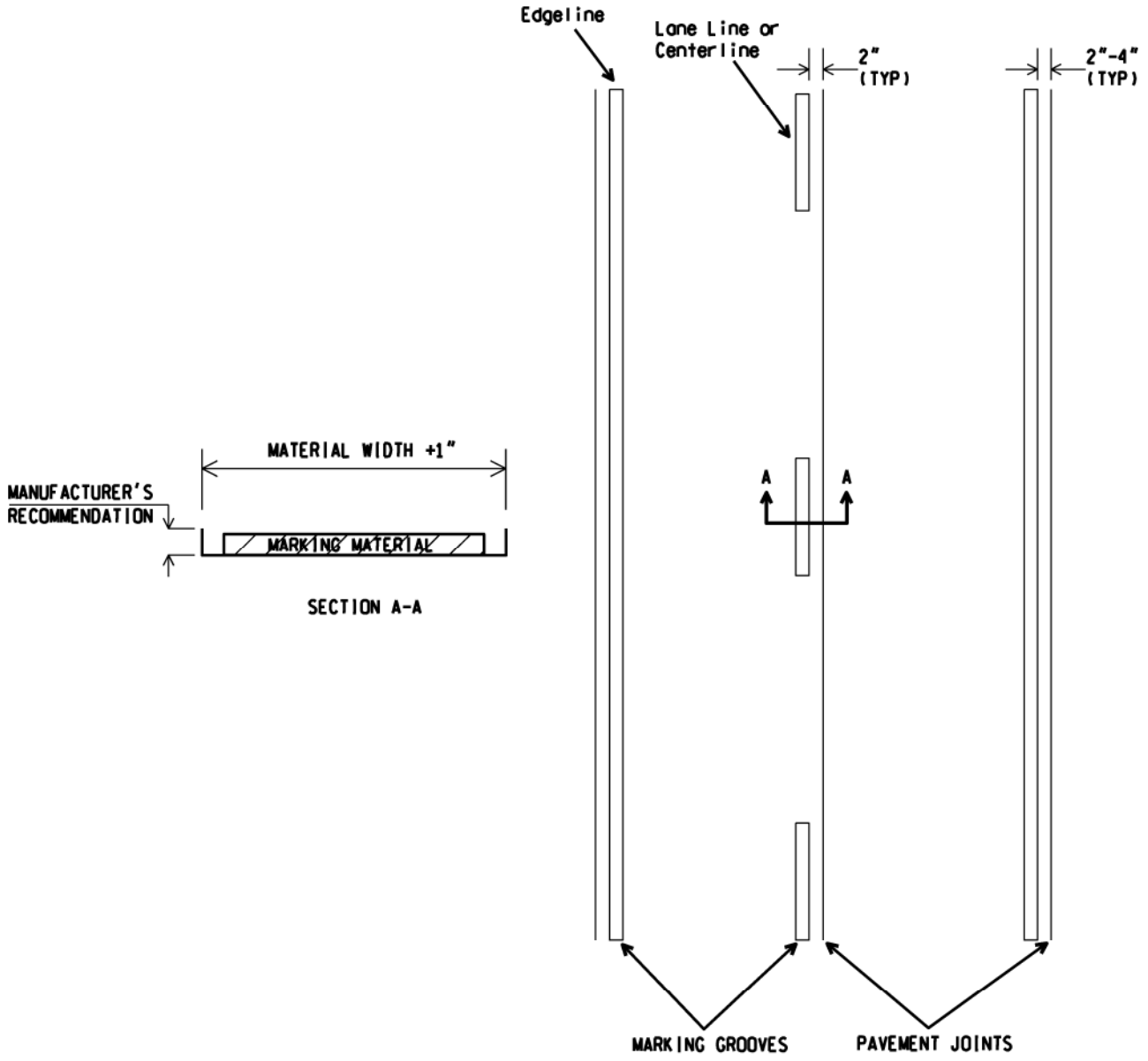
TYPICAL SPACING OF ARROW AND PAVEMENT MESSAGES

MDOT Michigan Department of Transportation

DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

STANDARD PLAN FOR
PAVEMENT ARROW &
MESSAGE DETAILS

11/22/2023	09/13/2023	PAVE-900-H	SHEET
FHWA APPROVAL	PLAN DATE		10 OF 10



RECESSING LONGITUDINAL MARKINGS

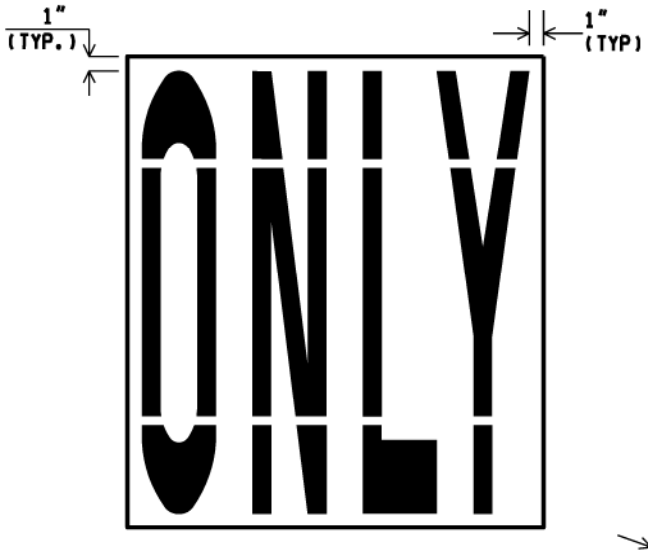
NOTES:

1. Tolerance on all transverse dimensions is ± 1/8".
2. Tolerance on all recessing depths is ± 5 mils.

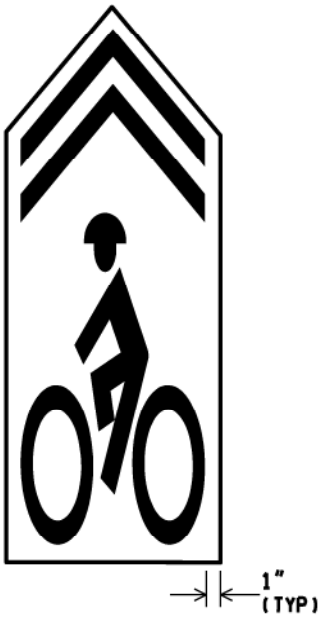
MDOT PREPARED BY TSMO DIVISION DRAWN BY: MKB CHECKED BY: CMW	DEPARTMENT DIRECTOR Paul C. Ajegba Gregg Brunner, P.E. Gregg Brunner Nov 2 2020 12:07 PM APPROVED BY: DIRECTOR, BUREAU OF FIELD SERVICES Bradley C. Wieferich Bradley C. Wieferich Nov 5 2020 5:44 AM APPROVED BY: DIRECTOR, BUREAU OF DEVELOPMENT	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR PAVEMENT MARKING RECESSING DETAILS	09/21/20 F.H.W.A. APPROVAL	03/25/20 PLAN DATE	PAVE-901-A SHEET 1 OF 2

SECTION B-B

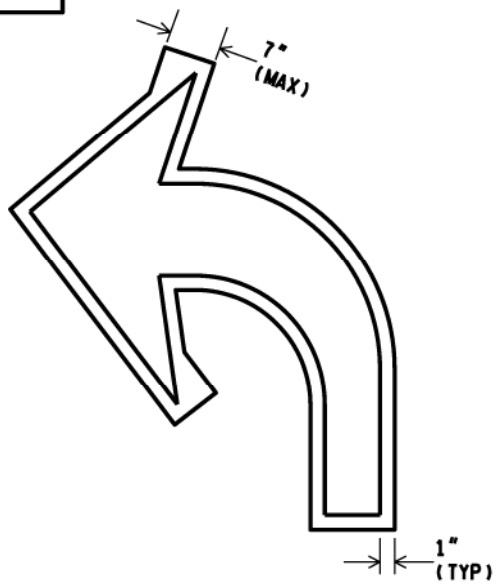
FOR STOP BARS, CROSSWALKS, & CROSS HATCHING



FOR LEGENDS



FOR IRREGULAR SYMBOLS



FOR ARROWS
(ALL TYPES)

RECESSING SPECIAL MARKINGS

NOTES:

1. Tolerance on all transverse dimensions is ± 1/8".
2. Tolerance on all recessing depths is ± 5 mils.
3. The recess should follow the shape of the special marking as closely as possible. Where the shape cannot be followed, use a grinder head with a maximum width of 7 inches.
4. For irregular shapes agree upon a recessing layout with the Engineer. See Special Marking Symbols and Legends (CAD drawing) for recommendations.
5. See PAVE-900 for special marking recessing payment areas.

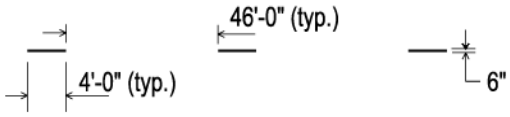
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	09/21/20 F.H.W.A. APPROVAL	03/25/20 PLAN DATE	PAVE-901-A	SHEET 2 OF 2

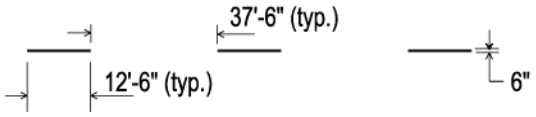
NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.

TYPES OF TEMPORARY LONGITUDINAL LINES

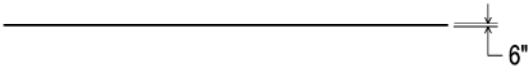
BROKEN WHITE LANE LINE (1)



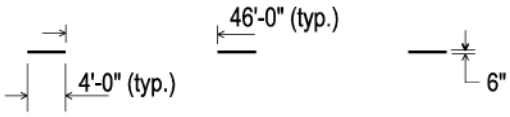
BROKEN WHITE LANE LINE (2)



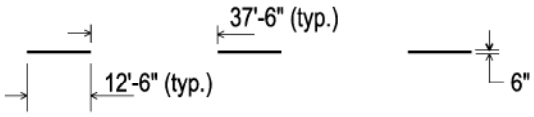
SOLID WHITE LANE LINE OR LANE SHIFT



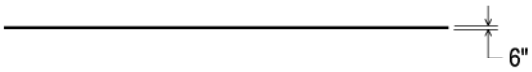
BROKEN YELLOW CENTERLINE (1)



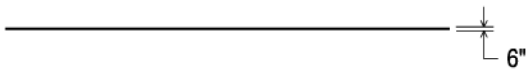
BROKEN YELLOW CENTERLINE (2)



SOLID WHITE EDGE LINE



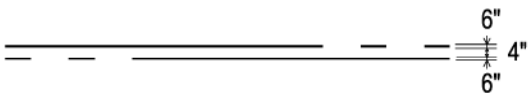
SOLID YELLOW EDGE LINE



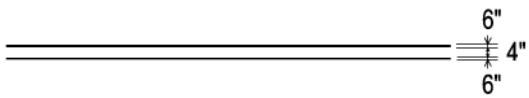
SOLID WHITE GORE MARKING

LINE PATTERNS

TWO - LANE PASSING PROHIBITED (YELLOW)



DOUBLE SOLID YELLOW (OR WHITE)



NOTE:
1. SEE PROJECT DOCUMENTS FOR CORRECT BROKEN LINE PATTERN.

APPROVED BY: E-SIGNED by JASON GUTTING on 2023-12-11 17:08:06 EST
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: E-SIGNED by Demetrius Parker on 2023-12-11 16:11:47 EST
DIRECTOR, BUREAU OF DEVELOPMENT

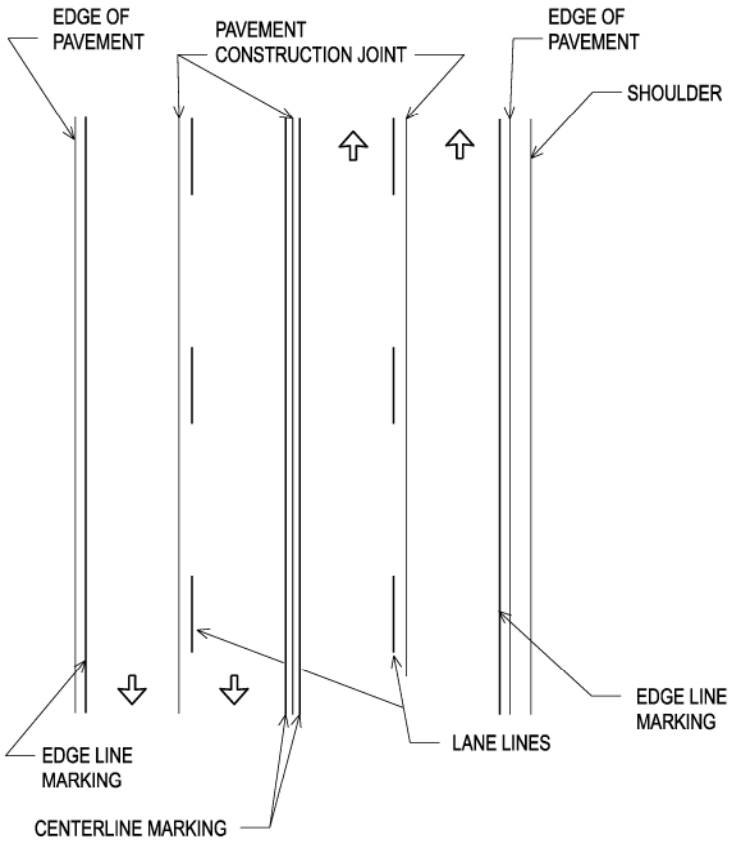
MDOT Michigan Department of Transportation

DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

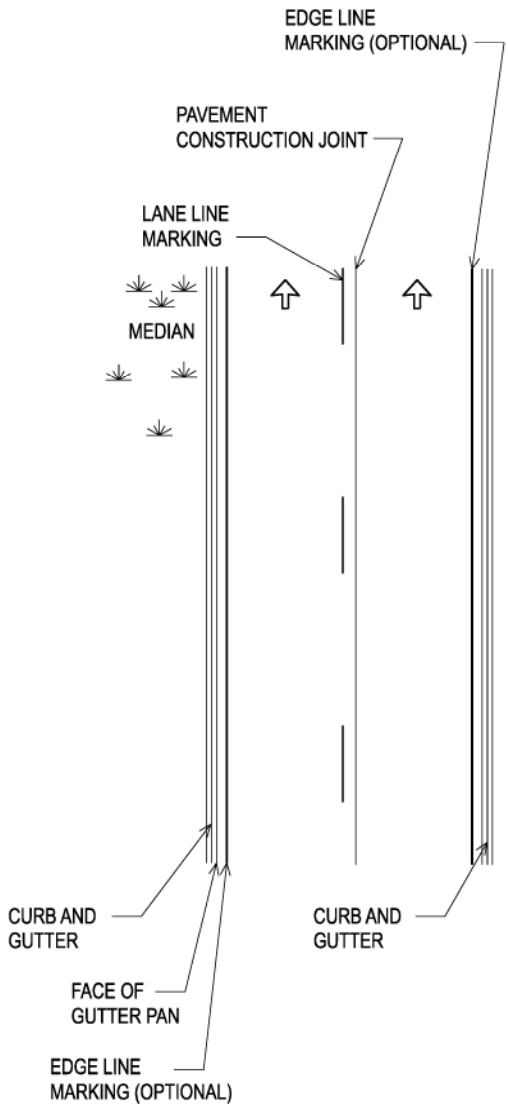
STANDARD PLAN FOR
TEMPORARY LONGITUDINAL
LINE TYPES & PLACEMENT

11/22/2023	09/13/2023	PAVE-904-B	SHEET
FHWA APPROVAL	PLAN DATE		1 OF 2

BASIC COLOR RULE: WHITE LINES SEPARATE FLOW OF TRAFFIC IN THE SAME DIRECTION, YELLOW LINES SEPARATE FLOW OF TRAFFIC IN THE OPPOSITE DIRECTION.



FOR UNCURBED ROADWAYS



FOR CURBED ROADWAYS

PLACEMENT OF LINES

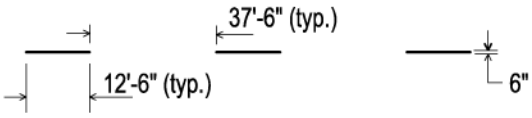
NOTES:

1. TEMPORARY MARKING LOCATIONS SHALL CONFORM WITH SECTION 812 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.
2. SEE PAVE-905 FOR LOCATIONS OF PERMANENT PAVEMENT MARKING LINES.
3. REMOVE PAVEMENT MARKINGS THAT CONFLICT WITH PROPOSED TEMPORARY TRAFFIC MARKINGS BEFORE MAKING ANY CHANGES IN TRAFFIC PATTERN. DO NOT USE PAINT OR BITUMINOUS BOND COAT TO COVER EXISTING AND INAPPROPRIATE PAVEMENT MARKINGS. TAPE MAY ONLY BE USED WITH APPROVAL OF THE ENGINEER.

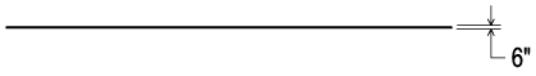
MDOT Michigan Department of Transportation DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	STANDARD PLAN FOR TEMPORARY LONGITUDINAL LINE TYPES & PLACEMENT			
	11/22/2023 FHWA APPROVAL	09/13/2023 PLAN DATE	PAVE-904-B	SHEET 2 OF 2

TYPES OF PERMANENT LONGITUDINAL LINES

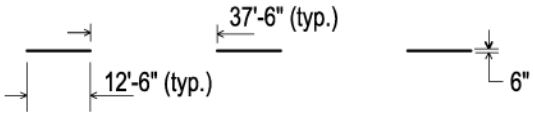
BROKEN WHITE LANE LINE



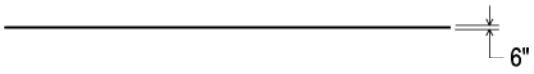
SOLID WHITE LANE LINE



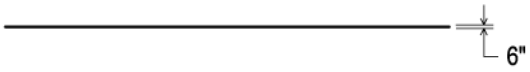
BROKEN YELLOW CENTERLINE



SOLID WHITE EDGE LINE

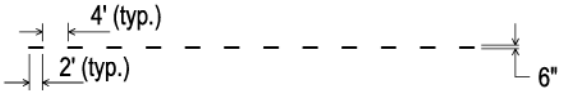


SOLID YELLOW EDGE LINE

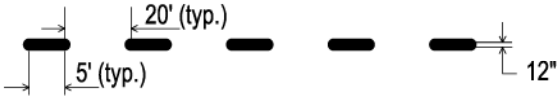


SOLID WHITE CHANNELIZING LINE

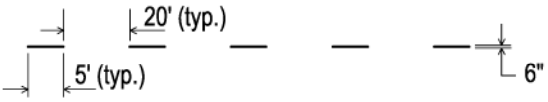
WHITE OR YELLOW DOTTED LINE (GUIDE LINES, LANE LINE EXTENSIONS)



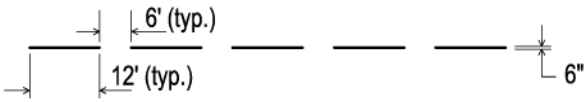
WHITE DOTTED LINE (LANE DROP, LANE DROP EXIT AND WEAVE LANES)



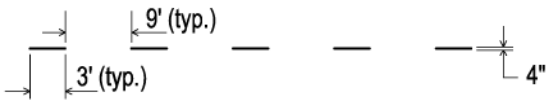
WHITE DOTTED LINE (PARALLEL AND TAPERED EXITS AND ENTRANCES)



WHITE DASHED LINE (ROUNDABOUT LANE LINES)

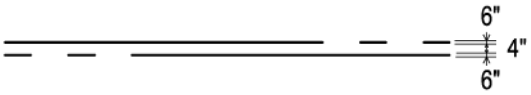


YELLOW DASHED LINE (CENTERLINE FOR MULTI-USE PATHS)



LINE PATTERNS

TWO - LANE PASSING PROHIBITED (YELLOW)



DOUBLE SOLID YELLOW (OR WHITE)

E-SIGNED by JASON GUTTING
on 2023-12-11 17:08:13 EST
APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES

E-SIGNED by Demetrius Parker
on 2023-12-11 16:11:52 EST
APPROVED BY: _____
DIRECTOR, BUREAU OF DEVELOPMENT

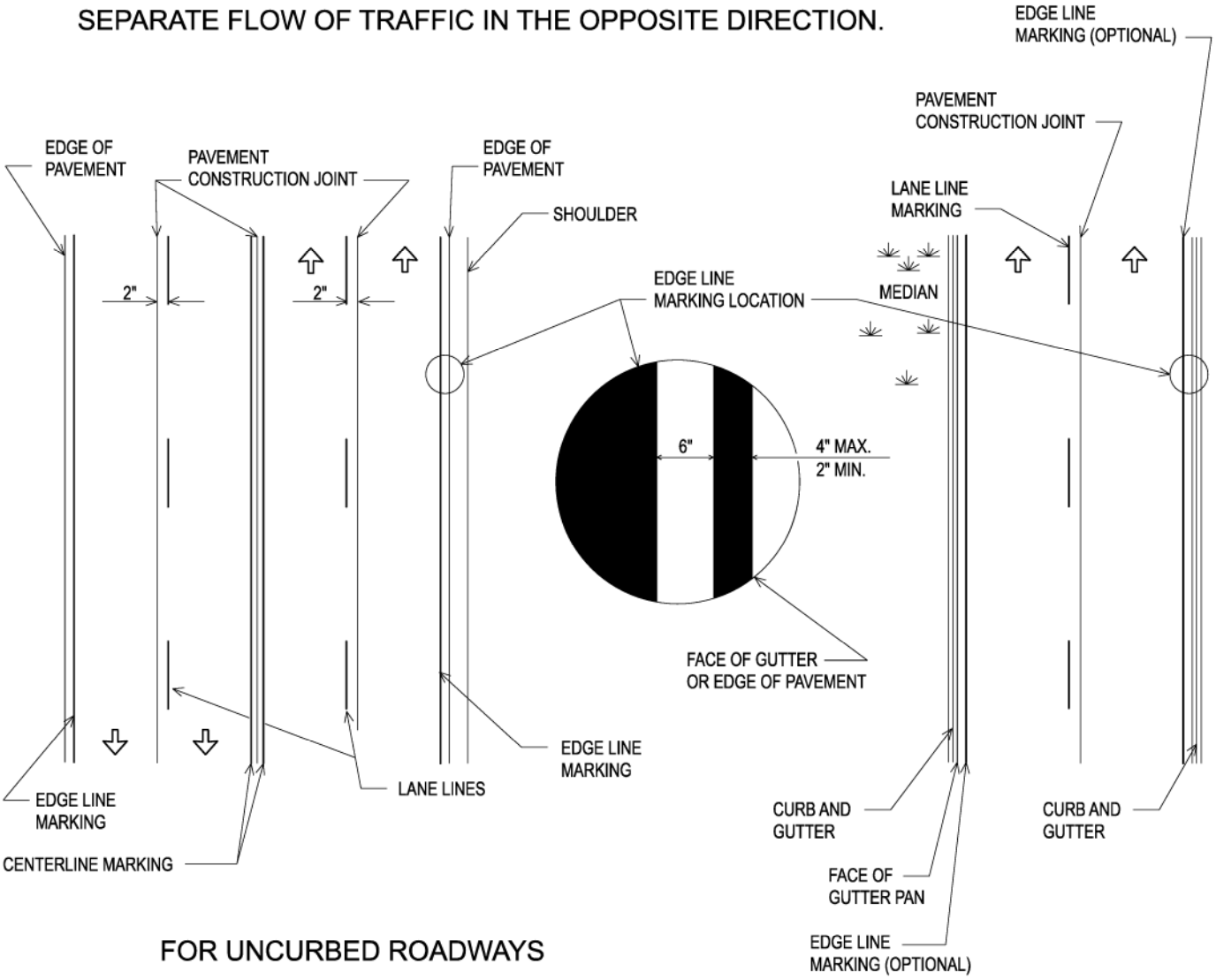
MDOT
Michigan Department of Transportation

DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

STANDARD PLAN FOR
PERMANENT LONGITUDINAL
LINE TYPES & PLACEMENT

11/22/2023	09/13/2023	PAVE-905-F	SHEET
FHWA APPROVAL	PLAN DATE		1 OF 2

BASIC COLOR RULE: WHITE LINES SEPARATE FLOW OF TRAFFIC IN THE SAME DIRECTION, YELLOW LINES SEPARATE FLOW OF TRAFFIC IN THE OPPOSITE DIRECTION.



PLACEMENT OF LINES

NOTES:

1. ON ALL DIVIDED HIGHWAYS, LANE LINES SHALL BE OFFSET 2 INCHES FROM PAVEMENT CONSTRUCTION JOINTS TOWARD THE MEDIAN SIDE.
2. ON 2-LANE, 2-WAY NORTH - SOUTH ROADWAYS A BROKEN YELLOW CENTERLINE SHALL BE OFFSET 2 INCHES TO THE LEFT OF PAVEMENT CONSTRUCTION JOINTS WHEN FACING NORTHWARD. DOUBLE SOLID YELLOW OR SOLID AND BROKEN YELLOW CENTERLINE MAY STRADDLE THE CONSTRUCTION JOINT.
3. ON 2-LANE, 2-WAY EAST - WEST ROADWAYS, A BROKEN YELLOW CENTERLINE SHALL BE OFFSET 2 INCHES TO THE LEFT OF PAVEMENT CONSTRUCTION JOINTS WHEN FACING EASTWARD. DOUBLE SOLID YELLOW OR SOLID AND BROKEN YELLOW CENTERLINES MAY STRADDLE THE CONSTRUCTION JOINT.
4. WHEN A CENTERLINE CONSTRUCTION JOINT DOES NOT CORRESPOND TO THE GEOMETRIC CENTERLINE OF THE ROADWAY FOR ROADWAY SEGMENTS OVER 1/2 MILE, PLACE THE CENTERLINE IN THE LOCATION THAT WILL PROVIDE LANES OF EQUAL WIDTH UNLESS DIRECTED OTHERWISE BY THE ENGINEER.

MDOT Michigan Department of Transportation

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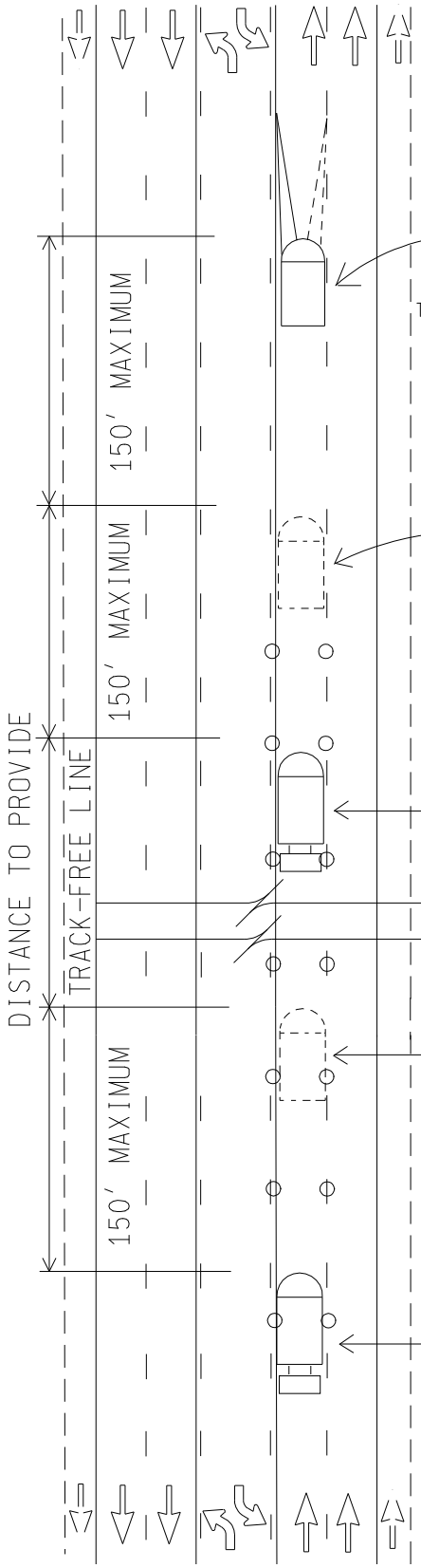
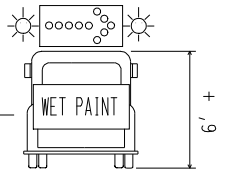
BRADLEY C. WIEFERICH, PE

STANDARD PLAN FOR
PERMANENT LONGITUDINAL LINE TYPES & PLACEMENT

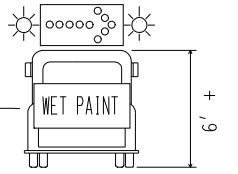
11/22/2023	09/13/2023	PAVE-905-F	SHEET 2 OF 2
FHWA APPROVAL	PLAN DATE		

SECT

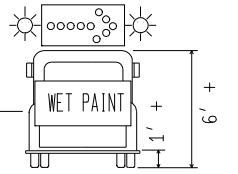




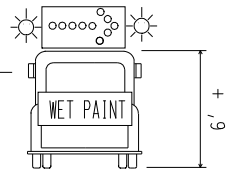
TYPICAL APPLICATION VEHICLE



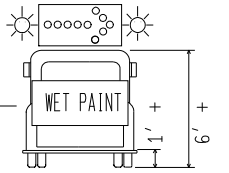
TYPICAL CONE PLACEMENT VEHICLE



TYPICAL MIN. 10,000 LBS. VEHICLE WITH TRUCK MOUNTED ATTENUATOR



TYPICAL CONE RETRIEVAL VEHICLE



TYPICAL MIN. 10,000 LBS. VEHICLE WITH TRUCK MOUNTED ATTENUATOR

1. ALL VEHICLES SHALL BE EQUIPPED WITH:
   a. TWO ROTATING YELLOW BEACONS OR STROBES VISIBLE FROM ANY APPROACH ANGLE
   b. TYPE B OR C FLASHING ARROW PANEL AS SHOWN
   c. "WET PAINT" SIGN AS SHOWN

2. ATTENUATED VEHICLE(S) SHALL WEIGH AT LEAST 10,000 LBS. AND BE LOCATED AS SHOWN.

3. BOTH THE CONE PLACEMENT AND CONE RETRIEVAL VEHICLES MAY BE INCORPORATED INTO THE VEHICLE EQUIPPED WITH THE TRUCK MOUNTED ATTENUATOR. CONES SHOULD BE PLACED 100′ APART.

6. DASHED LINE DENOTES OPTIONAL VEHICLE.

18. LANE LINE MAY NOT BE APPLIED AT THE SAME TIME AS THE CENTER LINE IN 3 LANE NON-FREEWAY SECTIONS.

20. REFER TO PMC22e FOR ADDITIONAL CONVOY SIGNING REQUIREMENTS

MDOT Michigan Department of Transportation

TRAFFIC AND SAFETY DIVISION

PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICALS FOR CENTER LANE FOR LEFT TURN AND NON-FREEWAY LANELINES (ALL REGIONS)

File: pw:rd/ts/signs/pave markings/PMC13e.dgn		PMC13e	SHEET 1 OF 1
Drawn by: ABG	Rev. Date: 11/17/2009 KL		