

2026 Hot Mixed Asphalt Bid Letting
County Wide
Letting Date – February 10, 2026, 10:00 am

Contractor: _____

Address: _____

Sign & Print: _____

Date: _____

Phone & Fax: _____

Email: _____

Bid Letting TCRC Grand Total: \$ _____

Estimated Qty	Unit	Item	Unit Price	Total Price
41,580	Tons	4EL Mainline		
2,400	Tons	Non-Motorized Pathway		
430	Tons	HMA Approach		
170	Tons	HMA Machine Patch		
11,820	Lbs.	FORTA-FI Asphalt Fibers		
17,660	Tons	23A Cr. Gravel		
1,270	Syds	Cold Milling		
33	Each	Butt Joint		
Grand Total:				

Primary Roads (21,830 tons) Local Roads (22,750 tons)
In the following townships: Akron, Arbela, Columbia, Denmark, Elkland, Gilford, Fremont,
Indianfields, Millington, Tuscola, & Watertown.

COMPLETION DATE: Seasonal Limitations per the MDOT 2020 Standard Specifications for Construction except as modify here. All paving must be complete by October 15, 2026. Signed Insurance, Agreement, and ROW Permit, and front page of RFP shall be enclosed.

Bids are to be submitted on the Road Commission forms in a plainly marked, sealed envelope. No faxed or emailed bids accepted. Plans and specifications are available online at www.tuscolaroad.org. Please contact Brent Dankert, Tuscola County Highway Engineer at 989-233-7472 or highwayengineer@tuscolaroad.org with any questions. Any addenda must be noted and initialed.

If you are interested in bidding and have downloaded plans from the website, please email highwayengineer@tuscolaroad.org to be added to the plan holders list to make sure you receive addendums.

The Contractor has examined the proposal, permits, plans, and the location of the work described here in and is fully informed as to the nature of the work and the conditions relating to its performance. Proposals will be received from contractors having a current (Cb) prequalification with the Michigan Department of Transportation. All work will be done in accordance with the requirements of Section 501 of 2020 MDOT Standard Specifications for Construction and as modified herein.

General:

This work shall be at various locations throughout Tuscola County or state highways under the maintenance jurisdiction of the Tuscola County Road Commission. This work shall include all necessary labor, equipment, and material to place HMA to the depth specified, and compacting the material to achieve the required density for a complete installation. Quantities shown are estimates and are subject to increase or decrease by the Engineer. Changes in quantities will not change unit prices as bid. Some projects are to be constructed in coordination with work by other Contractors, or Tuscola County Road Commission Crews. The contractor awarded these projects will cooperate by scheduling their work with the other crew(s) accordingly.

Projects may be added or deleted as mutually agreed upon by the Road Commission and the Contractor. All local road projects listed are subject to the approval and award of the project at the township level.

Schedule:

- 14 days advance notice shall be given by contractor prior to paving. The advance notification allows for advance construction signs to be installed and any prep work such as cutting and spraying shoulders, to be completed by the Tuscola County Road Commission. This advance notification is crucial as the Tuscola County Road Commission will not complete the prep work until notification is given.
- All work shall be completed Monday through Friday with Engineer's approval needed for Saturday work, and Board of Road Commissioner's approval needed for Sunday work.

- Late April 2026 Preconstruction meeting with contractor. The Engineer will determine the day, time and place for the preconstruction meeting.
- Biweekly Progress Meetings. The Contractor must attend biweekly progress meetings with the Engineer. The Engineer will determine the day, time, and place for the progress meetings. All work needs to be coordinated with the HMA Crush and Shape, Chip Seal Contractor, Grading Contractor, and Tuscola County Road Commission Crews and approved by the Engineer.
- May 4th, 2026 Weekly a list will be provided to the contractor as Townships authorize local road projects.
- June 1st, 2026 Complete List of Paving Projects to contractor
- June 30th, 2026 Interlayers Scheduled to be completed. HMA surface must be applied within 10 days of the acceptance of the interlayer.
- The HMA surface must be applied within 10 days of the acceptance of crush and shape surface.
- October 15th, 2026 Completion Date. All work shall be completed within the Seasonal Limitations as specified by the 2020 MDOT Standard Specifications for Construction unless otherwise approved by the Engineer.
- **It is expected that once a date is scheduled by the contractor to pave a project that project will be paved within 14 days. If the project is not paved within 14 days liquidated damages may be assessed at a rate of \$100.00 per day per project at the discretion of the Engineer.**

Construction:

The Contractor shall follow the construction methods as described in Section 501.03 of the 2020 MDOT Standard Specifications for Construction except as modified herein:

1. Hot Mix Asphalt (HMA)

- a. **Leveling** - Where directed by the Engineer to correct irregularities in the existing road surface, a leveling layer of bituminous mixture shall be placed with the paver and rolled. Corrections requiring additional bituminous mixture shall be rolled far enough ahead of paving operations to permit proper compaction. Materials placed as a leveling layer shall be paid for as **4EL Mainline**.
- b. **Main Line Paving** – Where directed by the Engineer to main line pave over existing or crush, shape, & compacted road surface, a layer of bituminous mixture shall be placed with the paver and rolled. Materials placed as main line paving shall be paid for as **4EL Mainline**.

- c. **Wedging** - Where directed by the Engineer to correct sporadic irregularities in the existing road surface. Wedging shall be considered included in the pay item for **4EL Mainline** paving but may require a separate application to achieve proper compaction.
 - d. **Base Patching** - This work involves removing the existing loose bituminous road material to the existing gravel base, and replacing it with new bituminous material, 1.5” minimum. The method by which the existing bit material is to be removed and replaced will be up to the Contractor but will require prior approval by the Engineer. The base patch shall be noted and included in the pay item as indicated.
 - e. **HMA Machine Patching** - This work involves removing the existing road material by others and replacing it with new bituminous material, 1.5” minimum. The method by which the existing bit material is to be removed and replaced will be by Cold Milling, coordination with TCRC required. All work shall be paid for as **HMA Machine Patching**. The HMA patch shall be noted and included in the pay item as indicated.
2. **HMA Approach** – When specified will be placed as a separate application from main line paving on a crossroad or drive requiring more than the 3’ typical widening done with main line paving. If the pay item **HMA Approach** is not included, but the contractor chooses to pave approaches and driveways separate from mainline, all cost for work will be included in **4EL Mainline**.
3. **Non-Motorized Pathway** – Where designated the non-motorized pathway shall be paved in the same pass as the mainline and at the same slope as mainline paving. Material placed shall be paid for as **Non-Motorized Pathway**.
4. **Compaction** - The Nuclear Gauge Method for testing compaction will be used on Primary roads. The Number of Rollers Method chart below shall apply, for local road paving. The Engineer may decide to verify density on local roads with the Nuclear Gauge Method.

Number of Rollers Required Based on Placement Rate:

Average Laydown Rate, Square Yards Per Hour	Number of Rollers Required	
	Compaction Rollers	Finish Rollers
Less than 600		
601 – 1200	1	1*
	1	1
1201 – 2400	2	1
2401 – 3600	3	1
3601 and more	4	1

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

An approved self-propelled pneumatic-tired roller shall be provided and used as directed while placing Bit Mix for leveling or wedging.

5. **Butt Joints** - Shall be constructed at railroad crossings, bridge decks, and at locations specified. Remove the existing surface to the thickness of the proposed overlay, for the full width of the joint. Uniformly taper the removal to the original surface over a minimum of 35 feet, (1" per 35'), or as agreed to with the Engineer. Once the Butt Joints are cut, bump signs shall be installed and a bag joint shall be installed and maintained by the Contractor until it is paved over. Butt Joint shall not be cut more than 7 days prior to paving. Butt Joints will be paid for by the Each as noted on the bid.
6. **Safety Edge** – Shall be installed on all reconstruct projects, (crush and shape and new pavement projects). Safety Edge shall be constructed in accordance with MDOT Standard Detail R-110.
7. **Pavement Removal** - Shall be completed according to Section 204.04B of the 2020 MDOT Standard Specifications for Construction.
8. **Cold Milling Full Width and Approach** - Shall be completed in accordance with Michigan Department of Transportation 2020 Standard Specifications for Construction Section S01 and all other applicable sections. Depth of Cold Milling shall be 1.5 inches or as noted on the bid. For locations where the depth of Cold Milling is 3.0 inches the Contractor shall pave back a minimum of 1.5 inches by end of day. Once paving is done, bump signs & uneven lane signs shall be installed. A bag joint shall also be installed and maintained by the contractor until all paving is complete. Cold Milling Full Width and Approach shall be paid for by the square yard as noted on the bid.
9. **Equipment** - The paver shall be equipped with an automatically controlled and activated screed and strike-off assembly.
10. **Temporary Pavement Marking Tape** - Shall be required on Michigan Department of Transportation projects and all Primary Road projects only. Temporary pavement marking tape shall be Type NR unless specified by the Engineer. No additional payment will be made for the tape; payment for temporary pavement marking tape shall be included in other items of work.
11. **Gravel Driveway Approaches** - Asphalt fillets at gravel driveways on overlay projects shall be completed with mainline paving. 23A Shoulder Gravel shall be applied to each gravel approach from the fillet out 5' to taper new grade to existing driveway. All driveways shall not exceed 10% running slope. If the driveway exceeds 10% the gravel shall be extended past the 5' point until the running slope is less than 10%. Material, equipment, and labor used to complete this work will not be paid for separately but will be considered included in line item 23A Gravel Shoulder.
12. **Hard Surfaced Driveways** – Driveway approaches for existing asphalt or concrete drives shall be feathered with hot mix asphalt to meet existing grade within 5' of the edge of pavement. All hard surface driveway overlays shall not exceed 10% running slope. If the driveway overlay exceeds 10% the asphalt shall be extended past the 5' point until the running slope is less than 10%. Material, equipment, and labor used to complete this work will not be paid for separately but will be considered in other items of work.
13. **Limestone Driveways** – Limestone material will be placed by the Tuscola County Road Commission. Locations may be marked to gap prior to the Contractor's shouldering operation. Care shall be taken to avoid placing shoulder material in these driveways.

14. **Bond Coat** – Shall be applied at a uniform rate of application between 0.05 to 0.15 gallons per square yard. A bond coat shall be applied between multiple lifts of asphalt. Bond Coat will not be paid for separately but included in the cost of other bid items.
15. **FORTA-FI Asphalt Fibers** - The fibers are added at a rate of one (1) pound of fibers per one (1) ton of asphalt mix. Add fiber during the production process after the flame but before introduction of the liquid AC. For batch plants, the fibers are added either manually using pre-measured bags or with a FORTA® Delivery System. For drum plants, bags can be placed on the RAP conveyor manually or directly into the drum with a FORTA Delivery System. Ensure minimum mix production temperatures as follows: 220°F minimum for bulk fiber use; or 275°F minimum for pre-measured bags (bags may not fully dissolve below 275°F).

Materials:

All materials must meet the 2020 MDOT Standard Specification for Construction except as modified herein:

1. **Bituminous Materials** – Bituminous Mixture shall be 4EL. See Below for more details.
2. **Bond Coat** – Shall be SS-1h or low tracking bond coat and shall meet the requirement of MDOT SSFC 2020 Section 501 and 904.
3. **Asphalt Cement** – Shall be PG 58-28 in accordance with 2020 MDOT SSFC Section 501 and 904.
4. **Bituminous Mixture 4EL** – Shall meet the gradation as specified in 2020 MDOT SSFC Section 902 Table 902-5 and Physical Requirements specified in 2020 MDOT SSFC Section 902 Table 902-6. Asphalt cement content of the mix shall be from 5.7% to 6.5% in the surface course as directed by the Engineer. If/When Reclaimed Asphalt Pavement (RAP) is used a maximum of 27% RAP binder by weight of the total binder in the mixture shall apply. Reference Special Provision 20SP-501F-01 for Recycled Hot Mix Asphalt Mixture on Local Agency Projects. The mix design shall be approved by the Engineer prior to the placement of the mixture.
5. **Bit Scratch Course** – The item Bit Scratch Course shall be placed at the pounds specified on the project list as leveling. The mix be the same as the top course, or as approved by the Engineer.
6. **Testing of Asphalt Materials** – All materials must be tested and approved in accordance with the MDOT Specifications before they enter the construction of the projects. The mix designs must be submitted and approved by the Engineer prior to placing any asphalt. Acceptance of asphalt material will be based on MDOT Special Provision 20SP-501I-01 Acceptance of HMA Mixture on Local Agency Projects, except as herein noted. Air voids shall be 3.0% for leveling and top course. The Engineer will perform Quality Assurance sampling and testing a minimum of two tests per day of production for each mix type. A failing test will result in additional testing with possible penalties. The Engineer will measure density with a Nuclear Density Gauge using the Gmm from the JMF for the density control target on all Primary Road Projects. Local Road Projects will use the Number of Rollers Method, unless requested otherwise by the Engineer. The Engineer may at their discretion verify the roller pattern as established by the contractor utilizing the Nuclear Density Gauge.

The Contractor shall submit Quality Control test results for each day of paving to the Engineer. **Lack of test reports may delay payment.** A new mix design must be approved prior to changes in the aggregate used. The Road Commission reserves the right to test randomly as necessary.

7. **Shoulders** – All crushed gravel or limestone material shall meet the 23A gradation and compacted in accordance with the 2020 MDOT Standard Specifications for Construction. The shoulder width of new roads shall be 3' minimum unless varied by the Engineer to fit field conditions. For overlay projects, existing shoulder width shall be matched, with a maximum width of 3'. Any concerns for loss of material due to existing narrow shoulder width shall be brought to the attention of the Engineer, as soon as possible. All shoulder material shall be bid by the ton furnished, hauled and placed. **Please Note: Shoulders on asphalt projects shall be placed within 7 days after asphalt is laid unless extended by approval of Engineer. A penalty of \$500/day per project may be charged if the Contractor does not comply.**
8. **Testing of 23A Shoulder Material** – The contractor will furnish one gradation test on each source (new stockpile) of shoulder material to be used, prior to placing and one gradation test for every 10,000 tons of shoulder material to be used. A copy of the test results shall be forwarded to the Engineer. The Road Commission reserves the right to test the shoulder material randomly as necessary.
9. **Monument Box Rings** – The Road Commission shall supply the contractor with monument box rings to adjust all existing monument boxes within the proposed pavement surface to the proper height providing a smooth ride, whether noted on the bid or not. These will be provided to the contractor during progress meetings. All work associated with installation shall be included in other items of work.
10. **FORTA-FI Asphalt Fibers** – The contractor shall furnish the pre-qualified aramid and polyolefin fiber blend known as FORTA-FI. A certified QA/QC mixing plan that includes procedures for continuously feeding the aramid fiber into the asphalt. The aramid fiber supplier must approve the QA/QC mixing plan of the asphalt plant producing the mix. In addition, the fiber supplier shall provide training to the asphalt producing plant personnel who are responsible for the continuous feeding of the aramid fiber into the HMA. Feeding can be accomplished by using either manual or machine operated equipment for the entire fiber mixing process but shall be done in a continuous flow-like manner.

Traffic Control:

The Road Commission will install “Road Work Ahead” signs on each project. Traffic must be maintained to local traffic during construction. Primary Road work will be performed via a single lane closure. Local Road work will be performed via temporary road closure.

1. Lane Closure – The contractor shall maintain traffic as per the Tuscola County Road Commission Maintaining Traffic Special Provision attached.
2. Temporary Road Closure – Will be allowed if approved by the Engineer on a site-specific basis. Type III barricades or arrow boards will be required at each end of the project along with a traffic regulator for re-routing traffic. Prior to commencing work, Contractor shall contact Central Dispatch, (989) 673-8338, and School District if in session to inform of Road Closure & Road Opening.
3. Warning Signs – The contractor will be responsible for supplying, installing, and maintaining any signs necessary to protect the motoring public from situations that have occurred due to unfinished work, i.e. Uneven Lanes Sign W8-11, Bump Sign W8-1, Low Shoulder W8-9. Such signs shall be installed in such a manner to NOT obscure visibility of existing regulatory and warning signs.
4. Traffic Regulators – Traffic regulators shall be equipped with High-visibility Class 2 or Class 3 safety apparel, Stop/Slow or Stop/Stop Sign Paddles, and a two-way radio system and a standby backup system if traffic regulators are not visible to each other. Ensure persons designated to regulate traffic receive training, no more than 12 months before traffic regulating operations, on property traffic regulating procedures. Ensure this training consists of at least viewing “Safely Regulating Traffic in Michigan” and reading the current MDOT handbook, Traffic Regulators Instruction Manual. Maintain documentation on persons trained and dates trained and provide to the Engineer upon request.

Measurement and Payment:

The completed work will be paid for at the contract unit price for the following contract pay item and includes all material, equipment, and labor to complete these items.

One (1) unit price shall apply to each contract pay item and shall remain the same for all project locations included in this bid, regardless of where the work is performed. No adjustment to the unit price will be made based on project location.

<u>Pay Item</u>	<u>Pay Unit</u>
4EL Mainline	Ton
Non-Motorized Pathway	Ton
23A Shoulder Gravel	Ton
HMA Approach	Ton
HMA Machine Patch	Ton
FORTA-FI Asphalt Fibers	Lbs
Cold Milling	Syds
Butt Joint	Each

Contract items shall be invoiced by location. Measurement will be made by the unit specified above. Proper material tickets shall be provided with the invoice documenting quantity used of each material.

All invoices **MUST** include the TCRC job number and project location.

It is understood by all parties involved that the construction of some projects in this bid letting are conditional on the Road Commission receiving the necessary agreements from the Townships. Payment will be made as funds become available.

Warranty:

The Contractor hereby warrants his work and material for one year from date of placement. The Road Commission may choose to hold up to 10% of the project bid cost until the warranty expires.

Liability:

The Contractor shall at all times exercise extreme care and shall assume all liability for any damages resulting from his operations and shall hold the Tuscola County Road Commission harmless from any such claims or damages.

The contractor must obtain a Tuscola County Right of Way Permit before any work can begin.

The successful bidder must also furnish certificates or policies giving satisfactory evidence of insurance coverage in accordance with *Tuscola County Road Commission Policies and Procedures Manual Section 9.7 Insurance Requirements*, to ensure adequate payment for any damage caused by his operations.

The contractor shall, prior to the start of work, file with the Tuscola County Road Commission a certificate of Workmen's Compensation Insurance. The attached certificate of insurance is required for the successful bidder or bidders.

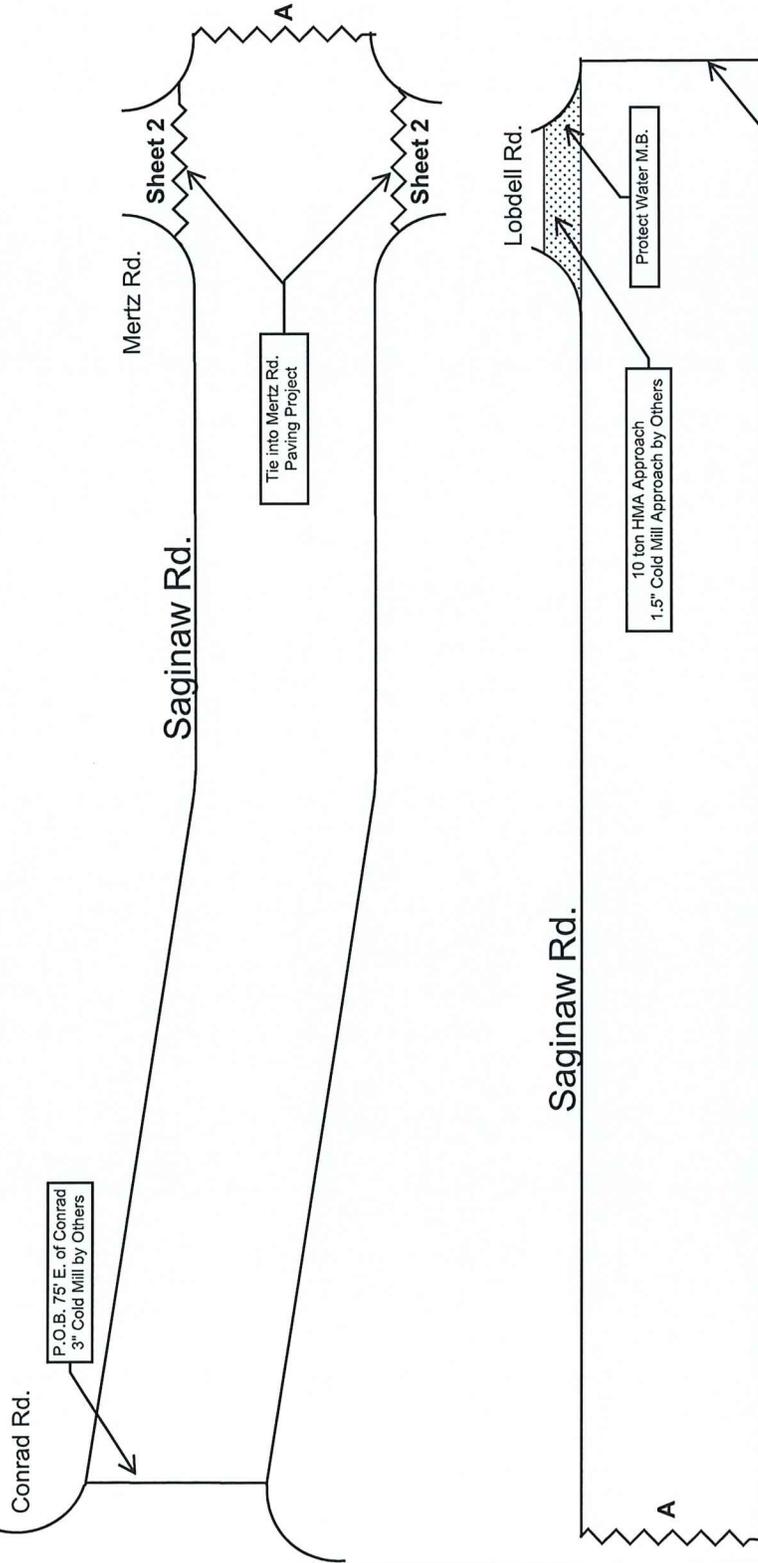
NON-COMPLIANCE WITH PROJECT SPECIFICATION PROVISIONS:

Any variation from the specifications of the project herein without written approval from the Tuscola County Road Commission and/or its authorized representative may result in, at the discretion of the Road Commission, the voiding and/or canceling of the acceptance of any bid and/or contract, resulting from this project.

The Board reserves the right to accept or reject any or all proposals and to re-advertise or to accept the proposal, which in their opinion, is in the best interest of Tuscola County.

Attachments:

1. 2026 HMA Project Scope
2. TCRC Standard Details
3. Title IV and VI Compliance
4. Agreement
5. Tuscola County Right of Way Permit
6. Traffic Control Policy
7. Insurance Policy
8. Safety Edge Standard Detail R-110
9. Special Provision 20SP-501A-01 – Sampling Asphalt Binder on Local Agency Project
10. Special Provision 20SP-501F-01 – Recycled Hot Mix Asphalt Mixture on Local Agency Projects
11. Special Provision 20SP-501I-01 – Acceptance of Hot Mix Asphalt Mixture on Local Agency Projects

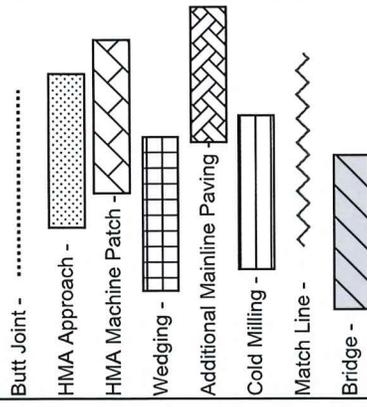


Location	Township	Road Name	Location	Length (Miles)	Width (Ft)
1	Primary	Saginaw	Conrad to Lobdell	2.02	36
		<u>Estimated Qty</u>	<u>Unit</u>	<u>Item</u>	<u>Placed Qty</u>
		4,750	Tons	165# Bit Mix (2 Lifts)	
		2,400	Tons	Non-Motorized Pathway	
		10	Tons	HMA Approach	
		1,300	Tons	23A Cr. Gravel	

NOTES:

- 3" Cold Mill & HMA Overlay Coordinate with Cold Milling Contractor.
- Sweeping & cleaning for cold milling to be included with HMA Costs.
- 4 days of cold milling anticipated.
- Safety Edge to be installed as per MDOT Standard Plan R-110-B.

LEGEND:



NO.	DATE	AUTH	DESCRIPTION

2026 TCRC HOT MIX ASPHALT BID LETTING

Tuscola County Road Commission
 1733 Mertz
 Caro, MI 48723
 Phone: 989 673-2128
 Fax: 989 673-3294

2026 TCRC HOT MIX ASPHALT BID LETTING

TCRC BID NO: 1

Created By: WRG
 Date: 12/31/2025

Approved By: BJD
 Date: 01/21/2026

SAGINAW RD
 CONRAD TO MAYVILLE VL

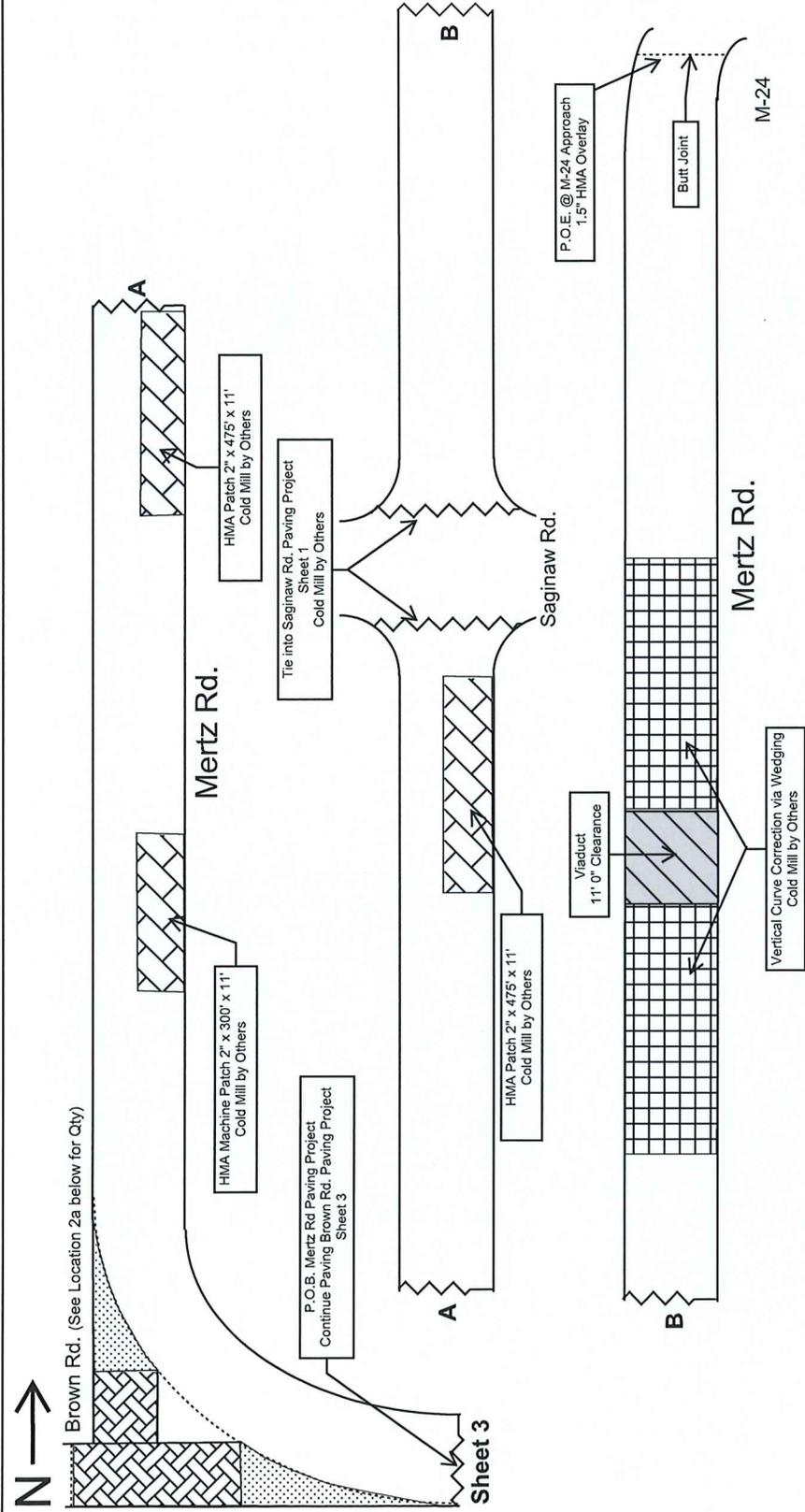
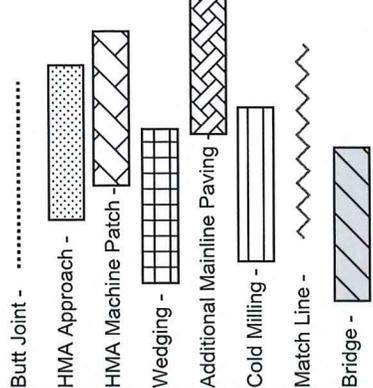
NOT TO SCALE

SHEET
1

NOTES:

1.5" HMA Overlay
 Coordinate with Cold Milling Contractor.
 Sweeping & cleaning for cold milling to be included with HMA Costs.
 1 day of cold milling & HMA Machine Patching.

LEGEND:



Location	Township	Road Name	Location	Length (Miles)	Width (Ft)	Length (Miles)	Width (Ft)
2	Primary	Mertz	Brown to M-24	1.82	22	0.06	20
	Estimated Qty	Unit	Item	Placed Qty			
	2,300	Tons	180# Bit Mix				
	170	Tons	HMA Machine Patch				
	20	Tons	HMA Approach				
	1,200	Tons	23A Cr. Gravel				
			Butt Joint				

2026 TCRC HOT MIX ASPHALT BID LETTING

Tuscola County Road Commission
 1733 Mertz
 Caro, MI 48723
 Phone: 989 673-2128
 Fax: 989 673-3294

2026 TCRC HOT MIX ASPHALT BID LETTING

TCRC BID NO: 2
 Created By: WRG
 Approved By: BJD

Date: 12/31/2025
 Date: 01/21/2026

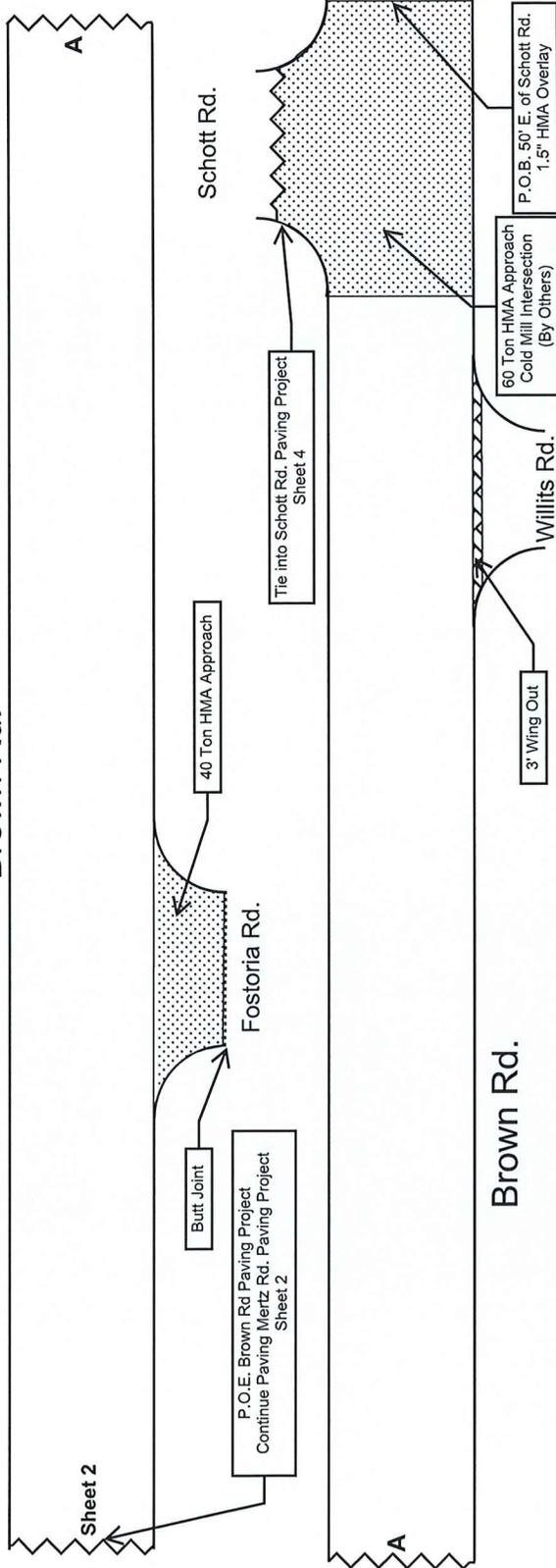
MERTZ RD
 BROWN TO M-24

NOT TO SCALE

SHEET
2



Brown Rd.



NOTES:

1.5" HMA Overlay

Coordinate with Cold Milling Contractor.

Sweeping & cleaning for cold milling to be included with HMA Costs.

1 day of cold milling anticipated (including Schott).

LEGEND:

Butt Joint -

HMA Approach - [Pattern]

HMA Machine Patch - [Pattern]

Wedging - [Pattern]

Additional Mainline Paving - [Pattern]

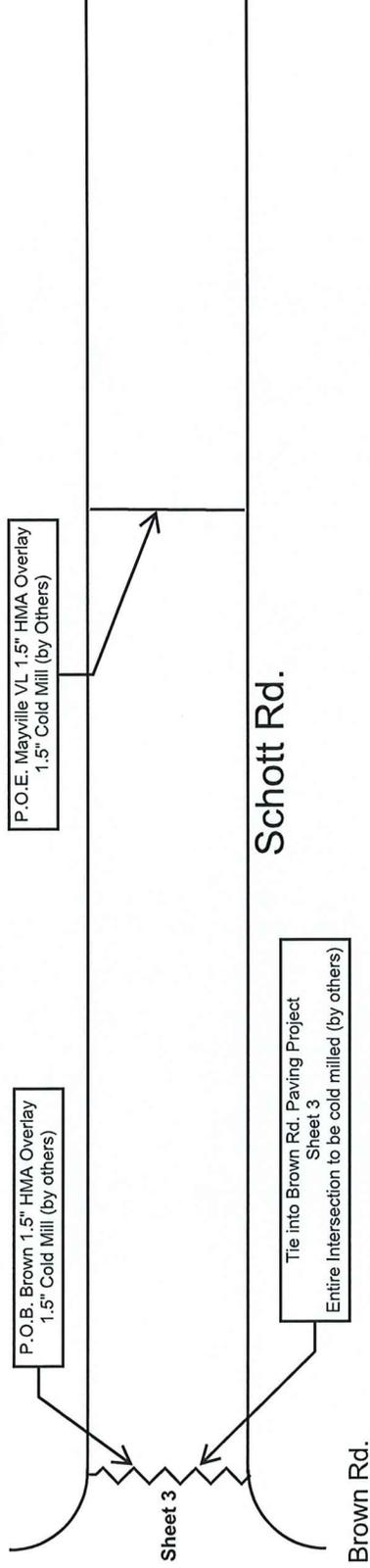
Cold Milling - [Pattern]

Match Line - [Pattern]

Bridge - [Pattern]

Location	Township	Road Name	Location	Length (Miles)	Width (ft)
3	Primary	Brown	Schott to Mertz	1.48	22
		<u>Estimated Qty</u>	<u>Item</u>	<u>Placed Qty</u>	
	1,800	Tons	180# Bit Mix		
	100	Tons	HMA Approach		
	1,000	Tons	23A Cr. Gravel		

2026 TCRC HOT MIX ASPHALT BID LETTING		2026 TCRC HOT MIX ASPHALT BID LETTING	
NO.	DATE	AUTH.	DESCRIPTION
Tuscola County Road Commission 1733 Mertz Caro, MI 48723 Phone: 989 673-2128 Fax: 989 673-3294		BROWN RD SCHOTT TO MERTZ	
		Created By: WRG Date: 12/31/2025 Approved By: BJD Date: 01/21/2026	
		3	
		NOT TO SCALE	



NOTES:

- 1.5" Cold Mill & HMA Overlay
- Coordinate with Cold Milling Contractor.
- Sweeping & cleaning for cold milling to be included with HMA Costs.
- 1 day of cold milling anticipated (including Brown).

LEGEND:

- Butt Joint -
- HMA Approach - [Patterned Box]
- HMA Machine Patch - [Hatched Box]
- Wedging - [Grid Box]
- Additional Mainline Paving - [Cross-hatched Box]
- Cold Milling - [Horizontal Line Box]
- Match Line - [Wavy Line]
- Bridge - [Diagonal Line Box]

Location	Township	Road Name	Location	Length (Miles)	Width (ft)
4	Primary	Schott	Brown to Mayvill VL	0.48	22
		<u>Estimated Qty</u>	<u>Unit</u>	<u>Placed Qty</u>	
		600	Tons	165# Bit Mix	
		300	Tons	23A Cr. Gravel	

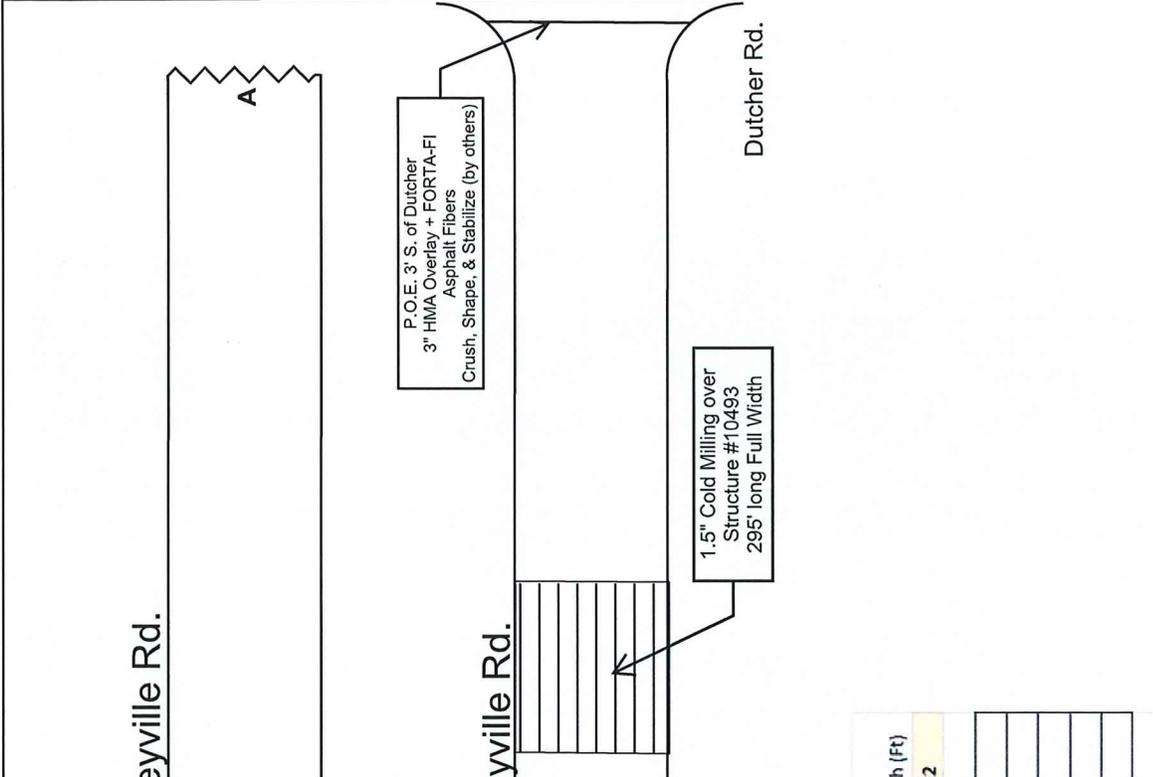
2026 TCRC HOT MIX ASPHALT BID LETTING		2026 TCRC HOT MIX ASPHALT BID LETTING		SCHOTT RD		SHEET	
NO.	DATE	AUTH	DESCRIPTION	BROWN TO MAYVILLE VL		4	
				Created By: WRG		NOT TO SCALE	
				Approved By: BJD		Date: 12/31/2025	
				Approved By: BJD		Date: 01/21/2026	



Tuscola County Road Commission
 1733 Metz
 Caro, MI 48723
 Phone: 989 673-2128
 Fax: 989 673-3294

NOTES:
 Crush, Shape, & Stabilize + 3" HMA Overlay
 Coordinate with Crush & Shape Contractor.
 Safety Edge to be installed as per MDOT
 Standard Plan R-110-B.
 *Only to be constructed if NRF funds
 become available.*

LEGEND:
 Butt Joint -
 HMA Approach - [Pattern]
 HMA Machine Patch - [Pattern]
 Wedging - [Pattern]
 Additional Mainline Paving - [Pattern]
 Cold Milling - [Pattern]
 Match Line - [Symbol]
 Bridge - [Pattern]



Location	Township	Road Name	Location	Length (Miles)	Width (Ft)
6	Primary	Bradleyville	M-138 to Dutcher	2.00	22
		Estimated Qty	Unit	Placed Qty	
		4,800	Tons		
		4,800	Lbs		
		40	Tons		
		1,375	Tons		
		850	Syds		
			Item		
			165# Bit Mix (2 Lifts)		
			FORTA-FI Asphalt Fibers		
			HMA Approach		
			23A Cr. Gravel		
			Cold Milling		

*Only to be constructed if NRF funds become available. (Decision by July 1st)

2026 TCRC HOT MIX ASPHALT BID LETTING		2026 TCRC HOT MIX ASPHALT BID LETTING		BRADLEYVILLE RD		SHEET			
NO.	DATE	AUTH	DESCRIPTION	M-138 TO DUTCHER					
				Created By: WRG		Date: 12/31/2025			
				Approved By: BJD		Date: 01/21/2026			
Tuscola County Road Commission 1733 Mertz Caro, MI 48723 Phone: 989 673-2128 Fax: 989 673-3294				NOT TO SCALE				6	

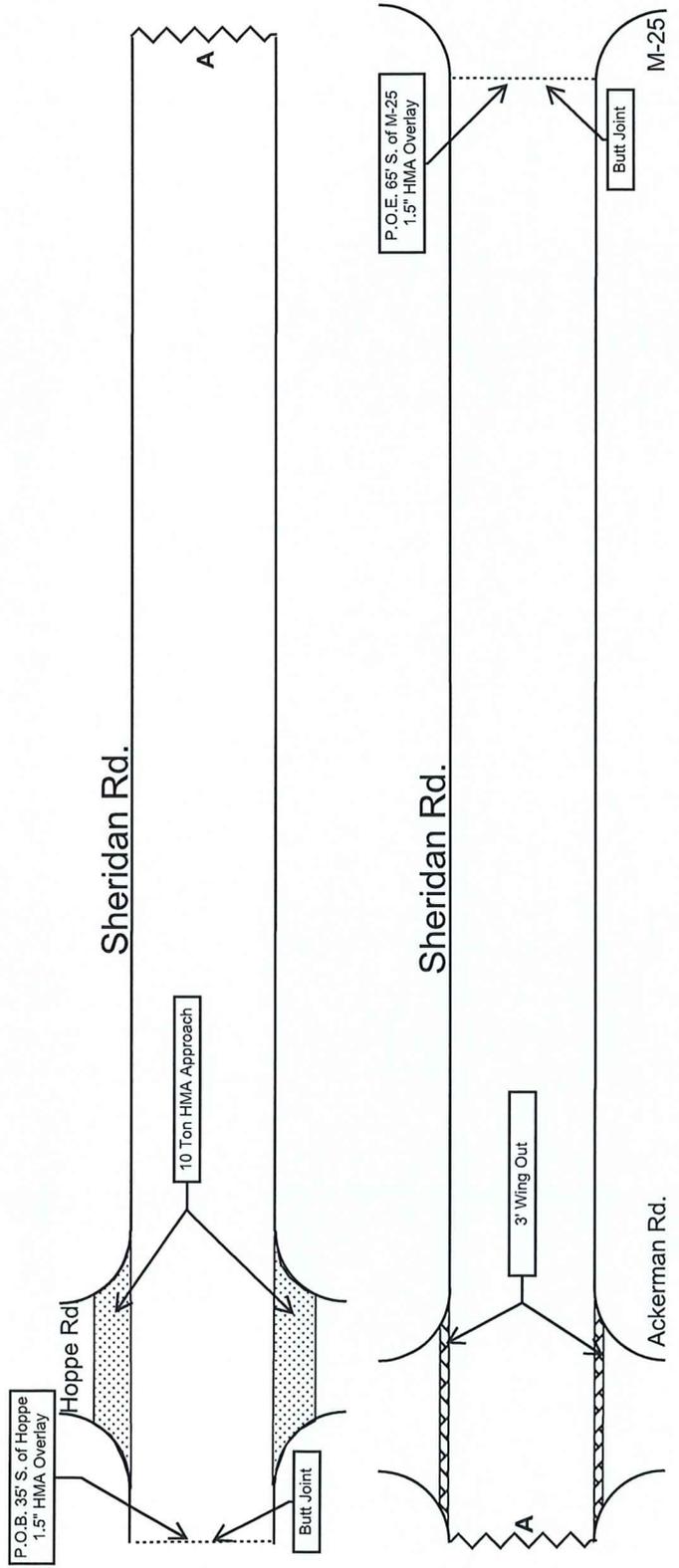




NOTES:
 1.5" HMA Overlay
 Wedging as requested.

LEGEND:

- Butt Joint -
- HMA Approach - [Pattern]
- HMA Machine Patch - [Pattern]
- Wedging - [Pattern]
- Additional Mainline Paving - [Pattern]
- Cold Milling - [Pattern]
- Match Line - [Symbol]
- Bridge - [Pattern]



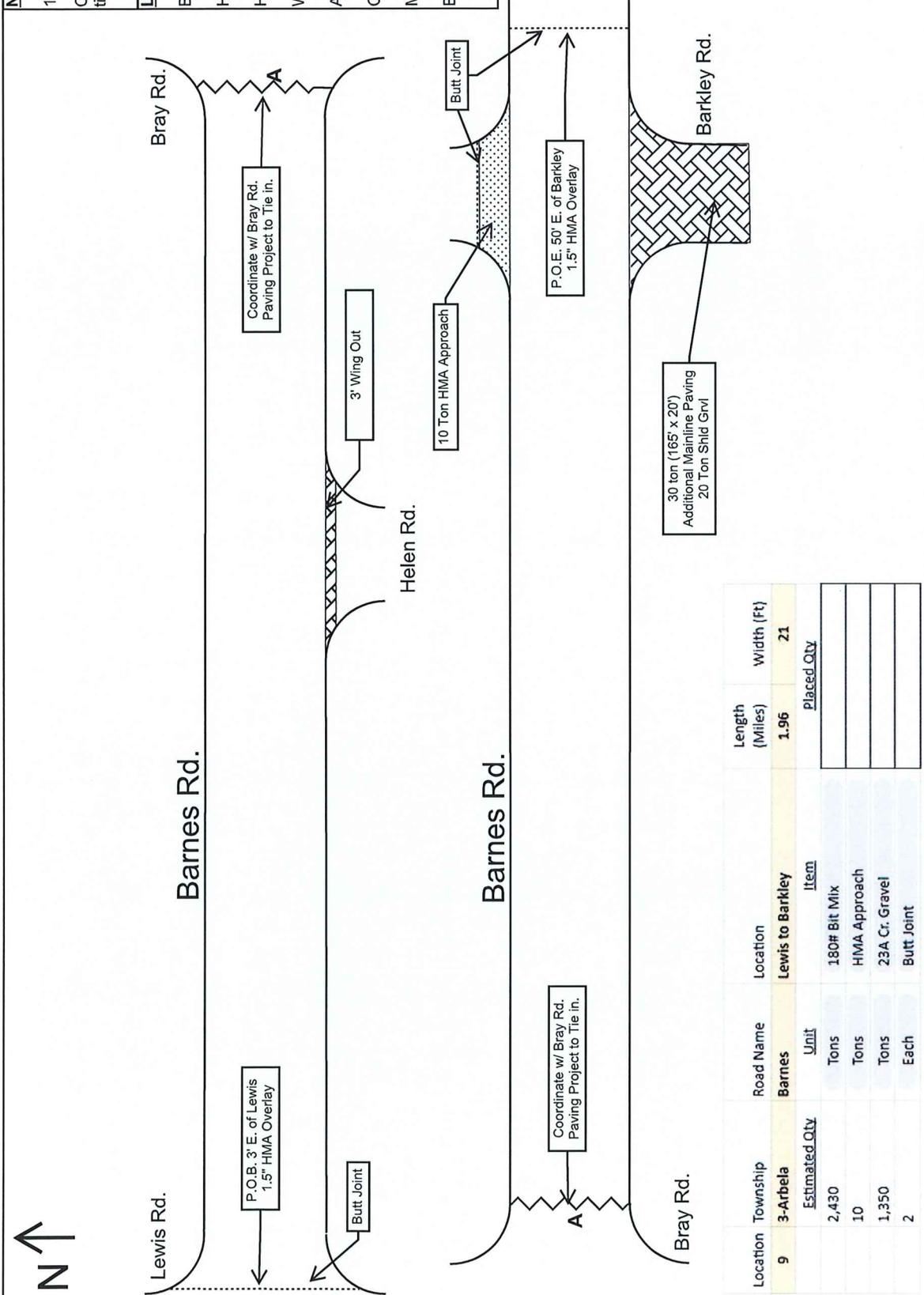
Location	Township	Road Name	Location	Length (Miles)	Width (ft)
8	1-Akron	Sheridan	Hoppe to M-25	1.99	21
		<u>Estimated Qty</u>	<u>Unit</u>	<u>Item</u>	<u>Placed Qty</u>
		2,200	Tons	180# Bit Mix	
		20	Tons	HMA Approach	
		1,300	Tons	23A Cr. Gravel	
		2	Each	Butt Joint	

2026 TCRC HOT MIX ASPHALT BID LETTING		SHERIDAN RD	SHEET
TCRC BID NO: 8		HOPPE TO M-25	
Created By: WRG		Date: 01/19/2026	
Approved By: BJD		Date: 01/21/2026	
NOT TO SCALE			
8			

<p>Tuscola County Road Commission 1733 Mertz Caro, MI 48723 Phone: 989 673-2128 Fax: 989 673-3294</p>	<p>2026 TCRC HOT MIX ASPHALT BID LETTING</p>
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NOTES:
 1.5" HMA Overlay
 Coordinate with Bray Rd. Fed Aid Project to tie into approach at Bray Rd.

LEGEND:
 Butt Joint -
 HMA Approach - [Pattern]
 HMA Machine Patch - [Pattern]
 Wedging - [Pattern]
 Additional Mainline Paving - [Pattern]
 Cold Milling - [Pattern]
 Match Line - ~~~~~
 Bridge - [Pattern]

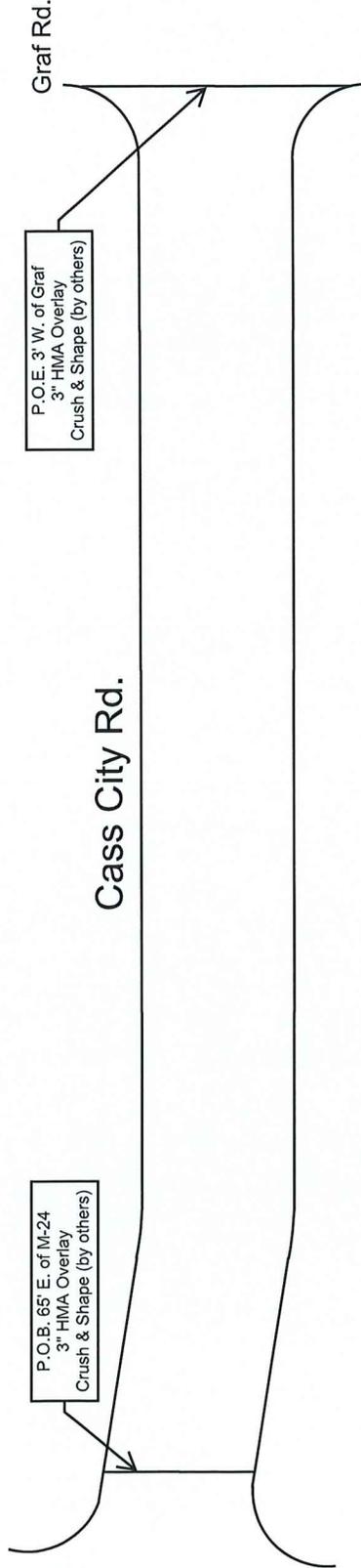


Location	Township	Road Name	Location	Length (Miles)	Width (Ft)
9	3-Arbela	Barnes	Lewis to Barkley	1.96	21
		Estimated Qty	Unit	Item	Placed Qty
		2,430	Tons	180# Bit Mix	
		10	Tons	HMA Approach	
		1,350	Tons	23A Cr. Gravel	
		2	Each	Butt Joint	

2026 TCRC HOT MIX ASPHALT BID LETTING		2026 TCRC HOT MIX ASPHALT BID LETTING		BARNES RD		SHEET	
NO.	DATE	AUTH	DESCRIPTION	TCRC BID NO: 9	LEWIS TO BARKLEY		9
				Created By: WRG	Date: 12/31/2025		
				Approved By: BJD	Date: 01/21/2026		
				Tuscola County Road Commission 1733 Mertz Caro, MI 48723 Phone: 989 673-2128 Fax: 989 673-3294			
				NOT TO SCALE			



M-24



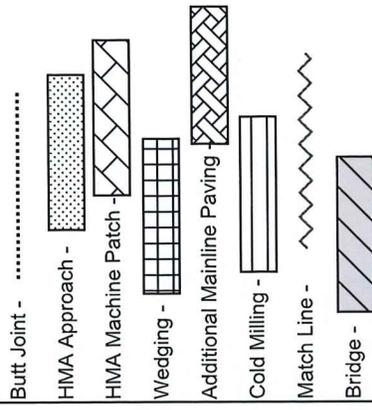
P.O.B. 65' E. of M-24
3" HMA Overlay
Crush & Shape (by others)

P.O.E. 3' W. of Graf
3" HMA Overlay
Crush & Shape (by others)

NOTES:

Crush & Shape + 3" HMA Overlay
Coordinate with Crush & Shape Contractor.
Safety Edge to be installed as per MDOT
Standard Plan R-110-B.

LEGEND:



Location	Township	Road Name	Location	Length (Miles)	Width (Ft)
10	4-Columbia	Cass City	M-24 to Graf	0.71	22
		Estimated Qty	Item		Placed Qty
		1,700	165# Bit Mix (2 Lifts)		
		550	23A Cr. Gravel		

2026 TCRC HOT MIX ASPHALT BID LETTING		2026 TCRC HOT MIX ASPHALT BID LETTING		CASS CITY RD		SHEET			
NO.	DATE	AUTH	DESCRIPTION	TCRC BID NO: 10	M-24 TO GRAF				
				Created By: WRG	Date: 12/31/2025				
				Approved By: BJD	Date: 01/21/2026				
 <p>Tuscola County Road Commission 1733 Mertz Caro, MI 48723 Phone: 989 673-2128 Fax: 989 673-3294</p>				<p>NOT TO SCALE</p>				10	



P.O.B. 3' N. of Dickerson
3" HMA Overlay
Crush & Shape (by others)

P.O.E. 20' S. of Hoppe
3" HMA Overlay
Crush & Shape (by others)

French Rd.

3' Wing Out

Kiel Rd.

Hoppe Rd.

Dickerson Rd.

NOTES:

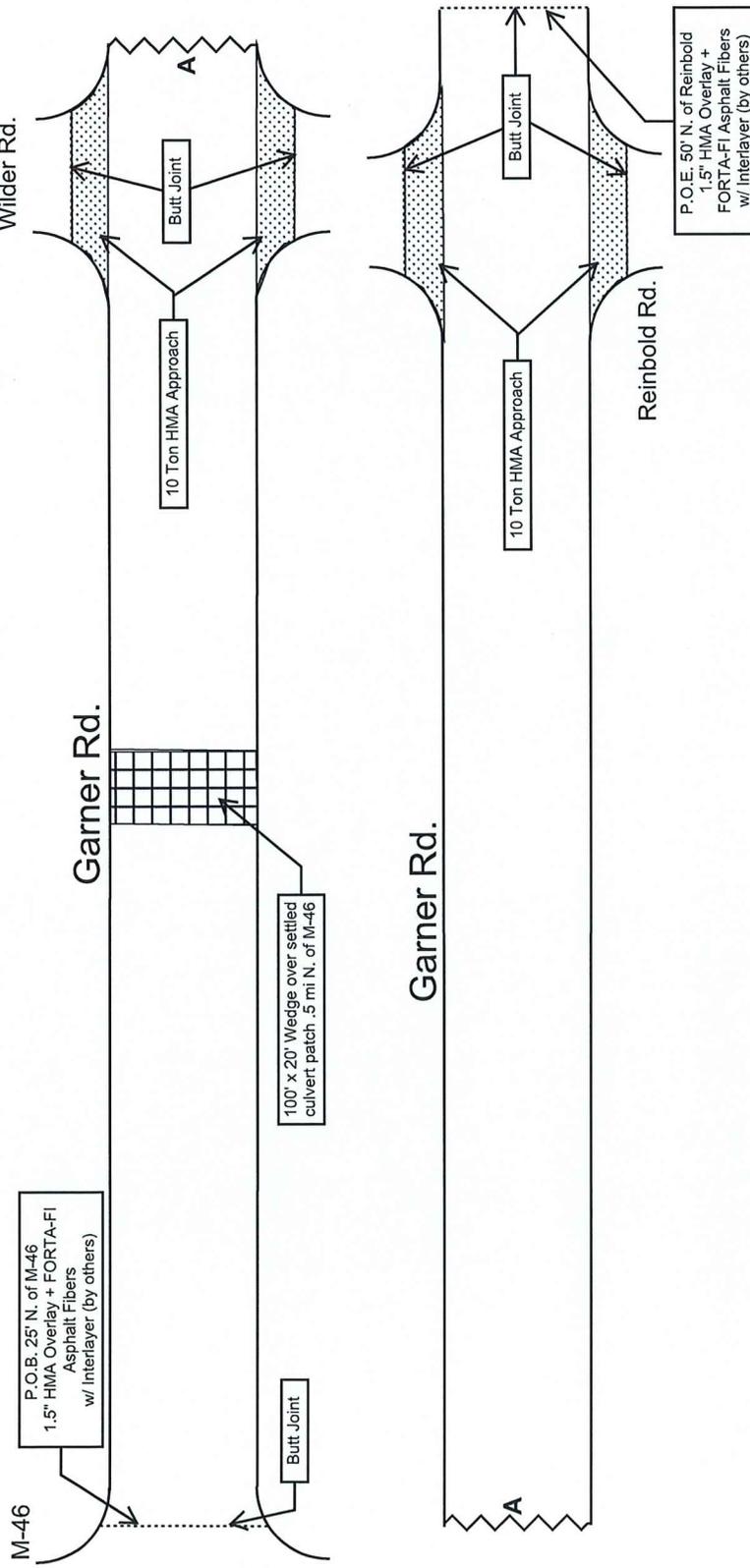
Crush & Shape + 3" HMA Overlay
Coordinate with Crush & Shape Contractor.
Safety Edge to be installed as per MDOT
Standard Plan R-110-B.

LEGEND:

- Butt Joint -
- HMA Approach - [Patterned Box]
- HMA Machine Patch - [Diagonal Lines Box]
- Wedging - [Grid Box]
- Additional Mainline Paving - [Cross-hatch Box]
- Cold Milling - [Horizontal Lines Box]
- Match Line - [Wavy Line]
- Bridge - [Diagonal Lines Box]

Location	Township	Road Name	Location	Length (Miles)	Width (Ft)
11	4-Columbia	French	Dickerson to Hoppe	1.01	20
		Estimated Qty	Item	Placed Qty	
		2,200	165# Bit Mix (2 Lifts)		
		700	23A Cr. Gravel		

2026 TCRC HOT MIX ASPHALT BID LETTING		2026 TCRC HOT MIX ASPHALT BID LETTING		FRENCH RD		SHEET	
NO.	DATE	AUTH	DESCRIPTION	DICKERSON TO HOPPE		11	
				Created By: WRG		Date: 12/31/2025	
				Approved By: BJD		Date: 01/21/2026	
 <p>Tuscola County Road Commission 1733 Merz Caro, MI 48723 Phone: 989 673-2128 Fax: 989 673-3294</p>				<p>NOT TO SCALE</p>			

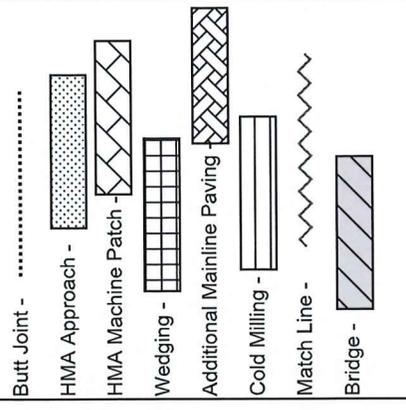


Location	Township	Road Name	Location	Length (Miles)	Width (Ft)
12	6-Denmark	Garner	M-46 to Reinbold	1.99	20
		Estimated Qty	Item	Placed Qty	
		2,220	180# Bit Mix		
		2,220	FORTA-FI Asphalt Fibers		
		40	HMA Approach		
		1,300	23A Cr. Gravel		
		6	Butt Joint		

NOTES:

- 1.5" HMA Overlay w/ Interlayer
- Coordinate with Chip Seal Contractor.
- Wedging as Requested.

LEGEND:



2026 TCRC HOT MIX ASPHALT BID LETTING		GARNER RD	SHEET
TCRC BID NO: 12		M-46 TO REINBOLD	12
Created By: WRG		NOT TO SCALE	
Approved By: BJD		Date: 12/31/2025	
Approved By: BJD		Date: 01/21/2026	

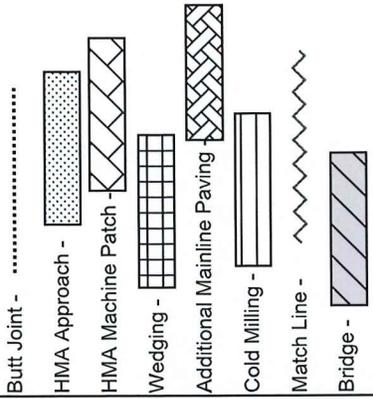
Tuscola County Road Commission
1733 Mertz
Caro, MI 48723
Phone: 989 673-2128
Fax: 989 673-3294



NOTES:

Crush & Shape + 3" HMA Overlay
 Coordinate with Crush & Shape Contractor.
 Safety Edge to be installed as per MDOT
 Standard Plan R-110-B.

LEGEND:



P.O.E. 3' S. of BCF
 3" HMA Overlay
 Crush & Shape (by others)

Voss Rd.
 3' Wing Out

P.O.B. 50' S. of Daus
 3" HMA Overlay
 Crush & Shape (by others)

Schwegler Rd.
 3' Wing Out

Bay City Forestville Rd.

Daus Rd.

Location	Township	Road Name	Location	Length (Miles)	Width (ft)
13	7-Elkland	Schwegler	Daus to Bay City Forestville	1.01	22
	Estimated Qty	Unit	Item	Placed Qty	
	2,400	Tons	165# Bit Mix (2 Lifts)		
	700	Tons	23A Cr. Gravel		

SHEET

SCHWEGLER RD
 DAUS TO BAY CITY FORESTVILLE

13

NOT TO SCALE

2026 TCRC HOT MIX ASPHALT BID LETTING

TCRC BID NO: 13

Created By: WRG

Date: 12/31/2025

Approved By: BJD

Date: 01/21/2026

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2026 TCRC HOT MIX ASPHALT BID LETTING

DESCRIPTION

DATE

NO.

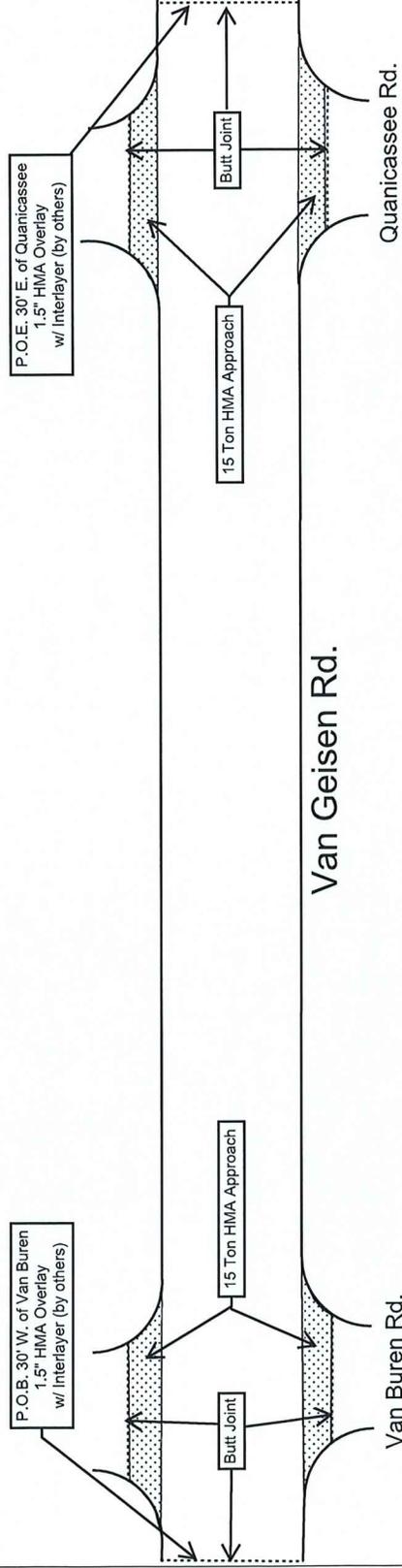


NOTES:

1.5" HMA Overlay w/ Interlayer
 Coordinate with Chip Seal Contractor.
 Wedging as Requested.

LEGEND:

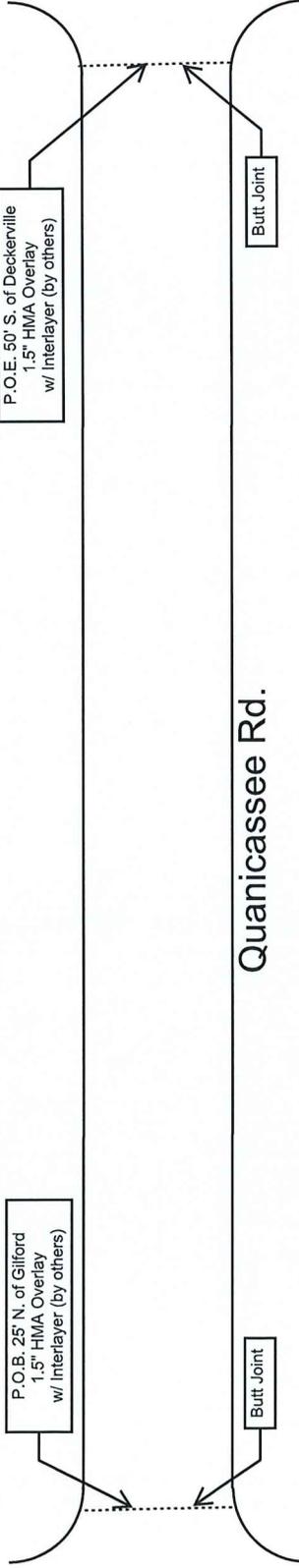
- Butt Joint -
- HMA Approach - [Patterned Box]
- HMA Machine Patch - [Patterned Box]
- Wedging - [Grid Pattern Box]
- Additional Mainline Paving - [Hatched Box]
- Cold Milling - [Horizontal Line Box]
- Match Line - [Wavy Line]
- Bridge - [Diagonal Line Box]



Location	Township	Road Name	Location	Length (Miles)	Width (Ft)
14	12-Gilford	Van Geisen	Van Buren to Quanicassee	1.00	20
		Unit	Item	Placed Qty	
		Tons	180# Bit Mix		
		Tons	HMA Approach		
		Tons	23A Cr. Gravel		
		Each	Butt Joint		

2026 TCRC HOT MIX ASPHALT BID LETTING		VAN GEISEN RD	SHEET
Tuscola County Road Commission 1733 Mertz Caro, MI 48723 Phone: 989 673-2128 Fax: 989 673-3294		VAN BUREN TO QUANICASSEE	14
TCRC BID NO: 14		NOT TO SCALE	
Created By: WRG		Date: 12/31/2025	
Approved By: BJD		Date: 01/21/2026	





NOTES:

1.5" HMA Overlay w/ Interlayer
 Coordinate with Chip Seal Contractor.
 Wedging as Requested.

LEGEND:

- Butt Joint -
- HMA Approach - [Patterned Box]
- HMA Machine Patch - [Hatched Box]
- Wedging - [Grid Box]
- Additional Mainline Paving - [Cross-hatched Box]
- Cold Milling - [Horizontal Line Box]
- Match Line - [Wavy Line]
- Bridge - [Diagonal Line Box]

Quanicassee Rd.

Gilford Rd.

Deckerville Rd.

Location	Township	Road Name	Location	Length (Miles)	Width (Ft)
15	12-Gilford	Quanicassee	Gilford to Deckerville	1.00	20
		Estimated Qty	Item	Placed Qty	
		1,100	180# Bit Mix		
		650	23A Cr. Gravel		
		2	Butt Joint		

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2026 TCRC HOT MIX ASPHALT BID LETTING		QUANICASSEE RD	SHEET
TCRC BID NO: 15	Created By: WRG	GILFORD TO DECKERVILLE	15
Approved By: BJD	Date: 12/31/2025	NOT TO SCALE	



S. Colling Rd.

P.O.E. @ Caro CL
1.5" HMA Overlay

Butt Joint

Butt Joint

Dixon Rd.

P.O.B. 60' E. of M-81
1.5" HMA Overlay

Butt Joint

M-81

Location	Township	Road Name	Location	Length (Miles)	Width (Ft)
16	13-Indianfields	S. Colling/Dixon	Caro VI to M-81	1.45	21
		Unit	Item	Placed Qty	
		Tons	180# Bit Mix		
		Tons	23A Cr. Gravel		
		Each	Butt Joint		

NOTES:

1.5" HMA Overlay
Wedging as Requested.

LEGEND:

- Butt Joint - [Symbol]
- HMA Approach - [Symbol]
- HMA Machine Patch - [Symbol]
- Wedging - [Symbol]
- Additional Mainline Paving - [Symbol]
- Cold Milling - [Symbol]
- Match Line - [Symbol]
- Bridge - [Symbol]

2026 TCRC HOT MIX ASPHALT BID LETTING
TCRC BID NO: 16
Created By: WRG
Approved By: BJD
Date: 01/13/2026
Date: 01/21/2026

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1733 Mertz
Caro, MI 48723
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NO.	DATE	AUTH	DESCRIPTION

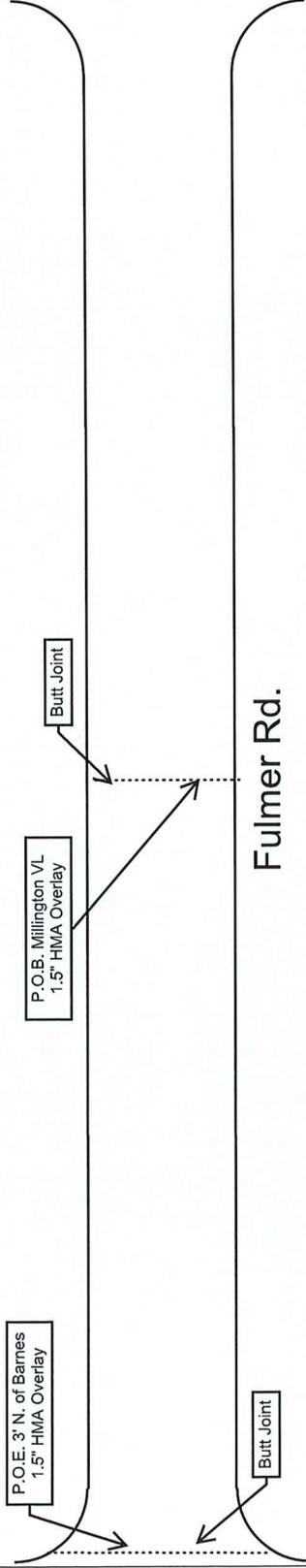


NOTES:

1.5" HMA Overlay

LEGEND:

- Butt Joint -
- HMA Approach - [Pattern]
- HMA Machine Patch - [Pattern]
- Wedging - [Pattern]
- Additional Mainline Paving - [Pattern]
- Cold Milling - [Pattern]
- Match Line - [Pattern]
- Bridge - [Pattern]

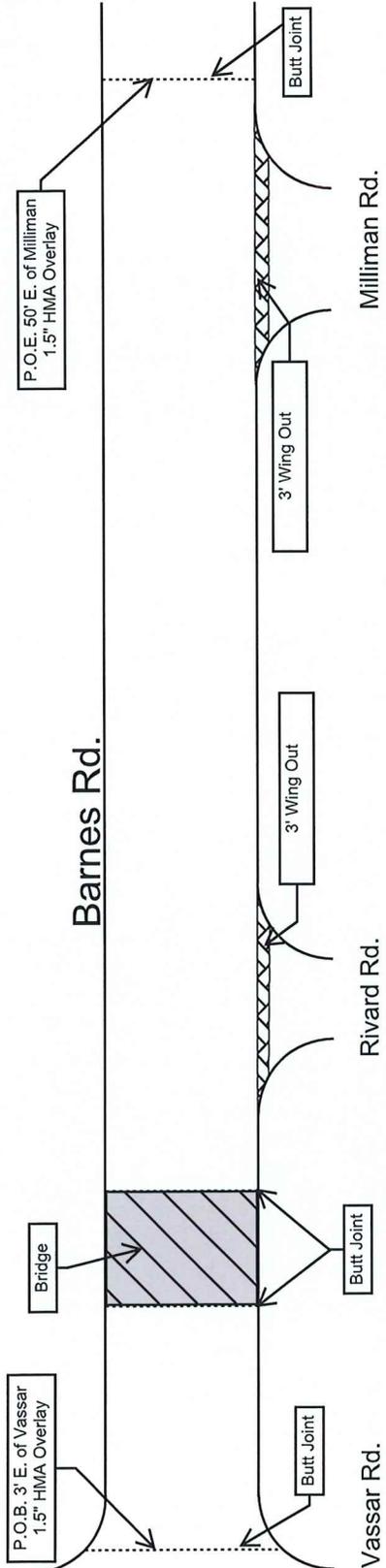


Millington Rd.

Barnes Rd.

Location	Township	Road Name	Location	Length (Miles)	Width (Ft)
17	17-Millington	Fulmer	Barnes to Millington VL	0.50	22
	Estimated Qty	Unit	Item	Placed Qty	
	600	Tons	180# Bit Mix		
	350	Tons	23A Cr. Gravel		
	2	Each	Butt Joint		

2026 TCRC HOT MIX ASPHALT BID LETTING		2026 TCRC HOT MIX ASPHALT BID LETTING		FULMER RD		SHEET	
NO.	DATE	AUTH	DESCRIPTION	TCRC BID NO: 17		BARNES TO MILLINGTON VL	
				Created By: WRG		Date: 12/31/2025	
				Approved By:		Date:	
 Tuscola County Road Commission 1733 Mertz Caro, MI 48723 Phone: 989 673-2128 Fax: 989 673-3294				NOT TO SCALE			
17							

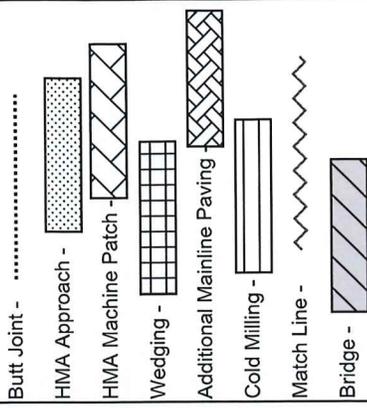


NOTES:

1.5" HMA Overlay

Box Culvert Installation set for Spring 2026.

LEGEND:



Location	Township	Road Name	Location	Length (Miles)	Width (Ft)
18	17-Millington	Barnes	Vassar to Milliman	0.67	22
		Estimated Qty	Unit	Item	Placed Qty
		800	Tons	180# Bit Mix	
		350	Tons	23A Cr. Gravel	
		4	Each	Butt Joint	

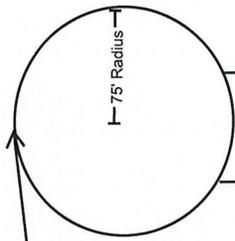
2026 TCRC HOT MIX ASPHALT BID LETTING		2026 TCRC HOT MIX ASPHALT BID LETTING		BARNES RD		SHEET	
NO.	DATE	AUTH	DESCRIPTION	TCRC BID NO: 18	VASSAR TO MILLIMAN		18
				Created By: WRG	NOT TO SCALE		
				Approved By: BJD	Date: 12/31/2025		
				Tuscola County Road Commission		Date: 01/21/2026	



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P.O.E. .18 mi. N. to End of Circle
1.5" HMA Overlay
w/ Interlayer (by others)



10 Tons HMA Approach

Wels Ln.

P.O.E. .08 mi. W of Athletic.
End of Pavement
1.5" HMA Overlay
w/ Interlayer (by others)

Athletic St.

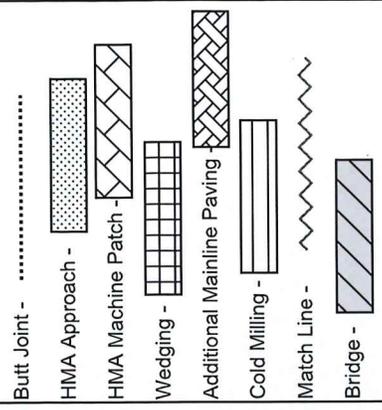
Butt Joint

P.O.B. 300' NW of Adam St.
1.5" HMA Overlay
w/ Interlayer (by others)

NOTES:

- 1.5" HMA Overlay w/ Interlayer
- Coordinate with Chip Seal Contractor.
- 1' 23A Gravel Shoulders
- Wedging as Requested.
- *5 Ton HMA Approach per hard surface driveway. (11 hard surface driveways)

LEGEND:



Location	Township	Road Name	Location	Length (Miles)	Width (Ft)
19	19-Tuscola	Athletic/Wells	300' W. of Adam to End of Pav	0.27	22
		Estimated Qty	Unit	Item	Placed Qty
		500	Tons	180# Bit Mix	
		65	Tons	HMA Approach	
		100	Tons	23A Cr. Gravel	
		1	Each	Butt Joint	

2026 TCRC HOT MIX ASPHALT BID LETTING		ATHLETIC/WELLS ST		SHEET
TCRC BID NO: 19	ATHLETIC ST. 300' WEST OF ADAMS to CIRCLE DR. WELLS ST. END OF PAVE to ATHLETIC			19
Created By: WRG	Date: 12/31/2025	NOT TO SCALE		
Approved By: BJD	Date: 01/21/2026			

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1733 Mertz
Caro, MI 48723
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NO.	DATE	AUTH	DESCRIPTION



NOTES:

1.5" HMA Overlay

Wedging as Requested.

LEGEND:

Butt Joint -

HMA Approach - [Pattern]

HMA Machine Patch - [Pattern]

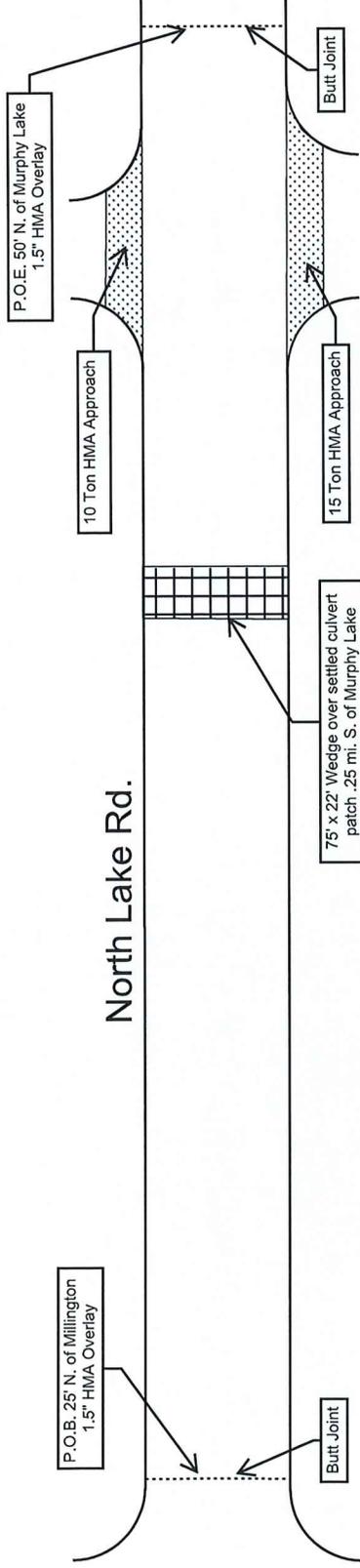
Wedging - [Pattern]

Additional Mainline Paving - [Pattern]

Cold Milling - [Pattern]

Match Line - [Symbol]

Bridge - [Pattern]



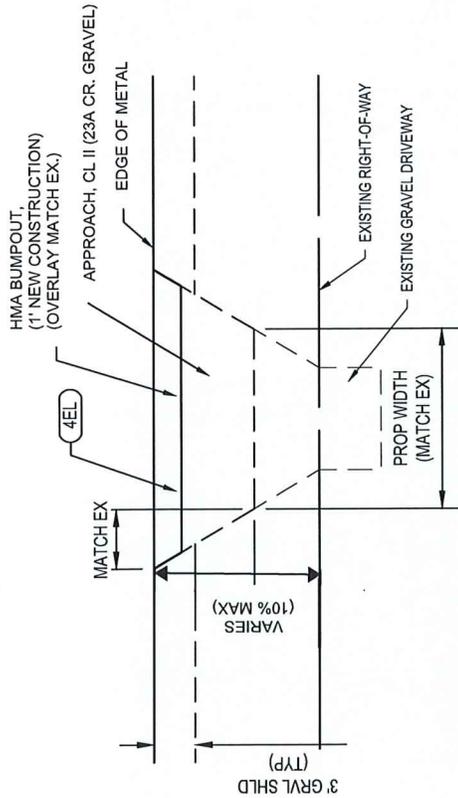
North Lake Rd.

Millington Rd.

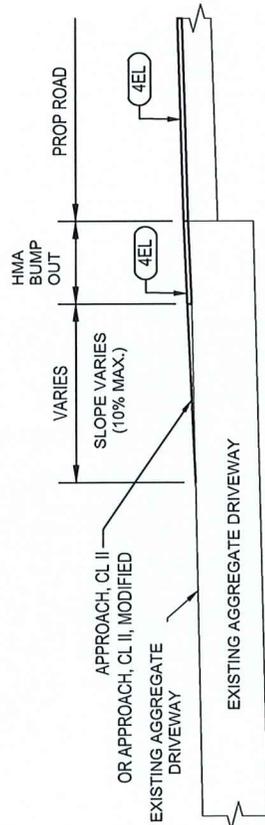
Murphy Lake Rd.

Location	Township	Road Name	Location	Length (Miles)	Width (Ft)
20	21-Watertown	N. Lake	Millington to Murphy Lake	1.01	22
		<u>Estimated Qty</u>	<u>Item</u>	<u>Placed Qty</u>	
		1,200	180# Bit Mix		
		25	HMA Approach		
		650	23A Cr. Gravel		
		2	Butt Joint		

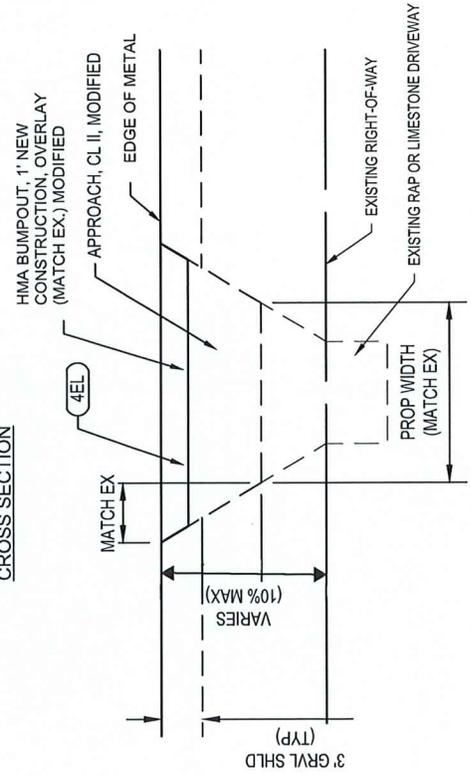
2026 TCRC HOT MIX ASPHALT BID LETTING		2026 TCRC HOT MIX ASPHALT BID LETTING		NORTH LAKE RD		SHEET
NO.	DATE	AUTH	DESCRIPTION	MILLINGTON TO MURPHY LAKE		20
 Tuscola County Road Commission 1733 Mertz Caro, MI 48723 Phone: 989 673-2128 Fax: 989 673-3284				Created By: WRG Date: 12/31/2025		NOT TO SCALE
				Approved By: BJD Date: 01/21/2026		



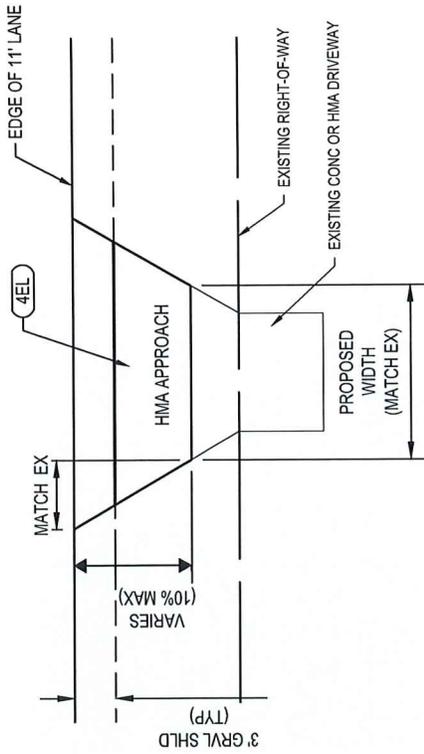
GRAVEL DRIVEWAY FEATHERING DETAIL



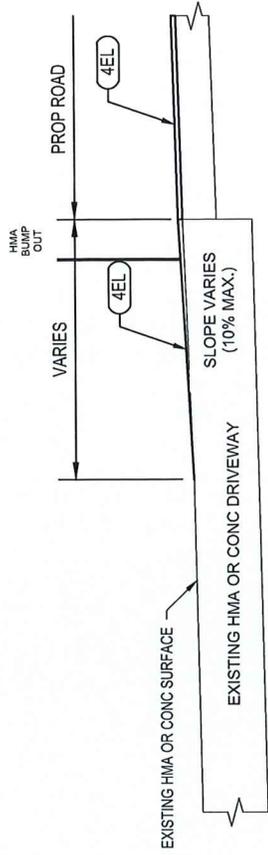
GRAVEL DRIVEWAY
CROSS SECTION



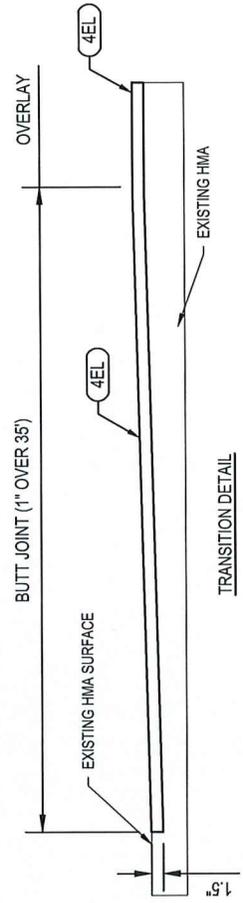
RAP OR LIMESTONE DRIVEWAY FEATHERING DETAIL
(TO BE COMPLETED BY TCRG)



HMA OR CONC DRIVEWAY FEATHERING DETAIL



HMA OR CONC DRIVEWAY
CROSS SECTION



FINAL PLAN REVISIONS

NO.	DATE	AUTH	DESCRIPTION



Tuscola County Road Commission
1733 Mertz
Caro, MI 48723
Phone: 989 673-2128
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TITLE SHEET:

DRIVEWAY DETAILS

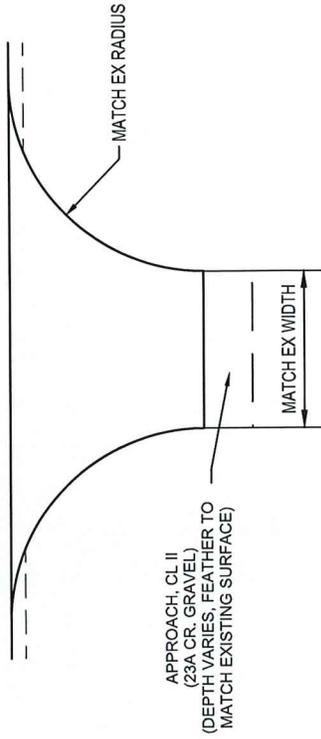
Date: 2/7/2024

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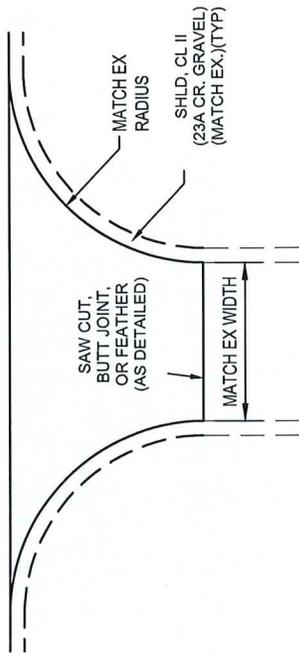
SHEET

1

GRAVEL APPROACH DETAIL



HMA APPROACH DETAIL



FINAL PLAN REVISIONS

NO.	DATE	AUTH	DESCRIPTION



Tuscola County Road Commission
1733 Mertz
Caro, MI 48723
Phone: 989 673-2128
Fax: 989 673-3294

TITLE SHEET:

APPROACH DETAILS

Date: 2/7/2024

FILE:

SHEET

2

TUSCOLA COUNTY ROAD COMMISSION

TITLE IV COMPLIANCE

APPENDIX A

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor shall comply with the Regulations relative to non-discrimination in Federally-assisted programs of the Department of Transportation, Title 49, code of Federal Regulations, Part 21 as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.
2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment.
3. The contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulation, including employment practices when the contractor covers a program set forth in Appendix B of the Regulations.
4. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to non-discrimination on the grounds of race, color, or national origin.
5. **Information and Reports:** The contractor shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Tuscola County Road Commission to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a contractor is in the exclusive possession of another who fails or refuses this information, the contractor shall so certify to the State highway department, or the Federal Highway Administration as appropriate, and shall set forth what efforts it has made to obtain the information.
6. **Sanctions for Non-compliance:** In the event of the contractor's non-compliance with the non-discrimination provisions of this contract, the Tuscola County Road Commission Shall Impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:
 - a) Withholding of payments to the contractor under the contract until the contractor complies, and/or
 - b) Cancellation, termination, or suspension of the contract, in whole or in part.
7. **Incorporation of Provisions:** The contractor shall include the provisions of paragraphs (1) through (6) in every subcontract, including procurement of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the Tuscola County Road Commission may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that, in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the Tuscola County Road Commission to enter into such litigation to protect the interests of the County, and, in addition, the contractor may request the State highway department to enter into such litigation to protect the interests of the State and/or the United States to enter into such litigation to protect the interests of the United States.

"The TUSCOLA COUNTY ROAD COMMISSION, in accordance with Title VI of the Civil Rights Act of 1964, 78-252, 42 U.S.C. 2000d-222d-4, the Civil Rights Act of 1987, P.L. 100-259, and Title 49, Code of Federal Regulations, Department of Transportation, subtitle A, Office of the Secretary, Part 21, Non-discrimination 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 contract entered into pursuant to this advertisement, Disadvantaged Business Enterprise firms 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, Sex, Age, National Origin, or Handicap in consideration for an award. For additional compliance information, please see Appendix A."

AGREEMENT

TUSCOLA COUNTY ROAD COMMISSION – 1733 S. MERTZ ROAD, CARO, MI 48723

PAGE 1 OF 1

This agreement made this _____ day of _____, 20_____
by and between the Board of Tuscola County Road Commissioners and _____
_____.

1. _____ hereby agrees to undertake the following work
in the status of an independent contractor performing the following job:

_____.

2. Said contractor, _____, shall at all
times exercise extreme care and shall assume any and all liability for property damage or bodily
injury resulting from the above operation by this employees, agents, assigns, sub-contractors
and anyone else acting under his control or direction; and will indemnify, hold harmless and
defend the Tuscola County Road Commission, its Commissioners or employees from any and all
claims for property damage or bodily injury arising out of this Agreement.

3. Said contractor, _____, while
engaged in said job shall maintain and furnish certificates of insurance, naming the Tuscola
County Road Commission and Commissioners as an additional insured under the policy, with
policy limits of \$500,000/\$1,000,000 for property damage and bodily injury, and shall furnish
the Tuscola County Road Commission copies of said certificates of insurance prior to
commencing any work on said project.

Additionally, said contractor, _____, shall furnish
prior to start of said job with the Board of Tuscola County Road Commissioners, a policy of
insurance certifying he carries and has in effect worker's compensation insurance on all those
required to be covered under Michigan law.

4. The address of the Board of Tuscola County Road Commissioners is 1733 S, Mertz Rd., Caro, MI
48723.

Witnessed:

Board of Tuscola County Road Commissioners

Contractor

Contractor bid will not be accepted unless the enclosed Agreement is Signed and Returned with you bid.

TUSCOLA COUNTY ROAD COMMISSION

Right - of - Way Permit Worksheet

Permit Fees & Proof of Insurance are required prior to review of the permit application

Date: _____

Applicant/Property Owner:

Name: _____

Address: _____

Phone: _____

Email: _____

Signature: _____

Contractor:

Name: _____

Address: _____

Phone: _____

Email: _____

Signature: _____

Project Locations:

Address: _____

Road: _____

Between: _____

And: _____

Township: _____ Section: _____

Project Description:

Type of Work:

Driveway: Commercial

Residential/Farm

Special Use: Utility

Yard Enclosure

Road Crossing: Bore

Open Cut

Misc.: _____

Material: *(If Known)*

**Pipe/Culvert Material: _____

Pipe/Culvert Diameter: _____

Pipe/Culvert Length: _____

***Backfill Material: _____

Reviewer's Recommendations:

**Additional Permit Standards & Policies apply, available upon Request*

Reviewer's Signature: _____

***Plastic, Concrete, or CMP (CMP may be purchased thru TCRC if placed in R-O-W)*

Flagged: _____

****A Copy of the Certified Mechanical Analysis & the Density Report are required for material placed under roadway*



8. TRAFFIC CONTROL POLICY

PURPOSE

The Tuscola County Road Commission manages traffic operations throughout the county and local road network to minimize vehicle crashes and maximize mobility.

POLICY

Traffic shall be maintained in accordance with Sections 812 and 922 of the 2020 Michigan Department of Transportation (MDOT) Standard Specifications for Construction, including any Supplemental Specifications, and as herein specified.

LOCATION OF WORK

- A. **Work outside of the shoulder** – occurs when equipment, personnel, and/or material “is confined to an area 5 feet or more from the edge of the traveled way”
- B. **Work on the shoulder**– when equipment, personnel, and/or material is confined to the shoulder without reducing any width of the traveled way. Edge of pavement to 5 feet.
- C. **Work within the traveled way** – work that exceeds the definition of any work previously described in parts A through B.

Location A. signing for work outside of the shoulder shall be according to the MDOT Maintaining Traffic typical [4000-M-SHL-OUT](#). Additional signage maybe required at Engineers discretion depending on number of personal & equipment in the ROW.

Location B. signing for a shoulder closure shall be according to attached MDOT Maintaining Traffic Typical [122-NFW-SHL-\(R\)](#).

Location C. work that exceeds the boundaries set by Parts A and B shall be completed in a single lane closure detailed according to a MDOT typical [110-TR-NFW-2L](#). Any alterations to this typical must be approved by the engineer prior to implementation of the TTC plan.

CONSTRUCTION INFLUENCE AREA

The construction influence area (CIA) shall consist of the width of the project right-of-way from 3,500 feet before the project P.O.B. to 3,500 feet beyond the project P.O.E. and 1,500 feet in all directions along all crossroads.



TRAFFIC CONTROL DEVICES

All traffic control devices and their usage shall conform to the Michigan Manual on Uniform Traffic Control Devices (MMUTCD), 2011 edition as amended, and as herein specified.

Sign covers shall be placed over existing regulatory, warning and construction signs that are not applicable during construction.

Arrow boards are to be placed and used in a manner that allows for the signal board to be “clearly legible at distances from 2500 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 typical Sheet [104-GEN-AB](#).

Reflective sheeting must meet or exceed the requirements of ASTM D4956 for Type VIII reflective sheeting on rigid signs. Reflective sheeting must meet or exceed the requirements of ASTM D4956 for Type VI reflective sheeting on flexible, roll-up signs. Orange sheeting must be fluorescent orange reflective sheeting.

FLAGGER/TRAFFIC REGULATORS

Traffic regulators are required to have completed the Michigan Traffic Regulator training within 12 months prior to performing any traffic regulating duties.

Traffic regulators and workers must conform with paragraph 4 of Section 6D.03 (MMUTCD) as quoted below.

Traffic Control for a one-lane, two-way traffic control shall be conducted in accordance with Section 6C.11 of the MMUTCD and as herein modified.

“Traffic should be controlled by a traffic regulator at each end of a constricted section of roadway. One of the traffic regulators should be designated as the coordinator. To provide coordination of the control of the traffic, traffic regulators should be able to communicate with each other orally, electronically, or with manual signs. These manual signals should not be mistaken for traffic regulating signals. Any alternative options must be approved by the engineer.”

Alternatively, traffic control may be conducted via an automated flagger assistance device or pilot car as stated by the MMUTCD, except as modified herein w/ prior approval from the Engineer.



ALL WORKERS IN ROW

“All workers, including emergency responders, within the right-of-way who are exposed either to traffic (vehicles using the highway for purposes of travel) or to work vehicles and construction equipment with the Temporary Traffic Control (TTC) zone shall wear high-visibility safety apparel that meets the Performance Class 2 or 3 requirements of the ANSI/ISEA 107-2004 publication entitled "American National Standard for High-Visibility Safety Apparel and Headwear" (see Section 1A.11), or equivalent revisions, and labeled as meeting the ANSI 107-2004 standard performance for Class 2 or 3 risk exposure, except as provided in Paragraph 5 (MMUTCD). A person designated by the employer to be responsible for worker safety shall make the selection of the appropriate class of garment.”

WORK DURATION

Work duration is a major factor in determining the number and types of devices used in TTC zones. The duration of a TTC zone is defined relative to the length of time a work operation occupies a spot location.

Standard

The four categories of work duration and their time at a location shall be:

- A. Intermediate-term stationary is work that occupies a location more than one daylight period up to 3 days or more.
- B. Short-term stationary is daytime work that occupies a location for more than 1 hour within a single daylight period.
- C. Short duration is work that occupies a location up to 1 hour.
- D. Mobile is work that moves intermittently or continuously.”

In addition, work shall be conducted during daylight hours only. No work shall be conducted on Sundays unless approved by the Engineer. The maximum distance between the traffic regulators shall be no more than 2 miles in length. All sequences of more than 2 miles in length will require written permission from the Engineer before proceeding.

Traffic Control for work conducted on the shoulder shall be in accordance with section 6H.01 of the MMUTCD as modified herein.

- a. **Short duration or mobile operations on the shoulder** – “Stationary warning signs may be omitted if the work vehicle displays high-intensity rotating, flashing, oscillating, or strobe lights. If an arrow board is used, the caution mode shall be used. Vehicle-mounted signs shall be mounted in a manner such that they are not obscured by equipment or supplies. Sign legends on vehicle-mounted signs shall be covered or turned from view when work is not in progress.”
- b. **Short-term or intermediate-term work on the shoulder without encroachment** – “When paved shoulders having a width of 8 feet or more are closed, at least one advance warning sign shall be used. In addition, channelizing devices shall be used to close the shoulder in advance to delineate the beginning of the work space and direct vehicular traffic to remain



- within the traveled way. Alternatively, traffic regulation shall be in accordance with MDOT typical 122-NFW-SHL-(R).”
- c. **Work on the shoulder with encroachment** – “Where the opposite shoulder is suitable for carrying vehicular traffic and of an adequate width, lanes may be shifted by use of closely-spaced channelizing devices, provided that the minimum lane width of 10 feet is maintained. Otherwise, a lane closure shall be employed in accordance with MDOT typical 110-TR-NFW-2L.”
 - d. Work extending beyond the criteria above shall have traffic control in accordance with MDOT typical 110-TR-NFW-2L or result in a full road closure.

ATTACHMENTS

<u>MDOT TYPICAL</u>	<u>Pg.</u>
<u>101-GEN-SPACING-CHARTS</u>	33
<u>102-GEN-NOTES</u>	36
<u>103-GEN-SIGN</u>	38
<u>104-GEN-AB</u>	43
<u>110-TR-NFW-2L</u>	44
<u>122-NFW-SHL-(R)</u>	45
<u>4000-M-SHL-OUT</u>	46

Maintaining Traffic Typicals can also be found on MDOT’s website:
<https://mdotboss.state.mi.us/TSSD/tssdHome.htm>.

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

 Michigan Department of Transportation FILE: 101-GEN-SPACING-CHARTS.dgn	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL	"B", "D" AND "L" TABLES CHANNELIZING DEVICE SPACING, SIGN BORDER KEY, AND ROLL-AHEAD SPACING	DATE: MAY 2021
		NO. 101-GEN-SPACING-CHARTS		SHEET: 1 OF 3

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

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

$$L = W \times S \quad \text{WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 45 MPH OR GREATER}$$

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

TYPES OF TAPERS

UPSTREAM TAPERS
MERGING TAPER
SHIFTING TAPER
SHOULDER TAPER
2 TO 1 LANE ROAD TAPER

DOWNSTREAM TAPERS
(USE IS RECOMMENDED)

TAPER LENGTH

L - MINIMUM
1/2 L - MINIMUM
1/3 L - MINIMUM
100' - MAXIMUM

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

EXIT



EXIT



NOT TO SCALE

 FILE: 101-GEN-SPACING-CHARTS.dgn	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL	"B", "D" AND "L" TABLES CHANNELIZING DEVICE SPACING SIGN BORDER KEY AND ROLL-AHEAD SPACING	DATE: MAY 2021
		NO: 101-GEN-SPACING-CHARTS		

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.

 <small>MDOT Michigan Department of Transportation</small>	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL	"B", "D" AND "L" TABLES CHANNELIZING DEVICE SPACING SIGN BORDER KEY AND ROLL AHEAD SPACING	DATE: MAY 2021
		NO. 101-GEN-SPACING-CHARTS		SHEET: 3 OF 3

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-5 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 R20-5 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 R6-3 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 (R3-5b) 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(SHIFT)
SHIFTS 5FT TO 12FT: PLACE TWO W1-6(SHIFT)
SHIFTS MORE THAN 12FT: PLACE THREE OR MORE W1-6(SHIFT) 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.
- TR3: PROVIDE EITHER A STOP/SLOW AHEAD OR A RED/YELLOW LENS AHEAD, MEETING THE REQUIREMENTS OF THE MMTCC.

TEMPORARY TRAFFIC CONTROL DEVICE NOTES

- TC01: 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.
- TC02: THE MAXIMUM DISTANCE IN FEET BETWEEN CHANNELIZING DEVICES IN A TANGENT SHOULD NOT EXCEED THREE 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 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.
- TC03: TYPE III BARRICADES MUST BE LIGHTED FOR OVERNIGHT CLOSURES.
- TC04: WHEN THE HAUL ROAD IS NOT IN USE, PLACE LIGHTED TYPE III BARRICADES WITH "ROAD CLOSED" EXTENDING COMPLETELY ACROSS THE HAUL ROAD.
- TC05: USE OBJECT MARKER SIGNS IN LIEU OF THE TYPE B HIGH INTENSITY LIGHT SHOWN IN THE STANDARD PLAN FOR TEMPORARY CONCRETE BARRIER (R-55 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.
- TC06: 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.
- TC07: ADDITIONAL TYPE III BARRICADES MAY BE REQUIRED TO COMPLETELY CLOSE OFF ROAD FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT.
- TC08: WHERE THE SHIFTED SECTION IS SHORTER THAN 600 FEET, A DOUBLE REVERSE CURVE SIGN (R24-1) CAN BE USED INSTEAD OF THE FIRST REVERSE CURVE SIGN AND THE SECOND REVERSE CURVE SIGN CAN BE OMITTED.
- TC09: 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.
- TC10: SEE THE WORK ZONE SAFETY AND MOBILITY MANUAL PORTABLE CHANGEABLE MESSAGE SIGN GUIDELINES FOR RECOMMENDED AND CORRECT POMS MESSAGING. STAGGER POMS THAT ARE ON OPPOSING SIDES OF THE ROAD 1000 FEET FROM EACH OTHER.

RAMP NOTES

- RMP1: WHEN CONDITIONS ALLOW, R5-1 SIGNS MUST BE REMOVED OR COVERED AND CHANNELIZING 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, R3-1 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.

 Michigan Department of Transportation FILE: 102-GEN-NOTES.dgn	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL NO1	TRAFFIC TYPICALS NOTE SHEET	DATE: MAY 2022 SHEET: 1 OF 2
		102-GEN-NOTES		

THE FOLLOWING NOTES APPLY IF CALLED FOR ON THE TRAFFIC TYPICAL

SIGNAL NOTES

- SI01: EXISTING SIGNAL MUST BE EITHER 4-WAY FLASHING RED, BAGGED, OR TURNED OFF.
- SI02: SIGNAL IS IN OPERATION.
- SI03: DELINEATE THE WORK ZONE AREA WITH 28 INCH CONES FOR DAYTIME WORK, OR 42 INCH CHANNELIZING DEVICES FOR NIGHTTIME WORK.
- SI04: THE CONTRACTOR MUST HAVE A DESIGNATED SPOTTER IF THE AERIAL BUCKET TRUCK IS LOCATED OVER ACTIVE TRAVEL LANES.
- SI05: 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 COMPROMISED. USE TRAFFIC REGULATORS TO CONTROL TRAFFIC THROUGH THE INTERSECTION WHEN TRAFFIC IS PLACED IN A 4 WAY STOP.
- SI06: 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 RECOMMENDED DISTANCE FROM THE WORK AREA AND PROCEED 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.

	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL	TRAFFIC TYPICALS NOTE SHEET	DATE: MAY 2022
		NOI 102-GEN-NOTES		SHEET: 2 OF 2
FILE: 102-GEN-NOTES.dgn				



To Our Future
Tuscola County Road Commission

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 24" x 18"	 18" x 18" 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"
 M4-9 30" x 24" 48" x 36" 60" x 48"	 M4-9L 30" x 30" 48" x 42" 60" x 54"	 M4-9R 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"	 M4-9BL 12" x 18"	 M4-9BR 12" x 18"	 M4-9U 12" x 18"
 M4-9L 12" x 18"	 M4-9UL 12" x 18"	 M4-9UR 12" x 18"	 M4-9L 12" x 24"	 M4-9R 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 SMS 13-WORK ZONE FOR SIGN DETAILS

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

SIGN NUMBER KEY

 NB-1GL 16" x 66"	 SB-1GR 36" x 66"	 NB-2GL 60" x 48"	 OW-3L 12" x 36" 24" x 48" 36" x 72"	 OW-3R 12" x 36" 24" x 48" 36" x 72"	 R1-1 14" x 18" 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"
 R1-2a 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"	 R3-8a 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"	 R4-1 12" x 18" 18" x 24" 24" x 30" 36" x 48" 48" x 60"	 R4-2 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"	 R9-11GL 24" x 12" 48" x 24"	 R9-11GR 24" x 12" 48" x 24"	 R10-4b 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 SMS 13-WORK ZONE FOR SIGN DETAILS

	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL	TRAFFIC TYPICALS SIGN SHEET	DATE: JUNE 2021
		NO: 103-GEN-SIGN		SHEET: 2 OF 5

FILE: 103-GEN-SIGN.dgn



To Our Future
Tuscola County Road Commission

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"	 W1-4DL 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 W1-4DR 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"	 W24-1L 30" x 30" 36" x 36" 48" x 48"	 W24-1R 30" x 30" 36" x 36" 48" x 48"
 W24-1CL 30" x 30" 36" x 36" 48" x 48"	 W24-1CR 30" x 30" 36" x 36" 48" x 48"	 W24-1DL 36" x 36" 48" x 48"	 W24-1DR 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"	 W1-6L 12" x 18" 18" x 24" 24" x 30" 30" x 36" 36" x 48"	 W1-6R 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" 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 W3-4 30" x 30" 36" x 36" 48" x 48" 60" x 60"	 W3-40 30" x 30" 36" x 36" 48" x 48"	 W3-5 36" x 36" 48" x 48"	 W3-50 30" x 30" 36" x 36" 48" x 48" 60" x 60"	 W3-50 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 SMS 13-WORK ZONE FOR SIGN DETAILS

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

SIGN NUMBER KEY

 WB-2 18" x 18" 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 WB-3 18" x 18" 30" x 30" 36" x 36" 48" x 48"	 WB-4 18" x 18" 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 WB-5 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 WB-5P 24" x 18" 30" x 24" 36" x 30"	 WB-7 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 WB-8 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 WB-9 24" x 24" 30" x 30" 36" x 36" 48" x 48"
 WB-11 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 WB-12 30" x 30" 36" x 36" 48" x 48"	 WB-14 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 WB-15 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 WB-15P 24" x 18" 30" x 24" 36" x 30"	 WB-17L 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 WB-17R 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 WB-17P 24" x 18" 30" x 24" 36" x 30"
 WB-18 24" x 24" 36" x 36" 48" x 48"	 WB-23 24" x 24" 36" x 36" 48" x 48"	 WB-24 30" x 30" 36" x 36" 48" x 48"	 WB-25 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 WB-26 36" x 36" 48" x 48"	 WB-1L 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 WB-1R 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 WB-2L 30" x 30" 36" x 36" 48" x 48"
 WB-2R 30" x 30" 36" x 36" 48" x 48"	 WB-3C 30" x 30" 36" x 36" 48" x 48" 60" x 60"	 WB-3L 30" x 30" 36" x 36" 48" x 48" 60" x 60"	 WB-3R 30" x 30" 36" x 36" 48" x 48" 60" x 60"	 WB-3a 30" x 30" 36" x 36" 48" x 48" 60" x 60"	 WB-3b 30" x 30" 36" x 36" 48" x 48" 60" x 60"	 WB-10 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 WB-10a 24" x 24" 30" x 30" 36" x 36" 48" x 48"
 WB-24 36" x 36" 48" x 48"	 WB-1 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 WB-2 18" x 18" 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 WB-1P 18" x 18" 24" x 24" 30" x 30"	 WB-2 24" x 30" 36" x 48" 48" x 60"	 WB-3 24" x 30" 36" x 48" 48" x 60"	 WB-4P 24" x 24" 36" x 36"	 WB-6 24" x 42" 36" x 60" 48" x 84"
 WB-6a 24" x 42" 36" x 60" 48" x 84"	 WB-7 24" x 42" 36" x 60" 48" x 84"	 WB-7a 24" x 42" 36" x 60" 48" x 84"	 WB-4-3 36" x 24" 40" x 30" 48" x 36" 64" x 48"	 WB-2P 18" x 12" 24" x 18" 30" x 24"	 WB-4aP 18" x 12" 24" x 18" 30" x 24" 36" x 30"	 WB-12P 24" x 18"	 WB-13P 24" x 18" 30" x 24"
 WB-20-1 24" x 24" 30" x 30" 36" x 36" 48" x 48" 60" x 60"	 WB-20-1a 24" x 24" 30" x 30" 36" x 36" 48" x 48" 60" x 60"	 WB-20-1b 24" x 24" 30" x 30" 36" x 36" 48" x 48" 60" x 60"	 WB-20-1c 24" x 24" 30" x 30" 36" x 36" 48" x 48" 60" x 60"	 WB-20-1d 24" x 24" 30" x 30" 36" x 36" 48" x 48" 60" x 60"	 WB-20-2 30" x 30" 36" x 36" 48" x 48"	 WB-20-3 30" x 30" 36" x 36" 48" x 48"	 WB-20-3a 30" x 30" 36" x 36" 48" x 48"

SEE MDOT SMS 13-WORK ZONE FOR SIGN DETAILS



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

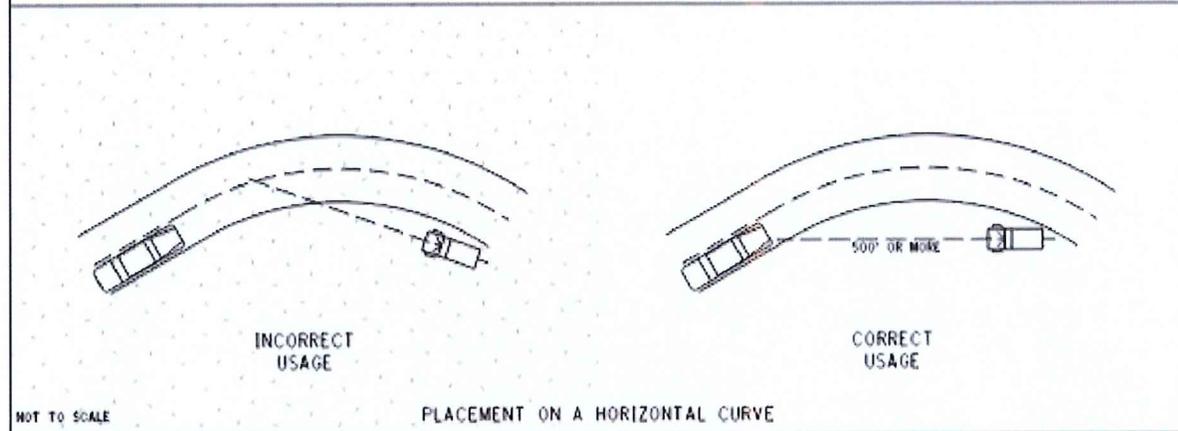
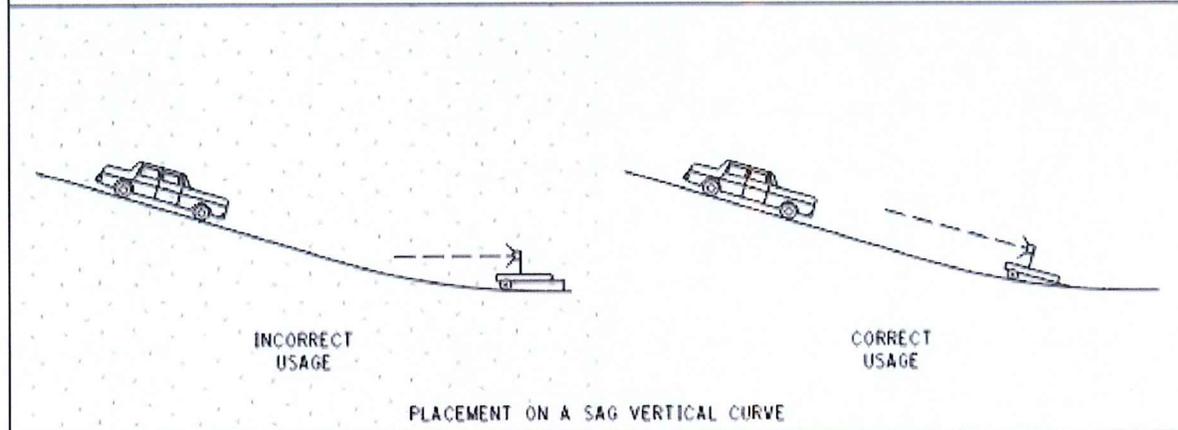
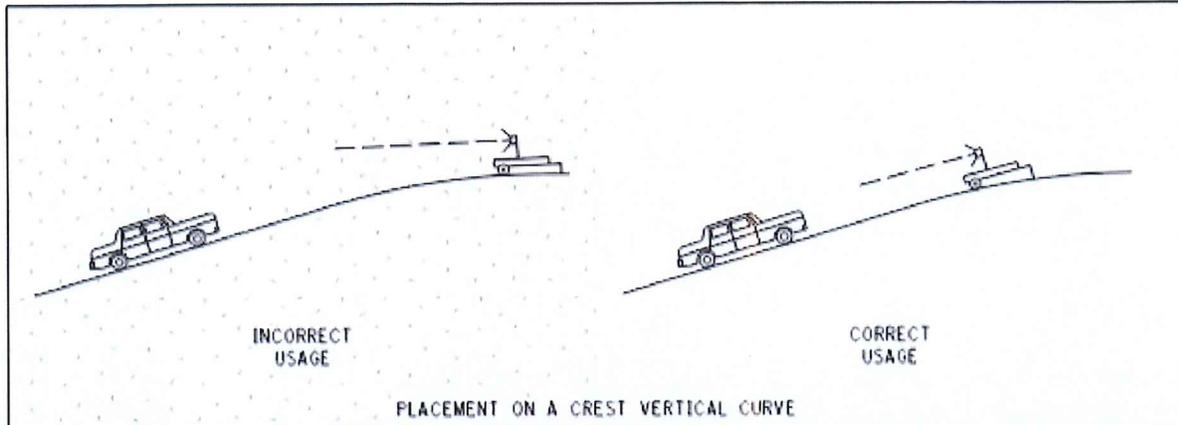


SIGN NUMBER KEY

 W20-3a 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"	 W20-5oL2 30" x 30" 36" x 36" 48" x 48"	 W20-5oL3 30" x 30" 36" x 36" 48" x 48"	 W20-5oR2 30" x 30" 36" x 36" 48" x 48"	 W20-5oR3 30" x 30" 36" x 36" 48" x 48"	 W20-1o 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"	 W20-14oP 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 38"	 W21-5 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 W21-5oL 30" x 30" 36" x 36" 48" x 48" 60" x 60"	 W21-5oR 30" x 30" 36" x 36" 48" x 48" 60" x 60"	 W21-5oL 30" x 30" 36" x 36" 48" x 48" 60" x 60"
 W21-5oR 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 MOOT SHS 13-WORK ZONE FOR SIGN DETAILS

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



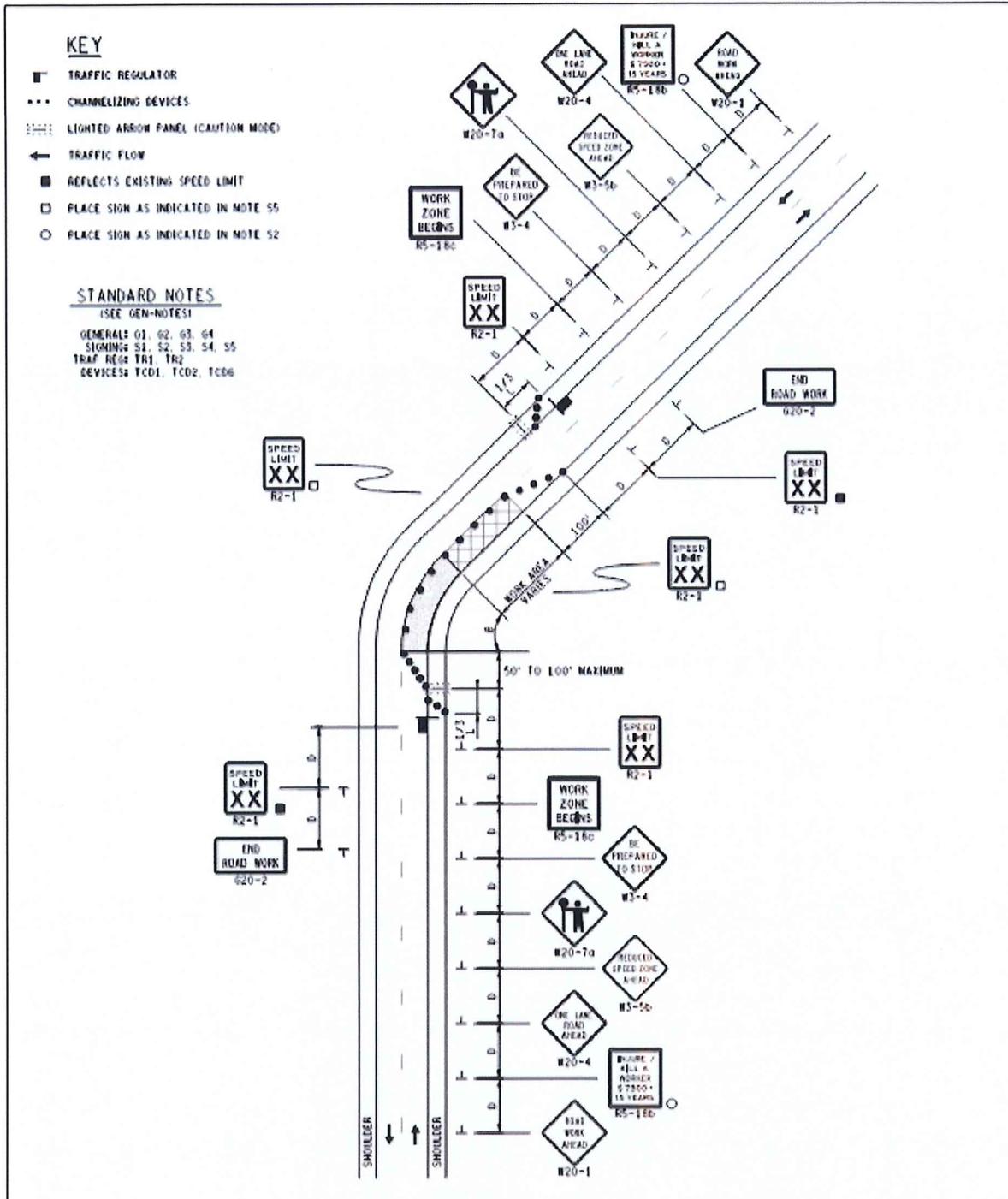
NOT TO SCALE

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.

<p>FILE: 104-GEN-AB.dgn</p>	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL	USE OF ARROW BOARD ON HILL OR CURVE AND WORK ZONE LAYOUT	DATE: MAY 2021
		NO:		104-GEN-AB



To Our Future
Tuscola County Road Commission



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

STANDARD NOTES

(SEE GEN-NOTES)
 GENERAL: G1, G2, G3, G4
 SIGNING: S1, S2, S3, S4, S5
 TRAF REG: TR1, TR2
 DEVICES: TCD1, TCD2, TCD6

	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL	LANE CLOSURE UTILIZING TRAFFIC REGULATORS ON A 2-LANE UNDIVIDED ROADWAY	DATE: MAY 2021
		NO. 110-TR-NFW-2L		SHEET: 1 OF 1

NOTES

1. FOR SHORT-DURATION OR MOBILE OPERATIONS, NO SIGNS ARE REQUIRED IF APPROPRIATELY EQUIPPED VEHICLES ARE USED.
2. IF THE OPERATION HAS VEHICLES PARKED ON THE SHOULDER OR VEHICLES ACCESSING THE WORK SITE VIA THE HIGHWAY OR CROSSING THE HIGHWAY TO PERFORM OPERATIONS, A "ROAD WORK AHEAD" SIGN OR AN ARROW BOARD IN CAUTION MODE SHALL BE USED.
3. WORK VEHICLES SHOULD BE PARKED AS FAR OFF THE TRAVELED WAY AS PRACTICAL.
4. IF THE WORK SPACE IS IN THE MEDIAN OF A DIVIDED ROADWAY, ADVANCE WARNING SIGNS SHALL BE PLACED IN BOTH DIRECTIONS OF TRAVEL.
5. VEHICLES AND PERSONNEL SHOULD ALL BE LOCATED AND PARKED ON THE SAME SIDE OF THE ROADWAY TO THE EXTENT PRACTICAL.

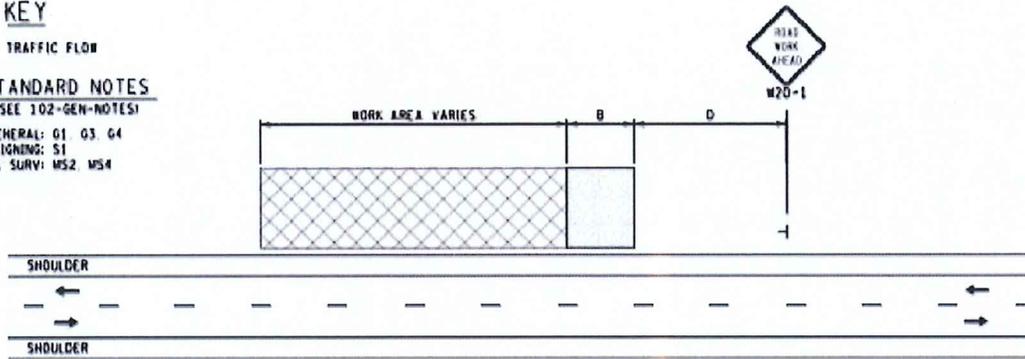
KEY

← TRAFFIC FLOW

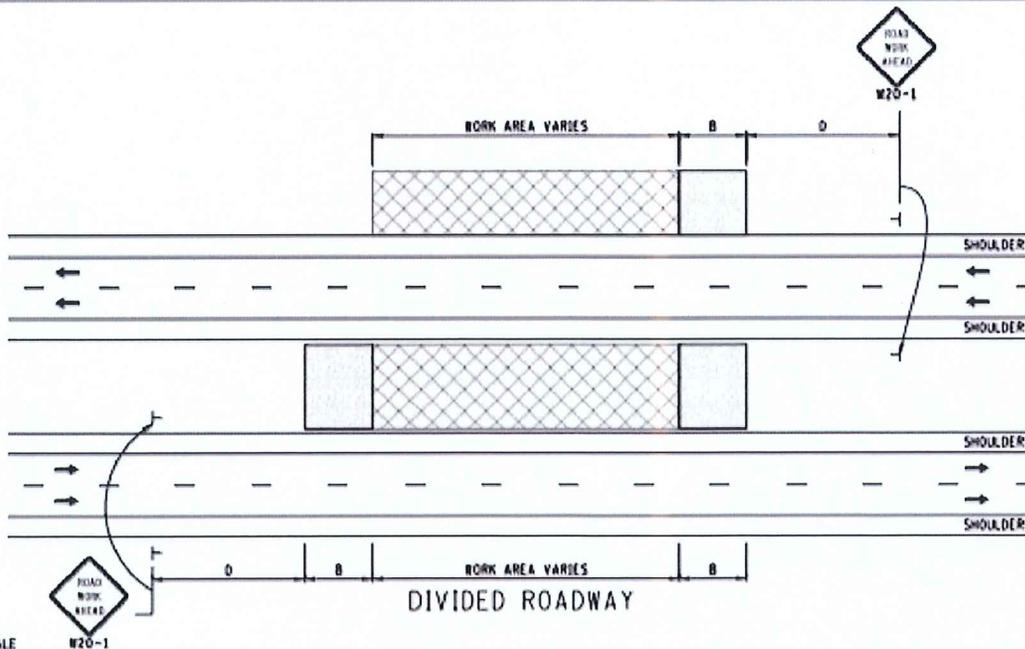
STANDARD NOTES

(SEE 102-GEN-NOTES)

GENERAL: G1, G3, G4
SIGNING: S1
MAINT & SURV: MS2, MS4



TWO LANE, TWO WAY ROADWAY



DIVIDED ROADWAY

NOT TO SCALE

<p>MDOT Michigan Department of Transportation</p>	<p>MAINTENANCE MAINTAINING TRAFFIC TYPICAL</p>	<p>DURATION:</p> <p>ALL</p>	<p>WORK OUTSIDE SHOULDER</p>	<p>DATE: MAY 2021</p>
				<p>NO: 4000-M-SHL-OUT</p>
<p>FILE: 4000-M-SHL-OUT.dgn</p>				<p>SHEET: 1 OF 1</p>



9.7. INSURANCE REQUIREMENTS

Agriculture Hauling Permit	
Type of Insurance	Notes
None	As required by Statute per the Attorney General Opinion

Oversize / Overweight Permits						
Type of Insurance	Coverage Limits	Addl. Insured	Waiver of Subrogation	Primary/Non Contributory	Claims Made	Indemnification
Auto Liability	Michigan No Fault Coverage/Property Protection (PPI) \$1M Statutory Limit	No	No	No	No	Yes

Driveway Permit	
Individual Homeowner Permit Holder - Residential Driveway	
Type of Insurance	Notes
None	Advise homeowner they will be responsible for any damage done to the ROW
	Advise homeowner they will be responsible for any injuries as a result of the work in the ROW
	Advise homeowner they will be required to indemnify the RC as outlined in the ROW permit

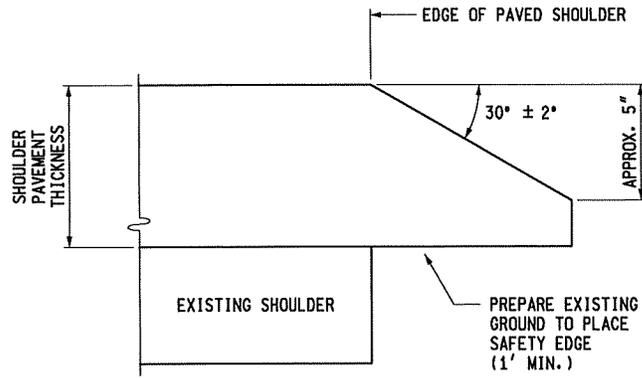
Contractor Permit Holder - Commercial or Residential Driveway							
Type of Insurance	Coverage Limits	Addl. Insured	Waiver of Subrogation	Primary/Non Contributory	Claims Made	Indemnification	
Commercial General Liability (CGL)	Each Occurrence	No	No	No	No	Yes	
	Products Comp/Op Aggregate						\$2,000,000
	General Aggregate						\$3,000,000

Special Event / Parade Permits						
Type of Insurance	Coverage Limits	Addl. Insured	Waiver of Subrogation	Primary/Non Contributory	Claims Made	Indemnification
Commercial General Liability (CGL)	Each Occurrence	Yes	Yes	Yes	No	Yes
	General Aggregate					
Notes						
For special events requiring participant waivers - Endeavor to have the RC added to the waiver. If alcohol is being served, host liquor liability is required.						

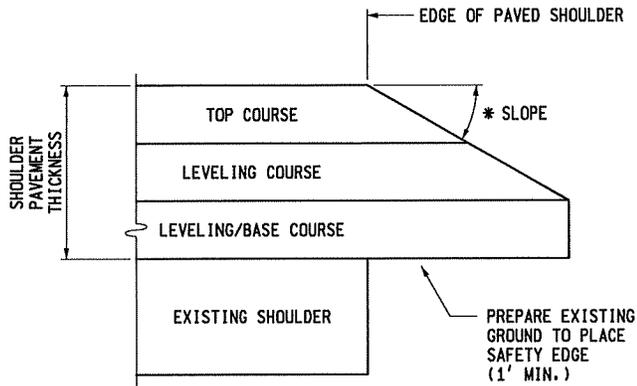
General Right of Way Permit	
Individual Homeowner Permit Holder	
Type of Insurance	Notes
None	Advise homeowner they will be responsible for any damage done to the ROW
	Advise homeowner they will be responsible for any injuries as a result of the work in the ROW
	Advise homeowner they will be required to indemnify the RC as outlined in the ROW permit

Contractor Permit Holder							
Type of Insurance	Coverage Limits	Addl. Insured	Waiver of Subrogation	Primary/Non Contributory	Claims Made	Indemnification	
Commercial General Liability (CGL)	Each Occurrence	Yes	Yes	Yes	No	Yes	
	Products Comp/Op Aggregate						\$2,000,000
	General Aggregate						\$3,000,000
Auto Liability	Michigan No Fault Coverage/Property Protection (PPI) \$1M Statutory Limit	No	No	No	No	Yes	
Professional Liability, as required	Each Occurrence & Aggregate	\$2,000,000	N/A	N/A	N/A	Yes	

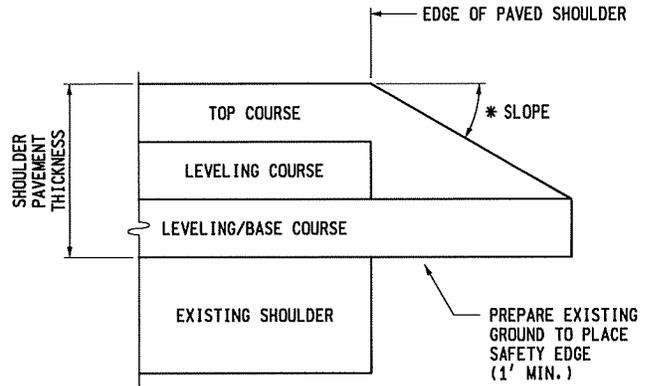
Umbrella may be used to meet limit requirements: Commercial General Liability & Auto Liability
 Retro Date for Professional Liability must be prior to issuing permit date.
 It is recommended the Self Insured Retention (SIR) for CGL be no greater than \$25,000.



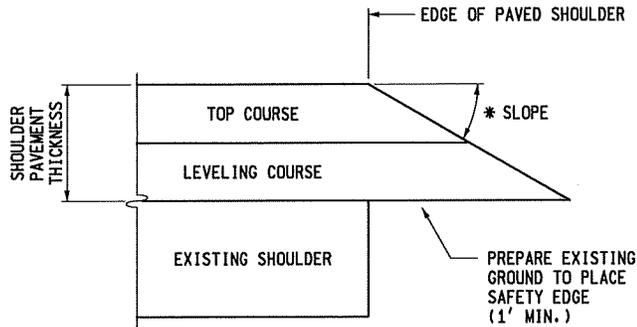
**SAFETY EDGE FOR CONCRETE PAVEMENT
OVERLAY**



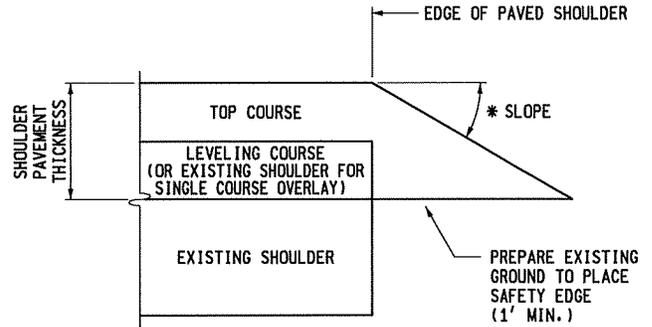
**CONFIGURATION 1 FOR
PAVEMENT THICKNESS GREATER THAN 5"**



**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**



PREPARED
BY
DESIGN DIVISION

DRAWN BY: B.L.T.

CHECKED BY: W.K.P.

DEPARTMENT DIRECTOR
Paul C. Ajegba

APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: _____
DIRECTOR, BUREAU OF DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

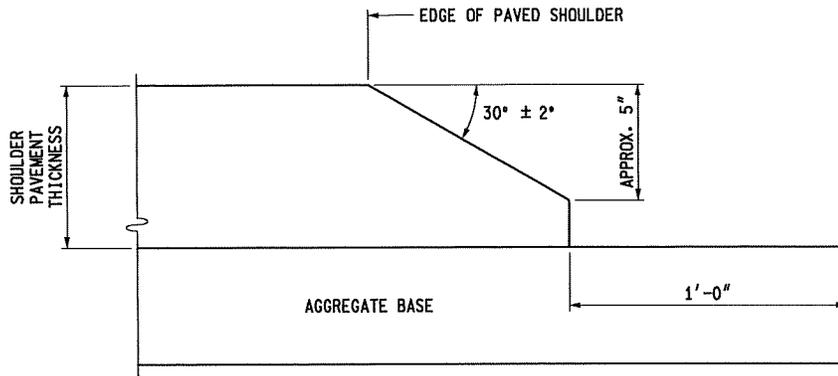
PAVEMENT SAFETY EDGE

F.H.W.A. APPROVAL

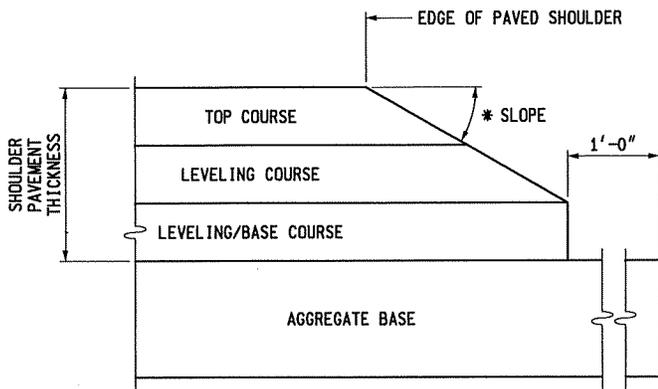
6-14-2021
PLAN DATE

R-110-B

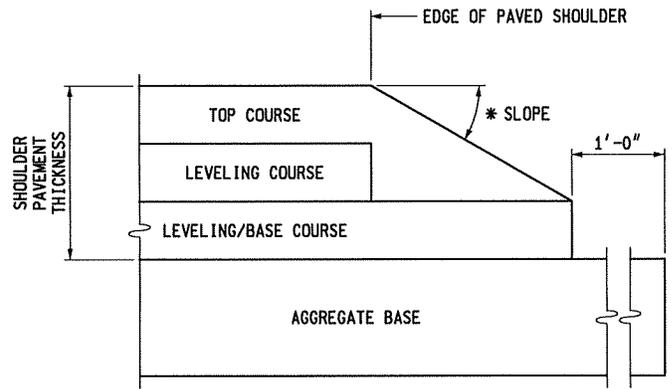
SHEET
1 OF 3



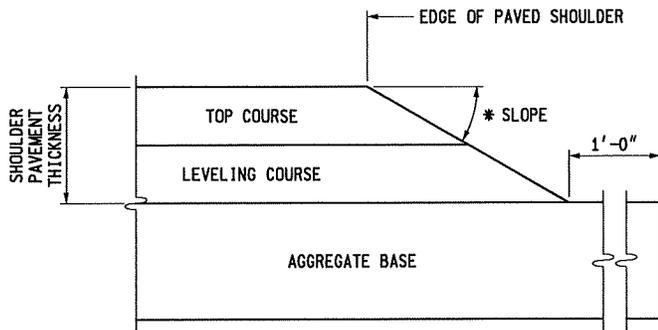
SAFETY EDGE FOR CONCRETE PAVEMENT
NEW CONSTRUCTION / RECONSTRUCTION



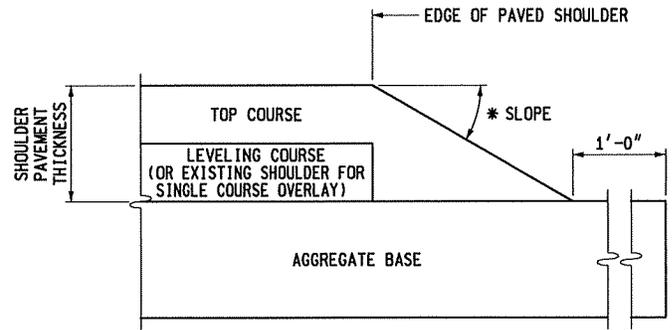
CONFIGURATION 1 FOR
PAVEMENT THICKNESS GREATER THAN 5"



CONFIGURATION 2 FOR
PAVEMENT THICKNESS GREATER THAN 5"



CONFIGURATION 1 FOR
PAVEMENT THICKNESS 5" OR LESS



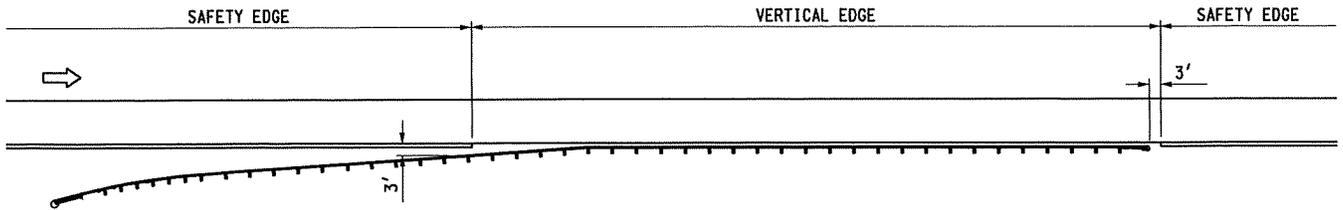
CONFIGURATION 2 FOR
PAVEMENT THICKNESS 5" OR LESS

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

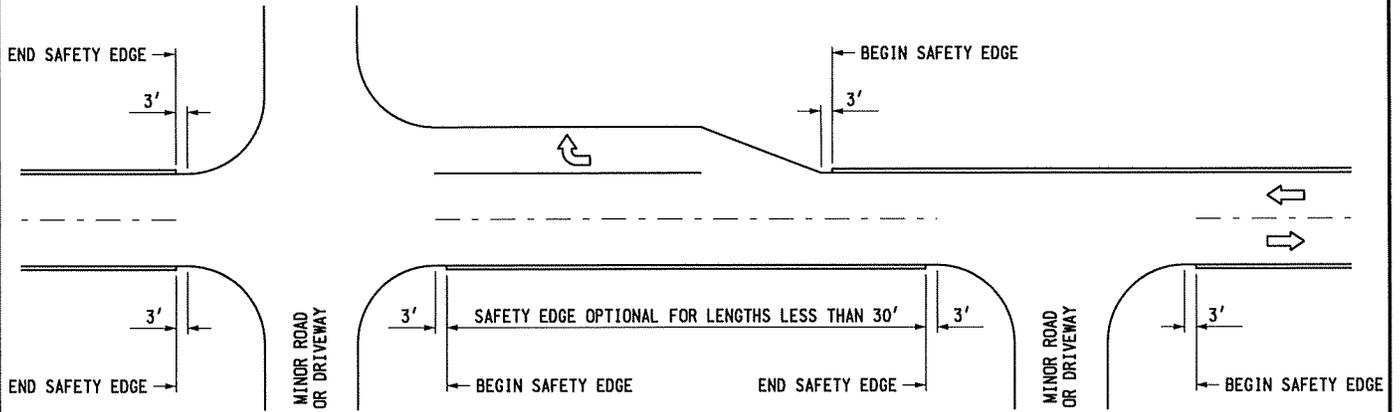
SAFETY EDGE FOR HMA PAVEMENT
NEW CONSTRUCTION / RECONSTRUCTION

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

PAVEMENT SAFETY EDGE



SAFETY EDGE TREATMENT AT GUARDRAIL



SAFETY EDGE TREATMENT AT INTERSECTIONS AND DRIVEWAYS

NOTES:

WHEN CALLED FOR, SAFETY EDGE ON FREEWAY OUTSIDE SHOULDERS WILL END PRIOR TO RAMP SHOULDER TRANSITIONS AND CONTINUE WHERE FULL MAINLINE SHOULDER RESUMES.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

PAVEMENT SAFETY EDGE

	6-14-2021	R-110-B	SHEET 3 OF 3
F.H.W.A. APPROVAL	PLAN DATE		

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
SAMPLING ASPHALT BINDER ON LOCAL AGENCY PROJECTS

CFS:TRC

1 of 1

APPR:JWB:KPK:02-19-20
FHWA:APPR:02-19-20

a. Description. This work consists of the Contractor taking samples of the asphalt binder and delivering the samples to the Engineer prior to incorporation into the hot mix asphalt mixture.

b. Materials. For informational purposes, original samples of asphalt binder will be taken by the Contractor and delivered to the Engineer prior to incorporation into the mixture. The frequency of sampling will be determined by the Engineer.

The Contractor must certify in writing that the materials used in the HMA mixture are from the same source as the materials used in developing the HMA mixture design and the bond coat is from an approved supplier as stated in the *Material Quality Assurance Procedures Manual*.

c. Construction. None specified.

d. Measurement and Payment. The cost of obtaining and delivering the samples to the Engineer will be included in the hot mix asphalt (HMA) pay items in the contract.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
RECYCLED HOT MIX ASPHALT MIXTURE ON LOCAL AGENCY PROJECTS

CFS:KPK

1 of 2

APPR:JWB:CJB:02-26-20

FHWA:APPR:03-02-20

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

- c. **Reclaimed Asphalt Pavement (RAP) and Binder Grade Selection.** The method for determining the binder grade in HMA mixtures incorporating RAP 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 binder toward the total binder, by weight. The tiers identified below apply to HMA mixtures with the following exception: Superpave mixture types EML, EML High Stress, EMH, EMH High Stress, and EH, EH High Stress used as leveling or top course must be limited to a maximum of 27 percent RAP binder by weight of the total binder in the mixture.

Recycled materials may be used as a substitute for a portion of the new materials required to produce HMA mixtures in accordance with contract.

- **Tier 1 (0% to 17% RAP binder by weight of the total binder in the mixture).** No binder grade adjustment is made to compensate for the stiffness of the asphalt binder in RAP.
- **Tier 2 (18% to 27% RAP binder by weight of the total binder in the mixture).** For all mixtures no binder grade change will occur in Tier 2 for all shoulder and temporary road mixtures.

Ensure 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.

For Marshall Mixes, no binder grade change will be required when Average Daily Traffic (ADT) is above 7000 or Commercial Average Daily Traffic (CADT) is above 700. No binder grade change will occur for EL mixtures used as leveling or top course.

The asphalt binder grade can also be selected using a blending chart for high and low temperatures. Supply the blending chart and the RAP test data used in determining the binder selection according to *AASHTO M323*.

- **Tier 3 ($\geq 28\%$ RAP 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 per *AASHTO M323*. Supply the blending chart and the RAP test data

used in determining the binder selection.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
ACCEPTANCE OF HOT MIX ASPHALT MIXTURE ON LOCAL AGENCY PROJECTS

CFS:KPK

1 of 7

APPR:CJB:JWB:02-26-20

FHWA:APPR:03-13-20

a. Description. This special provision provides sampling and testing requirements for local agency projects using the roller method and the nuclear density gauge testing. Provide the hot mix asphalt (HMA) mixture in accordance with the requirements of the standard specifications, except where modified herein.

b. Materials. Provide aggregates, mineral filler (if required), and asphalt binder to produce a mixture proportioned within the master gradation limits shown in the contract, and meeting the uniformity tolerance limits in Table 1.

Table 1: Uniformity Tolerance Limits for HMA Mixtures

Parameter		Top and Leveling Course		Base Course		
Number	Description	Range 1 (a)	Range 2	Range 1 (a)	Range 2	
1	% Binder Content	-0.30 to +0.40	±0.50	-0.30 to +0.40	±0.50	
2	% Passing	# 8 and Larger Sieves	±5.0	±8.0	±7.0	±9.0
		# 30 Sieve	±4.0	±6.0	±6.0	±9.0
		# 200 Sieve	±1.0	±2.0	±2.0	±3.0
3	Crushed Particle Content (b)	Below 10%	Below 15%	Below 10%	Below 15%	
a. This range allows for normal mixture and testing variations. The mixture must be proportioned to test as closely as possible to the Job-Mix-Formula (JMF).						
b. Deviation from JMF.						

Parameter number 2 as shown in Table 1 is aggregate gradation. Each sieve will be evaluated on one of the three gradation tolerance categories. If more than one sieve is exceeding Range 1 or Range 2 tolerances, only the one with the largest exceedance will be counted as the gradation parameter.

The master gradation should be maintained throughout production; however, price adjustments will be based on Table 1. Aggregates which are to be used in plant-mixed HMA mixtures must not contain topsoil, clay, or loam.

c. Construction. Submit a Mix Design and a JMF to the Engineer. Do not begin production and placement of the HMA until receipt of the Engineer's approval of the JMF. Maintain the binder content, aggregate gradation, and the crushed particle content of the HMA mixture within the Range 1 uniformity tolerance limits in Table 1. For mixtures meeting the definition of top or leveling course, field regress air void content to 3.5 percent with liquid asphalt cement unless specified otherwise on HMA application estimate. For mixtures meeting the definition of base course, field regress air void content to 3.0 percent with liquid asphalt cement unless specified

otherwise on HMA application estimate.

Ensure all persons performing Quality Control (QC) and Quality Assurance (QA) HMA field sampling are "Local Agency HMA Sampling Qualified" samplers. At the pre-production or preconstruction meeting, the Engineer will determine the method of sampling to be used. Ensure all sampling is done in accordance with *MTM 313 (Sampling HMA Paving Mixtures)* or *MTM 324 (Sampling HMA Paving Mixtures Behind the Paver)*. Samples are to be taken from separate hauling loads.

For production/mainline type paving, obtain a minimum of two samples, each being 20,000 grams, each day of production, for each mix type. The Engineer will sample and maintain possession of the sample. Sampling from the paver hopper is prohibited. Each sample will be divided into two 10,000 gram parts with one part being for initial testing and the other part being held for possible dispute resolution testing. Obtain a minimum of three samples for each mix type regardless of the number of days of production.

Obtain samples that are representative of the day's paving. Sample collection is to be spaced throughout the planned tonnage. One sample will be obtained in the first half of the tonnage and the second sample will be obtained in the second half of the tonnage. If planned paving is reduced or suspended, when paving resumes, the remaining sampling must be representative of the original intended sampling timing.

Ensure all persons performing testing are Bit Level One certified or Bit QA/QC Technician certified.

Ensure daily test samples are obtained, except, if the first test results show that the HMA mixture is in specification, the Engineer has the option of not testing additional samples from that day.

At the pre-production or preconstruction meeting, the Engineer and Contractor will collectively determine the test method for measuring asphalt content (AC) using *MTM 319 (Determination of Asphalt Content from Asphalt Paving Mixtures by the Ignition Method)* or *MTM 325 (Quantitative Extraction of Bitumen from HMA Paving Mixtures)*. Back calculation will not be allowed for determining asphalt content.

Ensure all labs performing local agency acceptance testing are qualified labs per the *HMA Production Manual and the Michigan Quality Assurance Procedures Manual*, and participate in the MDOT round robin process, or they must be *AASHTO Materials Reference Laboratory (AMRL)* accredited for *AASHTO T30* or *T27*, and *AASHTO T164* or *T308*. Ensure on non-National Highway System (NHS) routes, Contractor labs are made available, and may be used, but they must be qualified labs as previously stated. Contractor labs may not be used on NHS routes. Material acceptance testing will be completed by the Engineer within 14 calendar days, except holidays and Sundays, for projects with less than 5,000 tons (plan quantity) of HMA and within 7 calendar days, except holidays and Sundays, for projects with 5,000 tons (plan quantity) or more of HMA, after the Engineer has obtained the samples. QA test results will be provided to the Contractor after the Engineer receives the QC test results. Failure on the part of the Engineer or the laboratory to provide QA test results within the specified time frame does not relieve the Contractor of their responsibility to provide an asphalt mix within specifications.

The correlation procedure for ignition oven will be established as follows. Asphalt binder content based on ignition method from *MTM 319*. Gradation (*ASTM D5444*) and Crushed particle content (*MTM 117*) based on aggregate from *MTM 319*. The incineration temperature will be established

at the pre-production meeting. The Contractor will provide a laboratory mixture sample to the acceptance laboratory to establish the correction factor for each mix. Ensure this sample is provided to the Engineer a minimum of 14 calendar days prior to production.

For production/mainline type paving, the mixture may be accepted by visual inspection up to a quantity of 500 tons per mixture type, per project (not per day). For non-production type paving defined as driveways, approaches, and patching, visual inspection may be allowed regardless of the tonnage.

The mixture will be considered out-of-specification, as determined by the acceptance tests, if for any one mixture, two consecutive tests per parameter, (for Parameter 2, two consecutive aggregate gradations on one sieve) are outside Range 1 or Range 2 tolerance limits. If a parameter is outside of Range 1 tolerance limits and the second consecutive test shows that the parameter is outside of Range 2, then it will be considered to be a Range 1 out-of-specification. Consecutive refers to the production order and not necessarily the testing order. Out-of-specification mixtures are subject to a price adjustment per the Measurement and Payment section of this special provision.

Contractor operations will be suspended when the mixture is determined to be out-of-specification, but contract time will continue to run. The Engineer may issue a Notice of Non-Compliance with Contract Requirements (Form 1165), if the Contractor has not suspended operations and taken corrective action. Submit a revised JMF or proposed alterations to the plant and/or materials to achieve the JMF to the Engineer. Effects on the Aggregate Wear Index (AWI) and mix design properties will be taken into consideration. Production and placement cannot resume until receipt of the Engineer's approval to proceed.

Pavement in-place density will be measured using one of two approved methods. The method used for measuring in-place density will be agreed upon at a pre-production or preconstruction meeting.

Pavement in-place density tests will be completed by the Engineer during paving operations and prior to traffic staging changes. Pavement in-place density acceptance testing will be completed by the Engineer prior to paving of subsequent lifts and being open to traffic.

Option 1 - Direct Density Method

Use of a nuclear density gauge requires measuring the pavement density using the Gmm from the JMF for the density control target. The required in-place density of the HMA mixture must be 92.0 to 98.0 percent of the density control target. Nuclear density testing and frequency will be in accordance with the *MDOT Density Testing and Inspection Manual*.

Option 2 - Roller Method

The Engineer may use the Roller Method with a nuclear or non-nuclear density gauge to document achieving optimal density as discussed below.

Use of the density gauge requires establishing a rolling pattern that will achieve the required in-place density. The Engineer will measure pavement density with a density gauge using the Gmm from the JMF for the density control target.

Use of the Roller Method requires developing and establishing density frequency curves, and

meeting the requirements of Table 2. A density frequency curve is defined as the measurement and documentation of each pass of the finished roller until the in-place density results indicate a decrease in value. The previous recording will be deemed the optimal density. The Contractor is responsible for establishing and documenting an initial or QC rolling pattern that achieves the optimal in-place density. When the density frequency curve is used, the Engineer will run and document the density frequency curve for each half day of production to determine the number of passes to achieve the maximum density. Table 5, located at the end of this special provision, can be used as an aid in developing the density frequency curve. The Engineer will perform density tests using an approved nuclear or non-nuclear gauge per the manufacturer's recommended procedures.

Table 2: Minimum Number of Rollers Recommended Based on Placement Rate

Average Laydown Rate, Square Yards per Hour	Number of Rollers Required (a)	
	Compaction	Finish
Less than 600	1	1 (b)
601 - 1200	1	1
1201 - 2400	2	1
2401 - 3600	3	1
3601 and More	4	1
a. Number of rollers may increase based on density frequency curve.		
b. The compaction roller may be used as the finish roller also.		

After placement, roll the HMA mixture as soon after placement as the roller is able to bear without undue displacement or cracking. Start rolling longitudinally at the sides of the lanes and proceed toward the center of the pavement, overlapping on successive trips by at least half the width of the drum. Ensure each required roller is 8 tons minimum in weight unless otherwise approved by the Engineer.

Ensure the initial breakdown roller is capable of vibratory compaction and is a maximum of 500 feet behind the paving operations. The maximum allowable speed of each roller is 3 miles per hour (mph) or 4.5 feet per second. Ensure all compaction rollers complete a minimum of two complete rolling cycles prior to the mat temperature cooling to 180 degrees Fahrenheit (F). Continue finish rolling until all roller marks are eliminated and no further compaction is possible. The Engineer will verify and document that the roller pattern has been adhered to. The Engineer can stop production when the roller pattern is not adhered to.

d. Measurement and Payment. The completed work, as described, will be measured and paid for using applicable pay items as described in subsection 501.04 of the Standard Specifications for Construction, or the contract, except as modified below.

Base Price. Price established by the Department to be used in calculating incentives and adjustments to pay items and shown in the contract.

If acceptance tests, as described in section c. of this special provision, show that a Table 1 mixture parameter exceeds the Range 1, but not the Range 2, tolerance limits, that mixture parameter will be subject to a 10 percent penalty. The 10 percent penalty will be assessed based on the acceptance tests only unless the Contractor requests that the 10,000 gram sample part retained for possible dispute resolution testing be tested. The Contractor has 4 calendar days from receipt

of the acceptance test results to notify the Engineer, in writing, that dispute resolution testing is requested. The Contractors QC test results for the corresponding QA test results must result in an overall payment greater than QA test results otherwise the QA tests will not be allowed to be disputed. The Engineer has 4 calendar days to send the dispute resolution sample to the lab once dispute resolution testing is requested. The dispute resolution sample will be sent to an independent lab selected by the Local Agency, and the resultant dispute test results will be used to determine the penalty per parameter, if any. Ensure the independent lab is a MDOT QA/QC qualified lab or an AMRL HMA qualified lab. The independent lab must not have conflicts of interest with the Contractor or Local Agency. If the dispute testing results show that the mixture parameter is out-of-specification, the Contractor will pay for the cost of the dispute resolution testing and the contract base price for the material will be adjusted, based on all test result parameters from the dispute tests, as shown in Table 3 and Table 4. If the dispute test results do not confirm the mixture parameter is out-of-specification, then the Local Agency will pay for the cost of the dispute resolution testing and no price adjustment is required.

If acceptance tests, as described in section c. of this special provision, show that a Table 1 mixture parameter exceeds the Range 2 tolerance limits, the 10,000 gram sample part retained for possible dispute resolution testing will be sent, within 4 calendar days, to the MDOT Central Laboratory for further testing. The MDOT Central Laboratory's test results will be used to determine the penalty per mixture parameter, if any. If the MDOT Central Laboratory's results do not confirm the mixture parameter is out-of-specification, then no price adjustment is required. If the MDOT Central Laboratory's results show that the mixture is out-of-specification and the Engineer approves leaving the out-of-specification mixture in place, the contract base price for the material will be adjusted, based on all parameters, as shown in Table 3 and Table 4.

In the case that the Contractor disputes the results of the test of the second sample obtained for a particular day of production, the test turn-around time frames given would apply to the second test and there would be no time frame on the first test.

The laboratory (MDOT Central Laboratory or independent lab) will complete all Dispute Resolution testing and return test results to the Engineer, who will provide them to the Contractor, within 13 calendar days upon receiving the Dispute Resolution samples.

In all cases, when penalties are assessed, the penalty applies to each parameter, up to two parameters, that is out of specification.

Table 3: Penalty Per Parameter

Mixture Parameter out-of-Specification per Acceptance Tests	Mixture Parameter out-of-Specification per Dispute Resolution Test Lab	Price Adjustment per Parameter
No	N/A	None
Yes	No	None
	Yes	Outside Range 1 but not Range 2: decrease by 10%
		Outside Range 2: decrease by 25%

The quantity of material receiving a price adjustment is defined as the material produced from the time the first out-of-specification sample was taken until the time the sample leading to the first in-specification test was taken.

Each parameter of Table 1 is evaluated with the total price adjustment applied to the contract base price based on a sum of the two parameter penalties resulting in the highest total price adjustment as per Table 4. For example, if three parameters are out-of-specification, with two parameters outside Range 1 of Table 1 tolerance limits, but within Range 2 of Table 1 limits and one parameter outside of Range 2 of Table 1 tolerance limits and the Engineer approves leaving the mixture in place, the total price adjustment for that quantity of material is 35 percent.

Table 4: Calculating Total Price Adjustment

Cost Adjustment as a Sum of the Two Highest Parameter Penalties		
Number of Parameters Out-of-Specification	Range(s) Outside of Tolerance Limits of Table 1 per Parameter	Total Price Adjustment
One	Range 1	10%
	Range 2	25%
Two	Range 1 and Range 1	20%
	Range 1 and Range 2	35%
	Range 2 and Range 2	50%
Three	Range 1, Range 1 and Range 1	20%
	Range 1, Range 1 and Range 2	35%
	Range 1, Range 2 and Range 2	50%
	Range 2, Range 2 and Range 2	50%

Table 5: Density Frequency Curve Development

Tested by: _____ Date/Time: _____

Route/Location:		Air Temp:
Control Section/Job Number:		Weather:
Mix Type:	Tonnage:	Gauge:
Producer:	Depth:	Gmm:

Roller #1 Type:

Pass No.	Density	Temperature	Comments
1			
2			
3			
4			
5			
6			
7			
8			
Optimum			

Roller #2 Type:

Pass No.	Density	Temperature	Comments
1			
2			
3			
4			
5			
6			
7			
8			
Optimum			

Roller #3 Type:

Pass No.	Density	Temperature	Comments
1			
2			
3			
4			
5			
6			
7			
8			
Optimum			

Summary: _____
