HOT MIX ASPHALT BID LETTING TUSCOLA COUNTY ROAD COMMISSION – 1733 S. MERTZ ROAD, CARO, MI 48723 PAGE **1** OF **10**

2025 Hot Mixed Asphalt Bid Letting County Wide Letting Date – February 10, 2025, 10:00 am

Address:	
Sign & Print:	
Date:	
Phone & Fax:	
Email:	
Bid Letting Total	

from bid tab. Estimated Tons 59,790

Primary Roads (27,115 tons) Local Roads (32,675 tons)

In the following townships: Almer, Akron, Arbela, Columbia, Denmark, Elkland, Ellington, Gilford, Fairgrove, Fremont, Indianfields, Juniata, Kingston, Millington, Novesta, Vassar, Watertown, & Wells.

COMPLETION DATE: Seasonal Limitations per the MDOT 2020 Standard Specifications for Construction except as modify here. All paving must be complete by October 15, 2025. Signed Insurance, Agreement, and ROW Permit and bid tab shall be enclosed.

HOT MIX ASPHALT BID LETTING TUSCOLA COUNTY ROAD COMMISSION – 1733 S. MERTZ ROAD, CARO, MI 48723 PAGE **2** OF **10**

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 <u>www.tuscolaroad.org</u>. Please contact Brent Dankert, Tuscola County Highway Engineer at 989-233-7472 or <u>highwayengineer@tuscolaroad.org</u> 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 <u>highwayengineer@tuscolaroad.org</u> 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 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 2025 Preconstruction meeting with contractor. The Engineer will determine the day, time and place for the preconstruction meeting.

HOT MIX ASPHALT BID LETTING TUSCOLA COUNTY ROAD COMMISSION – 1733 S. MERTZ ROAD, CARO, MI 48723 PAGE **3** OF **10**

- 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 1st, 2025 Weekly a list will be provided to the contractor as Townships authorize local road projects.
- May 23th, 2025 Bid Items 005 Leix, 006 Saginaw, and 025 Walton shall be Completed
- June 1st, 2025 Complete List of Paving Projects to contractor
- June 30th, 2025 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, 2025 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 the ____# Bit Mix Scratch Course.
- 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 ____# Bit Mix.

HOT MIX ASPHALT BID LETTING TUSCOLA COUNTY ROAD COMMISSION – 1733 S. MERTZ ROAD, CARO, MI 48723 PAGE **4** OF **10**

- 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 main line 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.
- 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 ____# Bit Mix item.
- **3. HMA Curb** When encountered contractor shall verify direction of flow and verify that after placement and compact the water is channelized and flows in the correct direction.
- 4. 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.
- 5. 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.

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

Number of Rollers Required Based on Placement Rate:

*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.

6. 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

HOT MIX ASPHALT BID LETTING TUSCOLA COUNTY ROAD COMMISSION – 1733 S. MERTZ ROAD, CARO, MI 48723 PAGE **5** OF **10**

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.

- 7. 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.
- **8. Pavement Removal** Shall be completed according to Section 204.04B of the 2020 MDOT Standard Specifications for Construction.
- **9.** 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.
- **10. Equipment** The paver shall be equipped with an automatically controlled and activated screed and strike-off assembly.
- **11. 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.
- 12. 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.
- 13. 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.
- **14. Limestone Driveways** Limestone material will be placed by the Tuscola County Road Commission or 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.
- 15. 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.

HOT MIX ASPHALT BID LETTING TUSCOLA COUNTY ROAD COMMISSION – 1733 S. MERTZ ROAD, CARO, MI 48723 PAGE **6** OF **10**

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

HOT MIX ASPHALT BID LETTING TUSCOLA COUNTY ROAD COMMISSION – 1733 S. MERTZ ROAD, CARO, MI 48723 PAGE **7** OF **10**

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 Contractor shall supply 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.

HOT MIX ASPHALT BID LETTING TUSCOLA COUNTY ROAD COMMISSION – 1733 S. MERTZ ROAD, CARO, MI 48723 PAGE **8** OF **10**

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.
- 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.

HOT MIX ASPHALT BID LETTING TUSCOLA COUNTY ROAD COMMISSION – 1733 S. MERTZ ROAD, CARO, MI 48723 PAGE **9** OF **10**

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.

Pay Item	Pay Unit
# Bit Scratch Course	Ton
#Bit Mix	Ton
Non-Motorized Pathway	Ton
23A Shoulder Gravel	Ton
23A Limestone Shoulder Gravel	Ton
Monument Ring	Each
Cold Milling Inch Depth Full Width	Syds
Cold MillingInch Depth Approach	Syds
HMA Approach	Ton
HMA Curb Overlay	Feet
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.

HOT MIX ASPHALT BID LETTING TUSCOLA COUNTY ROAD COMMISSION – 1733 S. MERTZ ROAD, CARO, MI 48723 PAGE **10** OF **10**

The successful bidder must also <u>furnish certificates or policies giving satisfactory evidence of</u> <u>insurance coverage to the minimum extent of \$500,000.00 property damage and \$1,000,000.00</u> <u>personal liability to insure adequate payment for any damage caused by his operations</u>.

The contractor shall, prior to the start of work, file with the Tuscola County Road Commission a certificate of <u>Workmen's Compensation Insurance</u>. 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. Title IV and VI Compliance
- 2. 2025 HMA Bid Letting
- 3. 2025 HMA Bid Maps
- 4. Agreement
- 5. Tuscola County Right of Way Permit
- 6. TCRC Standard Detail for Driveway and Butt Joint
- 7. Tuscola County Road Commission Maintaining Traffic
- 8. Maintaining Traffic Typical M0150A
- 9. Safety Edge Standard Detail R-110
- 10. Special Provision 20SP-501A-01 Sampling Asphalt Binder on Local Agency Project
- 11. Special Provision 20SP-501F-01 Recycled Hot Mix Asphalt Mixture on Local Agency Projects
- 12. Special Provision 20SP-501I-01 Acceptance of Hot Mix Asphalt Mixture on Local Agency Projects

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:

- Compliance with Regulations: The contractor shall comply with the Regulations relative to nondiscrimination 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.
- 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 us 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 high· way 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 (I) through (6) in every subcontract, including procurement of materials and leases of equipment, unless exempt by the Regulations, or directives Issues 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 u 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 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 oppo1iunity 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."

Bid Number	Township	Road Name	Location	Length (Mi.)	Width (Ft)
1	Primary	Deckerville	Plain to Kingston	4.13	22
	<u>Qty</u>	<u>Unit</u>	ltem	<u>Unit Price</u>	Total Price
	3,000	Tons	110# Bit Scratch Mix		\$-
	105	Tons	HMA Approach		\$-
	2,800	Tons	23A Cr. Gravel		\$-
	160	Syds	Approach Cold Milling		\$-
	10	Each	Butt Joint		\$-
	7	Each	Monument Box		\$-
	*Coordinate w/ TCR	C Crews for Culve	ert Installation	Total:	\$ -

**Approach Cold Milling 2" Depth 8' Wide (from Deford Store to TCRC Drive)

2	Primary	Colling Rd	Dickerson to BCF	3.03	22
	<u>Qty</u>	<u>Unit</u>	ltem	Unit Price	Total Price
	3,600	Tons	165# Bit Mix		\$-
	50	Tons	HMA Approach		\$-
	1,950	Tons	23A Cr. Gravel		\$-
	4	Each	Butt Joint		\$ -
	5	Each	Monument Box		\$ -
	*Coordinate w/ TCR	C Crews for Culv	ert Installation	Total:	\$ -

**Wedging as requested

3	Primary	Unionville	Gilford to M-24	1.67	22
	<u>Qty</u>	<u>Unit</u>	Item	<u>Unit Price</u>	Total Price
	4,000	Tons	165# Bit Mix (2 Lifts)		\$-
	40	Tons	HMA Approach		\$-
	1,100	Each	23A Cr. Gravel		\$-
	*Coordinate w/ Crush & Shape Contractor				\$ -

**Safety Edge to be installed as per MDOT Standard Plan R-110-B

4	Primary	Millington	Reese to Bray	1.69	22
	<u>Qty</u>	<u>Unit</u>	Item	<u>Unit Price</u>	Total Price
	4,100	Tons	165# Bit Mix (2 Lifts)		\$-
	40	Tons	HMA Approach		\$-
	1,150	Each	23A Cr. Gravel		\$-
	*Coordinate w/ Crush & Shape Contractor				\$ -

**Safety Edge to be installed as per MDOT Standard Plan R-110-B

Monday, February 10th @ 10:00 a.m.

Bid Number	Township	Road Name	Location	Length (Mi.)	Width (Ft)
5	Primary	Leix	Saginaw to Blackmore	2.05	22
	<u>Qty</u>	<u>Unit</u>	ltem	<u>Unit Price</u>	Total Price
	4,800	Tons	165# Bit Mix (2 Lifts)		\$-
	40	Tons	HMA Approach		\$-
	1,400	Each	23A Cr. Gravel		\$-
	*Coordinate w/ Cru	sh & Shape Contra	actor	Total:	\$-

**Safety Edge to be installed as per MDOT Standard Plan R-110-B

6	Primary	Saginaw	Chambers to Conrad	2.08	36
	<u>Qty</u>	<u>Unit</u>	ltem	Unit Price	Total Price
	4,850	Tons	165# Bit Mix (2 Lifts)		\$ -
	2,450	Tons	Non-Motorized Pathway		\$ -
	40	Tons	HMA Approach		\$ -
	1,300	Tons	23A Cr. Gravel		\$ -
*Coordinate w/ Cold Milling Contractor					Ś -

**HMA Approach 1.5" Depth

***Sweeping & Clean up for Cold Milling to be included HMA Cost

****4 Days of Cold Milling (1 lane mile & non-motorized pathway per day)

*****Safety Edge to be installed as per MDOT Standard Plan R-110-B

7	1-Akron	Forest	Gotham to Kindler	0.63	22
	<u>Qty</u>	<u>Unit</u>	Item	Unit Price	Total Price
	750	Tons	180# Bit Mix		\$-
	400	Tons	23A Cr. Gravel		\$-
	2	Each	Butt Joint		\$-
				Total:	\$-

8	1-Akron	Ringle	Loomis to Gotham	1.01	21
	<u>Qty</u>	<u>Unit</u>	<u>ltem</u>	Unit Price	Total Price
	2,200	Tons	165# Bit Mix (2 Lifts)		\$-
	650	Tons	23A Cr. Gravel		\$-
	1	Each	Butt Joint		\$-
	550	Syds	Cold Milling		\$-
	*Wedging as reque	ested		Total:	\$ -

**Bridge #10532- Cold Milling 1.5" Depth Full Width + step down to 3" and taper out to 0"

Monday, February 10th @ 10:00 a.m.

Bid Number	Township	Road Name	Location	Length (Mi.)	Width (Ft)
9	1-Akron	Sheridan	Hoppe to Ackerman	0.99	21
	Qty	<u>Unit</u>	Item	<u>Unit Price</u>	Total Price
	1,100	Tons	180# Bit Mix		\$-
	30	Tons	HMA Approach		\$-
	650	Tons	23A Cr. Gravel		\$-
	1	Each	Butt Joint		\$ -
	2	Each	Monument Box		\$ -
	*Wedging as requested				\$ -

10	1-Akron	Sheridan	Ackerman to M-25	0.99	2	21
	<u>Qty</u>	<u>Unit</u>	ltem	<u>Unit Price</u>	<u>Tota</u>	l Price
	1,100	Tons	180# Bit Mix		\$	-
	650	Tons	23A Cr. Gravel		\$	-
	1	Each	Butt Joint		\$	-
	*Wedging as requested				\$	-

11	1-Akron	Wildner	Forest to County Line	0.44	22
	<u>Qty</u>	<u>Unit</u>	ltem	Unit Price	Total Price
	550	Tons	180# Bit Mix		\$-
	300	Tons	23A Cr. Gravel		\$-
	4	Each	Butt Joint		\$-
	*Wedging as requested			Total:	\$ -

12	3-Arbela	Swaffer	Buell to Belsay	1.05	22
	<u>Qty</u>	<u>Unit</u>	ltem	Unit Price	Total Price
	1,700	Tons	220# Bit Mix		\$-
	750	Tons	23A Cr. Gravel		\$-
	2	Each	Butt Joint		\$-
	*Wedging as requested			Total:	\$ -

**Safety Edge to be installed as per MDOT Standard Plan R-110-B

Monday, February 10th @ 10:00 a.m.

Bid Number	Township	Road Name	Location	Length (Mi.)	Width (Ft)
13	4-Columbia	Норре	Remington to Colwood	1.00	22
	<u>Qty</u>	<u>Unit</u>	ltem	<u>Unit Price</u>	Total Price
	2,400	Tons	165# Bit Mix (2 Lifts)		\$-
	650	Tons	23A Cr. Gravel		\$-
	*Coordinate w/ Crush & Shape Contractor				\$-

**Safety Edge to be installed as per MDOT Standard Plan R-110-B

14	4-Columbia	Норре	Ashmore to Remington	1.00	2	22
	<u>Qty</u>	<u>Unit</u>	ltem	Unit Price	<u>Tota</u>	l Price
	2,400	Tons	165# Bit Mix (2 Lifts)		\$	-
	30	Tons	HMA Approach		\$	-
	650	Tons	23A Cr. Gravel		\$	-
	100	Syds	Cold Milling		\$	-
	*Bridge #10560- Cold Milling 3.0" Depth Full Width				\$	-

**Coordinate w/ Crush & Shape Contractor

***Safety Edge to be installed as per MDOT Standard Plan R-110-B

15	6-Denmark	Bradford	M-46 to Wilder	1.00	22
	<u>Qty</u>	<u>Unit</u>	ltem	Unit Price	Total Price
	2,400	Tons	165# Bit Mix (2 Lifts)		\$-
	30	Tons	HMA Approach		\$-
	700	Tons	23A Cr. Gravel		\$-
	*Coordinate w/ Crush & Shape Contractor				\$ -

**Safety Edge to be installed as per MDOT Standard Plan R-110-B

16	7-Elkland	Schwegler	M-81 to Milligan	1.00	20
	<u>Qty</u>	<u>Unit</u>	Item	Unit Price	Total Price
	2,200	Tons	165# Bit Mix		\$-
	15	Tons	HMA Approach		\$-
	700	Tons	23A Cr. Gravel		\$-
	*Coordinate w/ Crush & Shape Contractor			Total:	\$-

**Safety Edge to be installed as per MDOT Standard Plan R-110-B

Bid Number	Township	Road Name	Location	Length (Mi.)	Width (Ft)
17	8-Ellington	Akron	Cedar Run to Dodge	1.00	22
	<u>Qty</u>	<u>Unit</u>	ltem	<u>Unit Price</u>	Total Price
	1,100	Tons	165# Bit Mix		\$-
	700	Tons	23A Cr. Gravel		\$-
	2	Each	Butt Joint		\$ -
	*Coordinate w/ Chi	Total:	\$ -		

18	12-Gilford	Quanicassee	Darbee to Dutcher	0.99	20
	<u>Qty</u>	<u>Unit</u>	ltem	Unit Price	Total Price
	2,400	Tons	165# Bit Mix (2 Lifts)		\$-
	30	Tons	HMA Approach		\$-
	700	Tons	23A Limestone		\$-
	*New Construction - Coordinate w/ Grading Contractor				\$ -

**Safety Edge to be installed as per MDOT Standard Plan R-110-B

19	13-Indianfields	Unionville	End of Pave to Gilford	0.50	22
	<u>Qty</u>	<u>Unit</u>	ltem	Unit Price	Total Price
	600	Tons	180# Bit Mix		\$-
	400	Tons	23A Cr. Gravel		\$-
	1	Each	Butt Joint		\$-
				Total:	\$-

iulai. Ş	Total	:	\$
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20	13-Indianfields	Purdy	Van Geisen to Gilford	0.95	20-23
	<u>Qty</u>	<u>Unit</u>	Item	Unit Price	Total Price
	1,200	Tons	180# Bit Mix		\$ -
	600	Tons	23A Cr. Gravel		\$ -
	150	Feet	HMA Curb Overlay		\$-
	2	Each	Butt Joint		\$-
	*Coordinate w/ Chi	p & Seal Contract	tor	Total:	\$ -

		Monday, F	ebruary 10th @ 10:00 a.m.		
Bid Number	Township	Road Name	Location	Length (Mi.)	Width (Ft)
21	14-Juniata	Fairway Dr.	Kirk West to Dead End	0.27	22
	<u>Qty</u>	<u>Unit</u>	ltem	<u>Unit Price</u>	Total Price
	350	Tons	180# Bit Mix		\$-
	200	Tons	23A Limestone		\$-
	1	Each	Butt Joint		\$-
	*Coordinate w/ Chi	p & Seal Contract	or	Total:	\$-
	**1' 23A Limestone	Shoulders			
22	14-Juniata	Sheridan Rd.	Wilder to Ball	1.02	22
	<u>Qty</u>	<u>Unit</u>	ltem	<u>Unit Price</u>	Total Price
	2,400	Tons	165# Bit Mix (2 Lifts)		\$-
	700	Tons	23A Cr. Gravel		\$-
	*Coordinate w/ Cru	sh & Shape Contr	actor	Total:	\$-
	**Safety Edge to be	e installed as per N	/IDOT Standard Plan R-110-B		
23	15-Kingston	Wilmot Streets	Bond, Hawkins, McComb, & Montague	0.81	21
	<u>Qty</u>	<u>Unit</u>	ltem	<u>Unit Price</u>	Total Price
	1,300	Tons	220# Bit Mix		\$-
	50	Tons	HMA Approach		\$-
	350	Tons	23A Limestone		\$-
	2	Each	Butt Joint		\$-
	*HMA Approach for	r Driveways		Total:	\$-
	**1' 23A Limestone	Shoulders			
24	17-Millington	Irish Rd.	Birch Run to Barnes	1.01	22
	<u>Qty</u>	<u>Unit</u>	ltem	Unit Price	Total Price
	1,200	Tons	180# Bit Mix		\$ -
	650	Tons	23A Cr. Gravel		\$ -

Butt Joint

Monument Box

\$

\$

\$

Total:

-

-

-

*Coordinate w/ Chip & Seal Contractor

2

1

**Coordinate w/ Construction Project on Irish

Each

Each

Monday, February 10th @ 10:00 a.m.

Bid Number	Township	Road Name	Location	Length (Mi.)	Width (Ft)
			•		
25	20-Vassar	Waltan	Caine to Oak	1.00	22
	<u>Qty</u>	<u>Unit</u>	<u>Item</u>	<u>Unit Price</u>	Total Price
	1,600	Tons	220# Bit Mix		\$-
	30	Tons	HMA Approach		\$ -
	650	Tons	23A Cr. Gravel		\$ -
	*Coordinate w/ Cru	sh & Shape Contra	actor	Total:	\$-
	**Safety Edge to be	installed as per N	1DOT Standard Plan R-110-B		
26	21-Watertown	Barnes	Fostoria to Willits	1.01	21
	<u>Qty</u>	<u>Unit</u>	Item	<u>Unit Price</u>	Total Price
	1,200	Tons	180# Bit Mix		\$-
	650	Tons	23A Cr. Gravel		\$-
	1	Each	Butt Joint		\$-
	*Coordinate w/ Chi	p & Seal Contracto	or	Total:	\$-
27	22-Wells	Lee Hill	M-46 to Rossman	1.01	21
	<u>Qty</u>	<u>Unit</u>	<u>ltem</u>	<u>Unit Price</u>	Total Price
	1,200	Tons	180# Bit Mix		\$ -
	10	Tons	HMA Approach		\$-
	750	Tons	23A Cr. Gravel		\$-
	4	Each	Butt Joint		\$ -
	*Coordinate w/ Chi	p & Seal Contracto	or	Total:	\$-
28	22-Wells	Riley	East Dayton to Murray	1.06	21
	<u>Qty</u>	<u>Unit</u>	Item	<u>Unit Price</u>	Total Price
	1,100	Tons	180# Bit Mix		Ş -
	700	Tons	23A Cr. Gravel		Ş -
	2	Each	Butt Joint		Ş -
	550	Syds	Cold Milling		\$ -
	*Wedging as reques	sted		Total:	\$ -

**Bridge #10662- Cold Milling 1.5" Depth Full Width

***Coordinate w/ Chip & Seal Contractor



AGREEMENT

TUSCOLA COUNTY ROAD COMMISSION – 1733 S. MERTZ ROAD, CARO, MI 48723 PAGE ${\bf 1}$ OF ${\bf 1}$

This ag	reement made this	day of	, 20
by and	between the Board of Tusco	la County Road Commissioners	s and
1.	in the status of an independ	hereby aghereby ag dent contractor performing the	rees to undertake the following work following job:
			·
2.	Said contractor, times exercise extreme care injury resulting from the ab and anyone else acting und defend the Tuscola County claims for property damage	e and shall assume any and all ove operation by this employe er his control or direction; and Road Commission, its Commiss or bodily injury arising out of	, shall at all liability for property damage or bodily es, agents, assigns, sub-contractors will indemnify, hold harmless and sioners or employees from any and all this Agreement.
3.	Said contractor, engaged in said job shall ma County Road Commission a policy limits of \$500,000/\$1 the Tuscola County Road Co commencing any work on s Additionally, said contracto prior to start of said job wit insurance certifying he carr required to be covered und	aintain and furnish certificates nd Commissioners as an additio ,000,000 for property damage ommission copies of said certifi aid project. r, h the Board of Tuscola County ies and has in effect worker's c er Michigan law.	, while of insurance, naming the Tuscola onal insured under the policy, with and bodily injury, and shall furnish icates of insurance prior to , shall furnish Road Commissioners, a policy of compensation insurance on all those
4.	The address of the Board of 48723.	Tuscola County Road Commis	sioners is 1733 S, Mertz Rd., Caro, MI
Witnes	ssed:		

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:		Contractor:	
Name:		Name:	
Address:		Adddress:	
Phone:		Phone:	
Email:		Email:	
Signature:		Signature:	
Project Locations:		Project Description:	
Address:			
Road:			
Between:			
And:			
Township:	Section:		
Type of Work:			
Driveway: <u>*Commercial</u>	Residential/Farm		
Special Use: <u>Utility</u>	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:			
*Additonal Permit Standards & Policies apply,	availible upon Request	Reviewer's Signature:	
**Plastic, Concrete, or CMP (CMP may be put	rchased thru TCRC if placed in R-O-W	V) Flagged:	
***A Copy of the Certified Mechanical Analys	is & the Density Report are required f	for material placed under roadway	

SPECIAL PROVISION FOR **MAINTAINING TRAFFIC**

TUSCOLA COUNTY ROAD COMMISSION – 1733 S. MERTZ ROAD, CARO, MI 48723 PAGE ${\bf 1}$ OF ${\bf 1}$

GENERAL

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.

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 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.

Signing for a lane closure shall be according to attached MDOT Maintaining Traffic Typical Figure M0150a. The use of the speed limit signs, R 2-1, will be as needed.

Sheeting shall conform to section 922.02B of the 2020 Standard Specifications for Construction. Engineer grade reflective sheeting must meet the requirements for ASTM D 4956 Type I engineer grade sheeting.

TRAFFIC RESTRICTIONS

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.

PAYMENT

Payment for Maintaining Traffic shall be included in other Bid unit prices. There will be no separate payment for Maintaining Traffic.

Approved by Board 1/27/05 rev.1/17/07 rev.12/22/11 rev. 117/13





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		F O F O F
· · · · · · · · · · · · INCORRECT		CORRECT USAGE
	, PLACEMENT ON A CREST N	VERTICAL CURVE
INCORRECT		CORRECT
· · · · · · · · · · · · · · · · · · ·		
	, FLACEMENT ON A SAG VE	CRIICAL CURVE
	, , , , , , , , , , , , , , , , , , ,	SOU OK MORE
INCORRECT USAGE		CORRECT USAGE
NOT TO SCALE	,PLACEMENT ON A HORIZ	ONTAL CURVE
NOTE: ENSURE THE ARROW REMAINS CLE LANES AND ROADWAY ENTRANCES	ARLY LEGIBLE AT DISTANCES F . DO NOT PLACE THE LIGHTED	ROM 2,500 FEET TO 200 FEET, FROM ALL TRAFFIC ARROW ON A HORIZONTAL OR VERTICAL CURVE THAT
	IBILITY REQUIREMENT.	DATE: MAY 2021
Wichigan Department of Transportation	104-GEN-AB	USE OF ARROW BOARD ON HILL OR CURVE SHEET:
FILE: 104-GEN-AB.dgn		1 OF 1

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

 - = 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.
- TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND G3: ALL ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT STSTEMS AND LIGHTING MUST MEET NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM REPORT 350 (NCHRP 350) TEST LEVEL 3, OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) TL-3 AS WELL AS THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED NAMED AND AND ADDRESSIONS. BY MDOT WILL BE ALLOWED.
- G4: DO NOT STORE EQUIPMENT, MATERIALS OR PERFORM WORK IN ESTABLISHED BUFFFR 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 IS DAYS OR LONGER OR NON-FREEWAY PROJECTS WITH A DURATION OF 90 DAYS OR LONGER. TO APPLY THIS TYPICAL WITHOUT R5-186 SIGNS, REMOVE THE SIGNS AND CONSOLIDATE THE SEQUENCE AS APPROPRIATE.
- S3: R5-18c IS ONLY REQUIRED IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. OMIT THIS SIGN IN SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE.
- S4: ADDITIONAL SIGNING AND/OR ELONGATED SIGNING SEQUENCES SHOULD BE USED WHEN TRAFFIC VOLUMES ARE SIGNIFICANT ENOUGH TO CREATE BACKUPS BEYOND THE W20-5 SIGNS
- S5: PLACE ADDITIONAL SPEED LIMIT SIGNS REFLECTING THE WORK ZONE SPEED AFTER EACH MAJOR CROSSROAD THAT INTERSECTS THE WORK ZONE, OR AFTER EACH ENTRANCE RAMP THAT COMES ONTO THE FREEWAY WHERE THE REDUCED SPEED IS IN EFFECT. PLACE ADDITIONAL SPEED LIMIT SIGNS AT INTERVALS ALONG THE ROADWAY SUCH THAT NO SPEED LIMIT SIGNS ARE MORE THAN 2 MILES APART WHEN REDUCED SPEED LIMITS ARE UTILIZED IN THE WORK AREA, PLACE ADDITIONAL SPEED LIMIT SIGNS RETURNING TRAFFIC TO ITS NORMAL SPEED BEYOND THE LIMITS OF THE WORK AREA AS INDICATED. IF PERMANENT SIGNS DISPLAYING THE CORRECT SPEED LIMIT ARE POSTED, OMIT ALL W3-5b AND R2-1 SIGNS AND REDUCE SPACING ACCORDINGLY.
- FABRICATE SPECIAL SIGNS IN ACCORDANCE WITH CURRENT SIGNING DESIGN S6: STANDARDS.
- S7: PLACE ADDITIONAL R8-3 SIGNS AT A MAXIMUM 500' SPACING THROUGHOUT THE WORK ZONE.
- S8: WHEN SPEED LIMIT SIGNS CANNOT BE PLACED SIDE BY SIDE AS SHOWN, PLACE THEM "D" DISTANCE APART.
- S9: STOP SIGNS NOT REQUIRED IF SIGNALS ARE ON 4-WAY FLASHING RED. STOP AHEAD SIGNS ARE NOT REQUIRED IF THERE IS ADEQUATE VISIBILITY THE STOP SIGN OR IF SIGNALS ARE BEING USED TO CONTROL TRAFFIC.
- S10: PLACE REDUCED SPEED ZONE AHEAD SIGN (W3-5b) HERE WHEN USING A SPEED REDUCTION IN THIS DIRECTION.
- S11:THE NUMBER OF W1-6 SHIFT SIGNS TO PLACE FOR A SHIFT IS AS FOLLOWS: SHIFTS 4FT OR LESS, PLACE ONE W1-6(R)(L) SHIFTS 5FT TO 12FT, PLACE TWO W1-6(R)(L) SHIFTS MORE THAN 12FT, PLACE THREE OR MORE W1-6(R)(L) SIGNS DEPENDING UPON LENGTH OF SHIFT AND AS PER THE ENGINEER.
- S12: PLACE R2-1 SIGNS AS DETAILED IN NOTE S5 WHEN THERE IS A SPEED REDUCTION IN THIS DIRECTION

TRAFFIC REGULATOR NOTES

- TR1:TRAFFIC REGULATORS MUST FOLLOW ALL THE REQUIREMENTS IN THE STANDARD SPECIFICATIONS, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS, THE CURRENT VERSIONS OF THE TRAFFIC REGULATOR'S INSTRUCTION MANUAL AND THE VIDEO "HOW TO SAFELY REGULATE TRAFFIC IN MICHIGAN". THE MAXIMUM DISTANCE BETWEEN THE TRAFFIC REGULATORS IS DETERMINED BY THE ROADWAY ADT, GEOMETRICS, AND AS DIRECTED BY THE ENGINEER.
- TR2: PROVIDE APPROPRIATE BALLOON LIGHTING TO SUFFICIENTLY ILLUMINATE TRAFFIC REGULATOR'S STATIONS WHEN TRAFFIC REGULATING IS ALLOWED DURING THE HOURS OF DARKNESS.

TEMPORARY TRAFFIC CONTROL DEVICE NOTES

- TCD1: THE MAXIMUM DISTANCE IN FEET BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD NOT EXCEED 1.0 TIMES THE WORK ZONE SPEED LIMIT IN MPH FOR ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT LESS THAN 45 MPH AND SHOULD NOT EXCEED 50 FEET ON ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT OF 45 MPH OR GREATER. THE SPACING FOR 42 INCH CHANNELIZING DEVICE TAPERS ARE NOT TO EXCEED 25 FEET AT NIGHT
- TCD2: THE MAXIMUM DISTANCE IN FEET BETWEEN CHANNELIZING DEVICES IN A TANGENT SHOULD NOT EXCEED TWICE THE WORK ZONE SPEED LIMIT IN MPH FOR ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT LESS THAN 45 MPH AND SHOULD NOT EXCEED 100 FEET ON ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT OF 45 MPH OR GREATER. THE SPACING FOR 42 INCH CHANNELIZING DEVICE TANGENTS ARE NOT TO EXCEED 50 FEET AT NIGHT.
- TCD3: TYPE III BARRICADES MUST BE LIGHTED FOR OVERNIGHT CLOSURES.
- TCD4: WHEN THE HAUL ROAD IS NOT IN USE, PLACE LIGHTED TYPE III BARRICADES WITH "ROAD CLOSED" EXTENDING COMPLETELY ACROSS THE HAUL ROAD.
- TCD5: USE OBJECT MARKER SIGNS IN LIEU OF THE TYPE B HIGH INTENSITY LIGHT SHOWN WHEN USED WITH A TEMPORARY SIGNAL SYSTEM. THE OBJECT MARKERS MUST BE A MINIMUM OF 12 INCHES IN WIDTH AND 36 INCHES IN HEIGHT AND HAVE ORANGE AND WHITE RETROREFLECTIVE SHEETING. THE RETROREFLECTIVE SHEETING MUST HAVE ALTERNATING DIAGONAL ORANGE AND WHITE STRIPES SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION VEHICULAR TRAFFIC IS TO PASS.
- TCD6: PLACE LIGHTED ARROW PANELS AS CLOSE TO THE BEGINNING OF TAPERS AS PRACTICAL, BUT NOT IN A MANNER THAT WILL OBSCURE OR CONFUSE APPROACHING MOTORISTS WHEN PHYSICAL LIMITATIONS RESTRICT PLACEMENT. IN CURBED SECTIONS, IF ARROW BOARD CANNOT BE PLACED BEHIND CURB, PLACE ARROW BOARD IN THE CLOSED LANE AS CLOSE TO THE BEGINNING OF TAPER AS POSSIBLE.
- TCD7: ADDITIONAL TYPE III BARRICADES MAY BE REQUIRED TO COMPLETELY CLOSE OFF ROAD FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT.
- TCD8: WHERE THE SHIFTED SECTION IS SHORTER THAN 600 FEET, A DOUBLE REVERSE CURVE SIGN (W24-1) CAN BE USED INSTEAD OF THE FIRST REVERSE CURVE SIGN, AND THE SECOND REVERSE CURVE SIGN CAN BE OMITTED.
- TCD9: RUMBLE STRIPS ARE TO BE PLACED AS SPECIFIED IN THE CONTRACT. IF NOT SPECIFIED IN THE CONTRACT, PLACE RUMBLE STRIPS AS SHOWN, AND IN ACCORDANCE WITH THE RUMBLE STRIP MANUFACTURER'S RECOMMENDATIONS. AN ARRAY OF RUMBLE STRIPS CONTAINS THREE RUMBLE STRIPS. PLACE THE RUMBLE STRIPS IN THE ARRAY AT A CONSISTENT DISTANCE, BETWEEN 10' AND 20' APART.
- TCD10: SEE THE WORK ZONE SAFETY AND MOBILITY MANUAL, PORTABLE CHANGEABLE MESSAGE SIGN GUIDELINES FOR RECCOMENDED AND CORRECT PCMS MESSAGING. STAGGER PCMS THAT ARE ON OPPOSING SIDES OF THE ROAD 1000 FEET FROM EACH OTHER.

RAMP NOTES

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

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

		MAINTAINING TRAFFIC TYPICAL		DATE: APRIL 2022
	NOT TO SCALE	NO:	TRAFFIC TYPICALS	SHEET:
Michigan Department of Transportation		102-GEN-NOTES	NOTE SHEET	
FILE: 102-GEN-NOTES dan				1 0F 2

THE FOLLOWING NOTES APPLY IF CALLED FOR ON THE TRAFFIC TYPICAL

SIGNAL NOTES

- SIG1: EXISTING SIGNAL MUST BE EITHER 4-WAY FLASHING RED, BAGGED, OR TURNED OFF.
- SIG2: SIGNAL IS IN OPERATION.
- SIG3: DELINEATE THE WORK ZONE AREA WITH 28 INCH CONES FOR DAYTIME WORK, OR 42 INCH CHANNELIZING DEVICES FOR NIGHTTIME WORK.
- SIG4: THE CONTRACTOR MUST HAVE A DESIGNATED SPOTTER IF THE AERIAL BUCKET TRUCK IS LOCATED OVER ACTIVE TRAVEL LANES.
- SIG5: THE LOWEST POINT OF THE BUCKET MAY NOT TRAVEL BELOW 14 FOOT VERTICAL CLEARANCE. THE CONTRACTOR MUST UTILIZE AN ALTERNATE SET UP, OR PLACE THE INTERSECTION IN A 4 WAY STOP IF THE 14 FOOT VERTICAL CLEARANCE IS COMPROMIZED. USE TRAFFIC REGULATORS TO CONTROL TRAFFIC THROUGH THE INTERSECTION WHEN TRAFFIC IS PLACED IN A 4 WAY STOP.
- SIG6: DELINEATE THE TRUCK WITH CHANNELIZING DEVICES. THE POSITION OF THE TRUCK MAY BE MOVED TO FACILITATE WORK.

MAINTENANCE AND SURVEYING NOTES

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

- MS2: WORKERS OUTSIDE OF VEHICLES SHOULD WORK WITHIN 150' OF WORK VEHICLES WITH AN ACTIVATED BEACON, BETWEEN THE "BEGIN WORK CONVOY" SIGN AND THE "END WORK CONVOY" SIGN, OR BETWEEN THE "WORK ZONE BEGINS" AND "END ROAD WORK" SIGN.
- MS3: WORK OR SHADOW VEHICLES WITH OR WITHOUT A TMA MAY BE USED TO SEPARATE THE WORK SPACE FROM TRAFFIC. IF USED, THE VEHICLES SHOULD BE PARKED ACCORDING TO THE ROLL AHEAD DISTANCE TABLES.
- MS4: WORK AND SHADOW VEHICLES SHALL BE APPROPRIATELY EQUIPPED WITH AN ACTIVATED AMBER BEACON.
- MS5: WHEN WORKERS ARE OUTSIDE THEIR VEHICLES IN AN EXISTING LANE WHILE A MOBILE OPERATION IS OCCURRING DURING THE NIGHTTIME HOURS, CHANNELIZING DEVICES TO DELINEATE OPEN OR CLOSED LANES AT 50 FT SPACING MUST BE USED. AN EXAMPLE OF AN OPERATION (BUT NOT LIMITED TO) IS THE LAYOUT OF CONCRETE PATCHES.
- MS6: W21-6 AND W20-1 SIGNS MAY BE SUBSTITUTED AS DETERMINED BY THE TYPE OF WORK TAKING PLACE AS PER THE ENGINEER.

Vichigan Department of Transportation		MAINTAINING TRAFFIC TYPICAL		DATE: APRIL 2022
	NOT TO SCALE	102-GEN-NOTES	NOTE SHEET	SHEET:
FILE: 102-GEN-NOTES.dgn				2 OF 2

DISTANCE BETWEEN TRAFFIC SIGNS, "D"

"D"			POST	ED SPEE	D LIMIT,	MPH (P	RIOR TO	WORK A	AREA)		
DISTANCES	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"				SPEED	* , mph (f	PRIOR T() WORK	AREA)				
LENGTHS	20	25	30	35	40	45	50	55	60	65	70	75
B (FEET)	33	50	83	1 3 2	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	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)										
(FEET)	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
1 1	115	165	225	294	495	550	605	660	715	770	825
12	125	180	245	320	540	600	660	720	780	840	900
1 3	136	195	266	347	585	650	715	780	845	910	975
1 4	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

	MAINTAINING TRAFFIC TYPICAL		DATE: MAY 2021
Michigan Department of Transportation	101 - GEN - GEN	CHANNELIZING DEVICE SPACING,	SHEET:
FILE: 101-GEN-SPACING-CHARTS.dgn	SPACING-CHARIS	SIGN BORDER KEY, AND ROLL-AHEAD SPACING	1 OF 3

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

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

- "L" = W X S WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 45 MPH OR GREATER
- L = MINIMUM LENGTH OF MERGING TAPER
- S = POSTED SPEED LIMIT IN MPH PRIOR TO WORK AREA
- W = WIDTH OF OFFSET

<u>types of tapers</u>	<u>taper length</u>
UPSTREAM TAPERS	
MERGING TAPER	L – MINIMUM
SHIFTING TAPER	1/2 L - MINIMUM
SHOULDER TAPER	1/3 L - MINIMUM
2 TO 1 LANE ROAD TAPER	100' - MAXIMUM

- DOWNSTREAM TAPERS
- (USE IS RECOMMENDED)

100' (PER LANE)

MAXIMUM SPACING FOR CHANNELIZING DEVICES

WORK ZONE DRUM AND 42" DE		/ICE SPACING (FT)	NIGHTTIME 42" DEVICE SPACING (FT)		
SPEED LIMIT	TAPER	TANGENT	TAPER	TANGENT	
< 45 MPH	1 × 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 SOLID OUTLINES INDICATE A SIGN THAT SOLID OUTLINES INDICATE A SIGN THE IS TO BE PLACED ON THE PROJECT EXISTS ON SITE, AND NEEDS TO BE COVERED. 17 Т EXIT EXIT 1 1_ NOT TO SCALE DATE: MAY 2021 MAINTAINING TRAFFIC TYPICAL **(ENI)**()) NOT TO SCALE "B", "D" AND "L" TABLES SHEET: N0: 101-GEN-CHANNELIZING DEVICE SPACING SPACING-CHARTS SIGN BORDER KEY AND ROLL-AHEAD SPACING 2 OF 3 FILE: 101-GEN-SPACING-CHARTS.dgn

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	45 MPH	100 FT
(MOBILE)	50-55 MPH	150 FT
	60-75 MPH	175 FT
1.2 TONS	45 MPH	25 FT
(STATIONARY)	50-55 MPH	25 FT
	60-75 MPH	50 FT

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

Wichigan Department of Transportation $1(1) - (2 + N - CHANNELIZING DEVICE SPACING$	MAINTAINING TRAFFIC TYPICAL DATE: MO: 4.0.4.0.5 NO: 5HEFT: SHEET:	TAINING TRAFFIC TYPICAL "B", "D" AND "L" TABLES	MAINTAINING TRAFFIC TYPICAL	NOT TO SCALE	
CDA OTALO COLLA DT C CHANNELIZING DEVICE SPACING	$\begin{bmatrix} 101 - GEN - \\ CHANNELIZING DEVICE SPACING \end{bmatrix}$	101-GEN- CHANNELIZING DEVICE SPACING	101 - GEN -		Michigan Department of Transportation
FILE: 101-GEN-SPACING-CHARTS.dgn SPACING-CHARTS SIGN BORDER KEY AND ROLL AHEAD SPACING 3 OF	SPACING-CHARIS SIGN BORDER KEY AND ROLL AHEAD SPACING 3 OF	CING-CHARIS SIGN BORDER KEY AND ROLL AHEAD SPACING 3 C	SPACING-CHARIS	FILE: 101-GEN-SPACING-CHARTS.dgn	



<u>NOTES</u>

- 1H. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES AND LENGTH OF LONGITUDINAL BUFFERS SEE MOO2Og FOR "D" VALUES.
- 2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.
- 3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.
- 3A. THE "WORK ZONE BEGINS" (R5-18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.
- 4A. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES IN THE TAPER AREA(S) SHOULD BE 15 FEET AND SHOULD BE EQUAL IN FEET TO TWICE THE POSTED SPEED IN MILES PER HOUR IN THE PARALLEL AREA(S).
- 5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.
- 6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.
- 7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.
- 9. ALL TRAFFIC REGULATORS SHALL BE PROPERLY TRAINED AND SUPERVISED.
- 9A. IN ANY OPERATION INVOLVING MORE THAN ONE TRAFFIC REGULATOR, ONE PERSON SHOULD BE DESIGNATED AS HEAD TRAFFIC REGULATOR.
- 10. ALL TRAFFIC REGULATORS' CONDUCT, THEIR EQUIPMENT, AND TRAFFIC REGULATING PROCEDURES SHALL CONFORM TO THE CURRENT EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD) AND THE CURRENT EDITION OF THE MDOT HANDBOOK ENTITLED "TRAFFIC REGULATORS INSTRUCTION MANUAL."
- 11. WHEN TRAFFIC REGULATING IS ALLOWED DURING THE HOURS OF DARKNESS, APPROPRIATE LIGHTING SHALL BE PROVIDED TO SUFFICIENTLY ILLUMINATE THE TRAFFIC REGULATOR'S STATIONS.
- 12E. THE MAXIMUM DISTANCE BETWEEN THE TRAFFIC REGULATORS SHALL BE NO MORE THAN 2 MILES IN LENGTH UNLESS RESTRICTED FURTHER IN THE SPECIAL PROVISIONS FOR MAINTAINING TRAFFIC. ALL SEQUENCES OF MORE THAN 2 MILES IN LENGTH WILL REQUIRE WRITTEN PERMISSION FROM THE ENGINEER BEFORE PROCEEDING.
- 13. WHEN INTERSECTING ROADS OR SIGNIFICANT TRAFFIC GENERATORS (SHOPPING CENTERS, MOBILE HOME PARKS, ETC.) OCCUR WITHIN THE ONE-LANE TWO-WAY OPERATION, INTERMEDIATE TRAFFIC REGULATORS AND APPROPRIATE SIGNING SHALL BE PLACED AT THESE LOCATIONS.
- 14. ADDITIONAL SIGNING AND/OR ELONGATED SIGNING SEQUENCES SHOULD BE USED WHEN TRAFFIC VOLUMES ARE SIGNIFICANT ENOUGH TO CREATE BACKUPS BEYOND THE W3-4 SIGNS.
- 15. THE HAND HELD (PADDLE) SIGNS REQUIRED BY THE MMUTCD TO CONTROL TRAFFIC WILL BE PAID FOR AS PART OF FLAG CONTROL.
- 16A. ADDITIONAL SPEED LIMIT SIGNS REFLECTING THE REDUCED SPEED SHALL BE PLACED AFTER EACH MAJOR CROSSROAD THAT INTERSECTS THE WORK AREA WHERE THE REDUCED SPEED IS IN EFFECT, AND AT INTERVALS ALONG THE ROADWAY SUCH THAT NO SPEED LIMIT SIGNS REFLECTING THE REDUCED SPEED ARE MORE THAN TWO MILES APART.
- 16B. WHEN REDUCED SPEED LIMITS ARE UTILIZED IN THE WORK AREA, ADDITIONAL SPEED LIMIT SIGNS RETURNING TRAFFIC TO ITS NORMAL SPEED SHALL BE PLACED BEYOND THE LIMITS OF THE REDUCED SPEED AS INDICATED.
- 16E. WHEN EXISTING SPEED LIMITS ARE REDUCED MORE THAN 10 MPH, THE SPEED LIMIT SHALL BE STEPPED DOWN IN NO MORE THAN 10 MPH INCREMENTS.
- 28E. THE TRAFFIC REGULATORS SHOULD BE POSITIONED AT OR NEAR THE SIDE OF THE ROAD SO THAT THEY ARE SEEN CLEARLY AT A MINIMUM DISTANCE OF 500 FEET. THIS MAY REQUIRE EXTENDING THE BEGINNING OF THE LANE CLOSURE TO OVERCOME VIEWING PROBLEMS CAUSED BY HILLS AND CURVES.

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







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 (≥ 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.

Parameter			Top and Leve	ling Course	Base Course			
Number		Description	Range 1 (a)	Range 2	Range 1 (a)	Range 2		
1	1 % Binder Content		-0.30 to +0.40	±0.50	-0.30 to +0.40	±0.50		
	ng	# 8 and Larger Sieves	±5.0	±8.0	±7.0	±9.0		
2	% Issi	# 30 Sieve	±4.0	±6.0	±6.0	±9.0		
	Ба	# 200 Sieve	±1.0	±2.0	±2.0	±3.0		
3	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 a	s close	ely as possible to the Job-N	/lix-Formula (JMF	-).				
lb Devia	ation fro	b Deviation from IMF						

Table 1: Uniformity Tolerance Limits for HMA Mixtures

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 calendars 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-ofspecification 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-ofspecification, 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 inplace 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.

Average Laydown Rate,	Number of Rollers Required (a)		
Square Yards per Hour	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.			

Table 2:	Minimum	Number of	of Rollers	Recommended	Based on	Placement Rate
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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 test results do not confirm the mixture parameter is out-of-specification, then the Local Agency will pay for the cost of 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 test results do not confirm the mixture parameter is out-of-specification, the resolution, then the Local Agency will pay for the cost of 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.

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

Table 3: Penalty Per Parameter

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.

CFS:KPK

6 of 7

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.

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

Table 4: Calculating Total Price Adjustment

7 of 7

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: _____