



**ENGINEERING OPERATIONS COMMITTEE
MEETING MINUTES
DECEMBER 5, 2019, 9:00 A.M. – 11:00 A.M.
MULTI-MODAL CONFERENCE ROOMS**

Present:	Mark Bott Gregg Brunner Andre' Clover Mark Dionise Mark Geib	Jason Gutting Tony Kratofil Ryan Mitchell Kristin Schuster Will Thompson	Brad Wieferich Gorette Yung (phone) Hal Zweng
Absent:	Carol Aldrich Matt Chynoweth	Rebecca Curtis Brandy Solak	
Guests:	Curtis Bleech Mike Eacker	Ben Krom Justin Schenkel	Jami Trudelle Steve Urda

OLD BUSINESS

1. Approval of the November 8, 2019, Meeting Minutes – Tony Kratofil

ACTION: Approved

2. Michigan Department of Transportation (MDOT) New Materials and Products – Jason Gutting

ACTION: Information only

NEW BUSINESS

1. Safety Topic – Tony Kratofil

Tony would like this topic presented at each meeting by Engineering Operations Committee (EOC) members on a rotational basis.

ACTION: Information only

2. Policy for Determining Criteria for Significant Project – Steve Brink/Mark Bott

Issue Statement - The MDOT policy for determining the criteria for a significant project.

Major Issue(s) – The Work Zone Safety Task Force (WZSTF) has reviewed the Work Zone Safety and Mobility Manual (WZSMM) and has identified an item that can improve worker safety by providing better balance with motorist mobility. Specifically, the criteria of 10 minutes of additional delay as noted in the WZSMM section 2.01 Project Significance. Background/History – WZSMM 1.01 Purpose: The WZSMM rule outlined in federal regulation 23 CFR 630 Subpart J requires a policy for the systematic consideration and management of work zone impacts on all federal aid highway projects across all stages of project planning, development, construction and operations. The policy agrees with, and does not supersede, State Transportation Commission Policy 10015, dated September 25, 1996. WZSMM Policy (Michigan Department of Transportation (MDOT) Guidance Document 10177, dated August 24, 2007).

The primary goals of the WZSMM rule and policy are to reduce crashes and manage congestion due to work zones. To accomplish these goals, a transportation management plan (TMP) is necessary for consistent consideration of the safety and mobility impacts of work zones and the development of strategies and plans to reduce work zone impacts on all projects.

WZSMM – 2.01 Project Significance: The Region and Transportation Service Center (TSC) staff will determine project significance based on predicted mobility impacts.

Significant Project is defined as “A project predicted to result in greater than 10 minutes of additional work zone delay, over normal conditions for the entire duration of the project.”

All projects require a temporary traffic control plan. Projects that exceed the 10-minute threshold are considered significant and must have a project-specific TMP developed and implemented that also includes a transportation operations plan and a public information plan.

Recommendation(s) – It is the recommendation of the WZSTF that section 2.01 of the WZSMM be revised to have the 10 minutes increased to 15 minutes. All other references to significance in the WZSMM are linked back to this section so changing this in one location updates all the references within the manual.

ACTION: Proposed changes to Section 2.01 of the WZSMM requires further development and discussion. This agenda item will be resubmitted at a future EOC meeting.

3. Life Cycle Cost Analysis (LCCA) Pavement Selection for I-69 in St. Clair County – Ben Krom

Department policy requires that a LCCA be used to determine the most cost-effective pavement design.

Pavement selection was determined using the procedures outlined in the MDOT Pavement Selection Manual. Department Policy requires that the pavement alternate with the lowest

Equivalent Uniform Annual Cost (EUAC) be selected. Final pavement selection requires approval by the EOC.

The reconstruction alternatives being considered are a Hot Mix Asphalt Pavement (HMA Alt #1) and a Jointed Plain Concrete Pavement (JPCP Alt #2). For both alternatives, the existing subbase is not suitable for retention and will not be left in place. The pavement designs being considered are as follows:

Alternative #1a: Reconstruct with Hot Mix Asphalt Pavement

1.5" HMA, 5E30, Top Course (PG 70-28P) (Mainline & Inside Shoulder)
1.5" HMA, 5E3, Top Course (PG 58-28) (Outer Shoulder)
3.75" HMA, 3E30, Leveling Course (PG 70-28P) (Mainline & Inside Shoulder)
3.75" HMA, 3E3, Leveling Course (PG 58-28) (Outer Shoulder)
3.75" HMA, 3E30, Base Course (PG 64-22) (Mainline & Inside Shoulder)
3.75" HMA, 3E3, Base Course (PG 58-28) (Outer Shoulder)
6" Aggregate Base
18" Sand Subbase
6" dia. Subbase Underdrain System
33" Total Section Thickness

Alternative #1b: Reconstruct with Hot Mix Asphalt Pavement (Ramps)

1.5" HMA, 5E3, Top Course (PG 58-28)
2" HMA, 4E3, Leveling Course (PG 58-28)
3" HMA, 3E3, Base Course (PG 58-28)
6" Aggregate Base
18" Sand Subbase
6" dia. Subbase Underdrain System
30.5" Total Section Thickness
Present Value Initial Construction Cost \$451,513/lane-mile
Present Value Initial User Cost \$147,917/lane-mile
Present Value Maintenance Cost \$114,098/lane-mile
Present Value Remaining Life Value -\$10,350/lane-mile
Equivalent Uniform Annual Cost (EUAC) \$25,422/lane-mile

Alternative #2a: Reconstruct with Jointed Plain Concrete Pavement (Mainline & Shoulders)

10.5" Non-Reinforced Conc Pavt, High Performance, w/ 14' jt spacing
6" Open-Graded Drainage Course
Geotextile Separator
10" Sand Subbase
6" dia. Open-Graded Underdrain System
26.5" Total Thickness

Alternative #2b: Reconstruct with Jointed Plain Concrete Pavement (Ramps)

8" Non-Reinforced Conc Pavt, High Performance, w/ 12' jt spacing
6" Open-Graded Drainage Course

Geotextile Separator
10" Sand Subbase
6" dia. Open-Graded Underdrain System
24" Total Thickness
Present Value Initial Construction Cost \$615,860/lane-mile
Present Value Initial User Cost \$114,035/lane-mile
Present Value Maintenance Cost \$117,325/lane-mile
Equivalent Uniform Annual Cost (EUAC) \$30,629/lane-mile

The pavement designs for both alternatives are based on the 1993 American Association of State Highway and Transportation Officials (AASHTO) "Guide for Design of Pavement Structures," using the AASHTO pavement software DARWin Version 3.1, 2004, and the 2015 AASHTO "Mechanistic-Empirical Pavement Design Guide, 2nd Edition," using the software AASHTOWare Pavement ME Design 2.3, 2016. The Equivalent Uniform Annual Cost calculation is based on the revised pavement selection process as approved by the EOC on June 3, 1999.

The estimated construction costs are based on historical averages from similar projects. User costs are calculated using MDOT's Construction Congestion Cost model, which was developed by the University of Michigan.

Conclusion

Pavement selection was determined using the procedures outlined in the MDOT *Pavement Selection Manual*. Department policy requires that the pavement alternative with the lowest EUAC, **Alternative #1: Reconstruct with Hot Mix Asphalt Pavement**, be selected. Final pavement selection requires approval by the Engineering Operations Committee.

ACTION: Approved

4. Alternate Pavement Bidding (APB) on Design-Build (DB) Projects – Ryan Mitchell/Curtis Blech

Issue Statement – Request approval to update the APB Selection Criteria to allow APB on all DB projects.

Major Issue(s) – Paving industry representatives have suggested application of APB on DB projects to increase competition and capture real time prices for determining the least cost pavement type.

Background/History - In September 2016 (as reflected in the November 2016 EOC minutes), the EOC approved multiple changes to the criteria used for selecting projects that would be considered for alternate pavement bidding. After further consideration, the EOC rescinded the approval (February 2017 EOC minutes).

Some paving industry stakeholders have stated that the department's LCCA process does not capture real-time spikes in paving material costs. By using APB on more projects, these variations in material costs would be reflected in the APB, resulting in the true lowest life cycle cost pavement selection based on the market conditions at the time of bid letting. Furthermore, an increased use of APB will also result in more competition between the paving industries. They argue that both outcomes are good for the taxpayers and the heavy construction industry generally. Summary for additional details of recent discussions on this subject with both paving industries and the Michigan Infrastructure and Transportation Association is available upon request.

Recommendation(s) – The Innovative Contracting Unit requests EOC approval to revise the APB process document to allow APB on all DB projects, regardless of the LCCA EUAC percentage difference, if all the other APB Selection Criteria are met.

ACTION: Approved. The Federal Highway Administration requested that the documented procedure for APB be updated, noting the differences between DB and Design-Bid-Build projects.

5. Mechanistic-Empirical (ME) Pavement Design, Phase 1 into Phase 2 – Justin Schenkel

Issue(s) – To approve of the MDOT ME Pavement Design Phase 1 results of the MDOT ME implementation plan and move to Phase 2.

MDOT is undergoing the process to fully implement ME design per the AASHTO ME Pavement Design Guide and its associated software, AASHTOWare Pavement ME Design. To facilitate the implementation of ME as the MDOT standard design method, MDOT established an oversight committee team. This team oversees the business process changes for pavement design and necessary research needs. Additionally, they assist with decisions on design criteria and input values. The oversight committee is comprised of various areas of MDOT (including representatives from all regions) and external partners, the concrete and asphalt paving industries. Per this team, an MDOT interim user guide for ME pavement design was created and a six-step transition plan for implementation of ME was proposed as follows:

- Preliminary Phase – Past but recent LCCA projects to validate official start
- Phase 1 – Life Cycle Cost Assessment (LCCA) and Alternate Pavement Bidding (APB) reconstruction projects
- Phase 2 – All (including MDOT Region/TSC) reconstruction projects
- Phase 3 – LCCA/APB rehabilitation projects (and all reconstruction projects)
- Phase 4 – All (include MDOT Region/TSC) rehabilitation projects (and all reconstruction projects)
- Phase 5 – Final recommendations for full implementation

A report has been written to summarize the MDOT ME design implementation of Phase 1, "LCCA and APB reconstruction projects." Additionally, recommendation to move on to the

next phase of the ME implementation plan is provided in the conclusion of this report. This report is assembled by the MDOT Construction Field Services (CFS) Division and is available upon request.

Recommendation(s) – Per the results of Phase 1 and information as outlined in the report, MDOT CFS recommends that MDOT proceeds to Phase 2 of the ME implementation plan while continuing to utilize the MDOT ± 1” ME protocol. The report and recommendations were approved and agreed to by the ME oversight committee, including the industry members.

Once the EOC approves, Phase 2 will begin. After six months of Phase 2 implementation, the MDOT CFS recommends that a meeting be scheduled with the MDOT pavement designers to evaluate if Phase 2 can be concluded. As a result of this meeting, Phase 2 will continue until a later defined time for reevaluation or drafting of the Phase 2 report will begin and be completed within two months for review by the ME Oversight Committee and the EOC.

ACTION: Approved

6. Mechanistic-Empirical Pavement Design User Guide Update – Justin Schenkel (walk-on)

Issue(s) – To approve the updated MDOT User Guide for ME Pavement Design (December 2019 edition).

Background – The MDOT ME User Guide was updated per the anticipated start of Phase 2 for the MDOT ME implementation plan and to capture changes since the last update in 2017.

This user guide is intended to help pavement designers use the Pavement ME Design software to design the pavement cross-section on MDOT projects. It provides details on software operation, design types to be used with ME, the inputs to be used, and how to assess the design results. This user guide is based on version 2.3 of the Pavement ME Design software. This user guide is assembled by the MDOT CFS Division.

Recommendation(s) – EOC approval of the updated MDOT User Guide for ME Pavement Design (December 2019 edition).

ACTION: Approved

7. Road Design Manual, Chapter 9 Changes – Steve Urda/Kristin Schuster

Subject/Issue – Propose changes to the Road Design Manual (RDM) Chapter 9 addressing new Michigan Department of Environment, Great Lakes, and Energy (EGLE) Water Service Lead (Pb) and Copper Rules and to incorporate Guidance Document 10087 (Distribution of

Cost -Municipally Owned Utilities) and 10086 (Relocation of Municipally Owned Utilities) into the RDM.

Issue Statement – EGLE now requires any existing Lead (Pb) or galvanized steel water services that are impacted by construction to be completely replaced from the water main into the residence or business.

Major Issue(s) – This may require work outside of the MDOT right of way (ROW).

Background/History – On a typical project where MDOT is participating in water main relocation we currently reconstruct water services from the new main to the property line and connect to the existing water services at that point. Under the new “Rule” this partial water service reconstruction is not permissible. MDOT will have to work with the Water Authority to coordinate this work. Costs associated with work beyond the curb stop are to be paid by the Water Authority. If Water Authority work is part of an MDOT project all real estate activities must follow federal regulations.

The proposed changes to the RDM define the necessary coordination between MDOT and the Water Authority to complete water main work outside of MDOT ROW. The changes also assign the responsibility for related costs.

Recommendation(s) – Approve the proposed changes to the RDM which define the necessary co-ordination between MDOT and the Water Authority to complete water main work outside of MDOT ROW.

ACTION: Approved. Revised RDM Chapter 9 will be recirculated to incorporate edits discussed at meeting.

Carol Aldrich, Secretary
Engineering Operations Committee

RA:lrb

cc: EOC Members	D. Jones (MDOT)	G. Bukoski (MITA)
Meeting Guests	C. Libiran (MDOT)	D. DeGraaf (MCA)
Region Engineers (MDOT)	L. Mester (MDOT)	C. Mills (APAM)
Assoc. Region Engineers (MDOT)	T. Schafer (MDOT)	D. Needham (MAA)
TSC Managers (MDOT)	R. Jorgenson (FHWA)	M. Ackerson-Ware (MRPA)
L. Doyle (MDOT)	R. Brenke (ACEC)	