



**ENGINEERING OPERATIONS COMMITTEE
MEETING MINUTES
NOVEMBER 1, 2018, 9:00 A.M. – 11:00 A.M.
MULTI-MODAL CONFERENCE ROOMS**

Present: Tony Kratofil
Carol Aldrich
Kim Avery
Mark Bott
Matt Chynoweth

Mark Geib
Jason Gutting
Dee Parker (phone)
Kristin Schuster
Brandy Solak

Hal Zweng
Greg Losch
Brad Wieferich
Gorette Yung

Absent: Kim Avery

Ted Burch

Guests: Adnan Iftikhar
Mike Lusk (phone)

Blessing Tayisepi
Carlos Torres

OLD BUSINESS

1. Approval of the October 4, 2018, Meeting Minutes

ACTION: Approved

NEW BUSINESS

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

Issue Statement – The MDOT receives numerous submittals of new materials and products. This process is meant to streamline the procedure and provide a review of submittals by the appropriate subject matter experts. Previous management suggestions are part of this draft procedure.

Background/History - In 2012, a new materials process and steering team were created, but not implemented. The submitted procedure streamlines submittals into specific focus areas that will review and provide recommendations on new material submittals.

Construction Field Services (CFS) has begun to share a new materials status report at each Engineering Operations Committee (EOC) meeting. This listing will provide the status of each new material submittal in a two-year rolling report.

Recommendation - Review, provide feedback, and eventual approval of the submitted new product evaluation procedure Guidance Document. Review and discussion of the new

materials status report and formatting. This report will be provided to EOC members one week prior to all EOC meetings.

ACTION: Guidance Document approved. Add Sub-Committee to the MDOT New Materials report.

2. M-28 and H-58 City of Munising Roundabout – Mike Lusk/Mark Bott

Issue Statement – As part of MDOT contract ID 02041-126912, construct a single-lane roundabout at the intersection of M-28 and H-58, City of Munising, Alger County.

Major Issue(s) – Two major routes merge at this location at a ninety-degree angle. It has a non-typical geometric configuration and lane assignments present a challenge to drivers unfamiliar with the area. Limited sight distance in the SW corner due to a raised parking area, further complicates matters, as does visibility limitations due to a vertical curve to the south of the intersection. Traffic volumes are expected to continue to increase with a new planned hotel on H-58 and ferry dock with access of M-28.

Background/History – Vehicles regularly blow through this intersection when they should be yielding (or stopping) to approaches that have the right of way. Traffic volumes were recently calculated at 11,650 vpd for the west leg of this intersection, and 8,875 vpd for the south leg. From 2012 thru 2016, eleven crashes were reported, including five angle and two fixed object collisions. With no fatalities, and two (2) debilitating crashes at this intersection, a Time of Return revealed that this intersection would not be a candidate for safety funding. In 2008, M-28 in Munising was reduced from four lanes to three.

Recommendation(s) – For EOC information. As part of a recent road safety audit, a modern compact single lane roundabout is recommended as one of the fix types. Based on this information, and future growth characteristics, the Transportation Service Center (TSC) and Region recommend a roundabout at the M-28 and H-58 intersection.

Status – This has been submitted as a candidate for Highway Safety Improvement Program funds, and the non-freeway reliability and operations template and was selected for further analysis. Project is currently progressing forward with a modern single lane roundabout in the design, with the expectation that it will be funded. Letting Date: 02/2020

ACTION: Approved, conditional on geometric review and public involvement results.

3. Design-Build Upgrade of MDOT Rest Areas and Welcome Centers – Greg Losch/Bill Stonebrook

Subject/Issue: Request approval for the use of the Design-Build (DB) delivery method for the upgrade of all MDOT Rest Areas and Welcome Centers to meet the requirements of the Americans with Disabilities Act (ADA).

Major Issue(s): The use of the DB delivery method is being requested due to the expedited nature of the schedule, and to complete upgrades to facilities along the interstate system by December of 2019. The following issues will be addressed:

- Correct ADA deficiencies at Rest Areas and Welcome Centers statewide.
- ADA improvements on historic facilities may require coordination with SHPO.
- The extent of structural work necessary will vary with the multiple floor plans and construction techniques encountered at each facility. The building aesthetics must be maintained.
- Asbestos and lead paint may be encountered.

Background/History: The Federal Highway Association (FHWA) requires that MDOT Rest Area and Welcome Center facilities be brought into compliance with current ADA requirements. Facilities along the interstate system must be brought into compliance by the end of 2019, and the remaining facilities will be upgraded by the end of 2020.

Recommendation(s) – This project was reviewed and approved for Design Build by the Innovative Contracting Committee at its October 3, 2018 meeting.

ACTION: Approved

4. Construction Manager/General Contractor Delivery Method US-23BR/M-14 – Greg Losch/Jose Garcia

Subject/Issue: Request approval for the use of Construction Manager/General Contractor (CMGC) delivery method for the pin and hanger replacement, bearing replacement, and rehabilitation of the US-23BR/M-14 structure over Huron River in the City of Ann Arbor, Washtenaw County.

Major Issue(s): The use of the CMGC delivery method is being requested to perform the work, while avoiding closures of lanes, ramps, or shoulders on US-23BR/M-14. As such, the superstructure will need to be supported from below to replace the pin and hangers. A unique temporary support system will be needed within the limits of the waterway, meeting all requirements of the environmental clearance documents. Contractor means and methods will be integral to the design of the temporary support and pin and hanger replacement. All temporary shoring/jacking for pin and hanger replacement must be done under traffic and must be designed to include live load, dynamic load allowance, wind on live load, and vertical and horizontal wind load effects. I'd also add bearing replacement at fractural critical span 7.

Access to the site will be limited due to adjacent 4(f) recreational properties, a local drive, and a railroad. Waterway recreational traffic will need to be maintained, and Michigan Department of Environmental Quality (MDEQ) permit requirements will need to be met.

Engagement with stakeholders will be necessary, including the City of Ann Arbor, University of Michigan, and MDEQ.

Background/History - Pin and hanger replacement, bearing replacement, and rehabilitation of the US-23BR/M-14 structure over Huron River in the City of Ann Arbor, Washtenaw County. The structure is fracture critical at multiple spans.

Job Number: 203659 (Design Phase only)

Control Section: 81075

Project Cost: \$2,000,000

Letting Date: December 2019

Recommendation(s) – The Innovative Contracting Committee (ICC) has approved the use of CMGC contracting method for this project.

ACTION: Approved

5. Impact Attenuator Action Plan – Carlos Torres

Subject/Issue – Impact attenuator action plan for selection of impact attenuators after 12/31/18.

Major Issue(s)/Potential Complication(s) – Manual for Assessing Hardware (MASH)-compliant permanent impact attenuators must be used for new installations on construction projects on the National Highway System (NHS) after 12/31/18. To date, the FHWA and American Association of State Highway and Transportation Officials have not granted an extension to the 12/31/18 sunset date for permanent impact attenuators.

The potential issue(s) with state transportation agencies trying to meet the 12/31/18 sunset date for permanent impact attenuators are:

- a. There is a limited number of MASH-Compliant impact attenuators and the inability to create an environment of competitive bidding. Currently, there are only two MASH-16 compliant impact attenuators on the market:
 - 24-inch wide Quadguard M10 (standard, cartridge-based attenuator), manufactured by Trinity Highway Products.
 - 24-inch wide SCI 100 GM (low-maintenance attenuator), manufactured by Work Area Protection Corporation.

Even though there are two attenuator options, the SCI 100 GM is a low-maintenance attenuator that has a considerably higher purchase cost than the Quadguard M10, a standard attenuator that utilizes disposable cartridges. Therefore, the SCI 100 GM and Quadguard M10 should NOT be considered equivalent products and allowing these

two devices to bid against each other would not create an environment of competitive bidding.

Therefore, when specifying MASH-compliant impact attenuators, sole-sourcing will be necessary within each attenuator category (standard and low-maintenance, respectively) until additional attenuators become available and are approved for use by MDOT. This has the following disadvantages/potential issues:

- Potential for unjustifiable cost increases (e.g., “price gouging”) due to sole-sourcing.
 - Inability to provide attenuators to state transportation agencies in a timely manner due to a manufacturer’s inability to keep up with demand (e.g., only one manufacturer supplying MASH-compliant attenuators to all state transportation agencies).
- b. Extremely limited width options and uncertainties associated with Quadguard M10.

The Quadguard M10 is only capable of shielding hazards up to 24 inches wide, and wider versions of this unit are currently unavailable. Also, the 24” wide Quadguard M10 is only approved for uni-directional applications (i.e., not for areas where there is bi-directional traffic). Trinity is in the process of developing a transition panel for bi-directional applications, and they expect to have it ready sometime in 2018, but this is uncertain at this time. In addition, Trinity is working on developing transition sections for the 24” wide Quadguard M10 for shielding 36” and 48” wide hazards, and it is expected they will be ready by the end of 2018, but this is also uncertain.

- c. SCI 100 GM Transitions (used to accommodate hazards wider than 24 inches) were not subjected to full suite of MASH crash testing.

The SCI 100 GM impact attenuator is capable of shielding hazards up to 24 inches wide. Work Area Protection makes transition sections attached to the rear of the SCI 100 GM, and these transitions may be used for shielding hazards wider than 24 inches.

It should be noted that Work Area Protection successfully passed a MASH test (Test 3-36) on a 36” wide block transition. In their opinion, this demonstrated that the transition could be flared safely. In addition, MASH Test 3-37 was conducted on their New-Jersey barrier transition to a narrow median. In their opinion, this established that the transition could withstand a reverse-direction impact. Based on the results of this testing, Work Area Protection believes all their transitions are MASH-compliant, but the FHWA eligibility letter for the SCI 100 GM does not mention that the transitions are eligible for federal aid reimbursement.

In summary, the manufacturer did not conduct the full suite of MASH crash tests on the transitions for shielding objects wider than 24 inches. Therefore, MDOT would have to rely on manufacturer’s certification that the transitions are MASH-compliant.

- d. Increase in overall installation length when using SCI 100 GM Transitions (used to accommodate hazards wider than 24 inches).

While there is no theoretical limit on the maximum width that can be shielded with transitions, the overall length of the unit (i.e., attenuator and transitions) increases with increasing hazard width. Therefore, it may be impossible to install an attenuator and the appropriate transitions if there are constraints (e.g., expansion, joints, catch basins, underground utilities, roadway features, insufficient space for attenuator installation, etc.) impeding installation at the proposed site.

- e. Need to use National Cooperative Highway Research Program (NCHRP) 350 compliant devices after 12/31/18 sunset date.

It will be necessary to continue using NCHRP 350 compliant permanent impact attenuators after the 12/31/18 sunset date under any of the following conditions:

- If a MASH-compliant attenuator is unavailable in the desired category (standard or low-maintenance) and/or required attenuator width.
- If one or more MASH-compliant attenuators exist in the desired category (standard or low-maintenance) and required width, but the attenuator(s) are not suitable for installation at the proposed location due to site-specific constraints (e.g., conflicting utilities, available space is inadequate for proper attenuator installation, presence of expansion joints, catch basins, grade separations, obstructions, etc.).

It should be noted that AASHTO's Technical Committee on Roadside Safety (TCRS) voted in favor of pushing back the sunset date for impact attenuators from 12/31/18 to 12/31/19, and the matter was taken to AASHTO's Council on Highways and Streets (CHS) for further consideration. CHS is currently voting on the matter, and ballots are due by 11/9/18.

If the sunset date for impact attenuators remains unchanged, the recommended plan for selecting attenuators after 12/31/18 is as listed below in items f through i. However, if AASHTO and FHWA delay the sunset date to 12/31/19, then no action is recommended at this time.

- f. Allow manufacturers to certify their respective transitions to shield hazards wider than the attenuator itself. This will require manufacturers to provide a completed and signed *MDOT Approval Checklist for Narrow Attenuators Equipped with Transition Assemblies* certifying to MDOT that their respective transitions are MASH, TL-3 compliant, along with detailed drawings of their respective transitions.
- g. Proposed permanent attenuator installations will be evaluated by MDOT staff on a site-by-site, case-by-case basis. Attenuator selection will be performed by MDOT staff on a site-by-site, case-by-case basis, including selecting the desired attenuator category (i.e., standard, low-maintenance, etc.) at each proposed installation site. This will also include evaluating each site to determine the required attenuator width

(based on hazard being shielded), the amount of space available for attenuator installation, and any site-specific constraints that may affect attenuator installation (i.e., presence of expansion joints, utilities and/or obstructions, grade separations, catch basins, etc.).

- h. MASH-compliant attenuator(s) will be specified when meeting all of the following conditions:
- There is at least one MDOT-approved, MASH-compliant attenuator in the desired category (i.e., standard, low-maintenance, etc.) and width (i.e., based on the width of hazard being protected), and;
 - The MDOT-approved, MASH-compliant attenuator is deemed suitable for installation at the proposed installation site, as determined by MDOT staff.
- i. NCHRP 350 compliant attenuator(s) will be specified when meeting one or more of the following conditions:
- When MDOT-approved, MASH-compliant attenuators are unavailable in the desired category (i.e., standard, low-maintenance, etc.);
 - When MDOT-approved, MASH-compliant attenuators are unavailable in the desired width (i.e., based on the width of hazard being protected);
 - When MDOT-approved, MASH-compliant attenuators are deemed unfit for installation at the proposed installation site due to site-specific constraints, as determined by MDOT staff.

ACTION: Approved (plan will be pulled if the sunset date is delayed).

6. Performance Based Practical Design (PBPD) – Kristin Schuster (walk-on)

Issue Statement – The MDOT needs to provide guidance and tools to evaluate the performance aspects for decision making on projects to apply aspects of PBPD.

Major Issue(s) – Some projects are considering PBPD elements beyond the traditional design exception for spot locations. The MDOT needs to agree on the direction on the use of PBPD to determine a process and tools. Concerns to address are:

- Does PBPD apply at the spot level, project level or system level?
- Reducing a roadway feature because standards allow it (design expectation not required)?
- How do we maintain consistency?

Background/History - PBPD is a decision-making approach that uses quantitative analyses to guide decision-making through the project development process. PBPD is the combination of Practical Design and Performance-Based Design encompassing the what (economic

efficiency) and the how (performance-based, data-driven methodology), either of which is incomplete without the other.

Analysis is a key component of PBPD. Emerging growth of analysis tools using relevant, objective data enables agencies to better evaluate projects within important program areas. The use of appropriate analysis methods, such as the Highway Safety Manual and the Highway Capacity Manual and their associated tools, will allow agencies to effectively evaluate and compare the performance of various alternatives.

With PBPD a roadway agency can address and achieve various transportation system goals including but not limited to:

- Minimizing fatalities and serious injuries
- Providing reasonable travel times
- Providing for the economical, efficient, and safe movement of goods to and from markets
- Maximizing the long-term benefits received for each state transportation investment
- Minimizing impact on the environment

Design Division plans to work with Regions, Transportation Systems Management and Operations, and FHWA through a technical agenda to address questions related to process, timing, tools, contract language for consultants, and corridor considerations among other issues.

Recommendation(s) – Finalize and approve Technical Agenda for PBPD.

ACTION: Approved

Carol Aldrich, Secretary
Engineering Operations Committee

RA:lrb

cc: EOC Members	M. DeLong	D. DeGraaf (MCA)
Meeting Guests	D. Jones	J. Becsey (APAM)
M. VanPortFleet	C. Libiran	D. Needham (MAA)
L. Mester	R. Jorgenson (FHWA)	M. Ackerson-Ware (MRPA)
D. Wresinski	R. Brenke (ACEC Michigan)	
Region Engineers	G. Bukoski (MITA)	
Assoc. Region Engineers		
TSC Managers		