ENGINEERING OPERATIONS COMMITTEE
MEETING MINUTES
APRIL 20, 2022, 9:00 A.M. – 11:00 A.M.
VIA TEAMS

Present:	Carol Aldrich	Tony Kratofil	Will Thompson	Kim Zimmer
	Gregg Brunner	Ryan Mitchell	Brad Wieferich	Hal Zweng
	Jason Gutting	Kristin Schuster	Gorette Yung	
Absent:	Mark Bott	Rebecca Curtis		
	Matt Chynoweth	Mark Dionise		
Guests:	Erin Chelotti	Ben Krom	Jack Rick	Lori Swanson
	Garrett Dawe	Nathan Miller	Brandy Solak	Carlos Torres

OLD BUSINESS

1. Approval of the March 18, 2022, meeting minutes – Gregg Brunner (acting Chair)

   ACTION: Approved

2. Michigan Department of Transportation (MDOT) new materials and products – Jason Gutting

   ACTION: For information only

NEW BUSINESS

1. Safety Topic: Be Prepared for a Tornado – Ryan Mitchell

   <<See Appendix A>>

   ACTION: For information only

2. Performance Based Practical Design: Revise design exception/design variance procedures to include predictive crash analysis and update Road Design Manual – Nathan Miller

   Issue Statement – Performance Based Practical Design

   Major Issue(s) – The Engineering Operations Committee (EOC) approved the establishment of protocols and procedures related to performance based practical design during the meeting held on August 8, 2019. One of these tasks was the "Review of Design Exception (DE)/Design Variance (DV) procedures, including safety analysis requirements and submittal schedule."

The Design Division, in conjunction with the Traffic and Safety Section, have coordinated on a revision of the design exception and design variance procedures through the requirement of a predictive crash analysis on these submittals.

Background/History – On August 8, 2019, Mark Shulick and Mark Bott sponsored the below agenda item:

> Performance Based Practical Design (PBPD) – Mark Shulick/Mark Bott
>
> Issue(s) – The purpose of the technical agenda is to establish protocols and procedures for the development of projects that utilize PBPD. Eight major tasks were identified:
>
> a. Review of Design Exception (DE)/Design Variance (DV) procedures, including safety analysis requirements and submittal schedule
> b. How PBPD can be utilized on a corridor or system approach
> c. Review of tools needed for analysis associated with PBPD
> d. Consideration of performance standards for evaluation of PBPD options
> e. Recommendation of applicable projects and development process impacts
> f. Recommend contract language for consultant contracts, if needed
> g. Identification of documents requiring modifications and training needs
> h. Quantify the system benefits of PBPD
>
> Background – It is understood the Federal Highway Administration (FHWA) has supported opportunities within project development to incorporate a decision-making approach. This approach helps agencies better manage transportation investments and serve system level needs and performance priorities with limited resources. MDOT traditionally has considered a DE and/or DV as needed with a project, however, DE/DV reflect spot locations rather than project based.
>
> Recommendation(s) – Approved the recommendations as outlined in the eight tasks of the Technical Agenda to implement PBPD in the project development process.
>
> *ACTION: Approved with request to add a process timeline.*

As an update to the approved agenda item, the Design Division and the Traffic and Safety Section have coordinated an approach to resolving the first of eight major tasks identified from 2019.

Recommendation(s) – Update the DE/DV instructions as illustrated below:

Proposed design values for the exception element (identify what design speed and appropriate dimensions this treatment meets if applicable). , predictive
All Design Exceptions must have a site-specific Highway Safety Manual (HSM) Crash Analysis attached for the requested Geometric element. See section 3.08.01F of the Road Design Manual for the analyses required. If a specific HSM model does not exist, perform a crash analysis using the existing crash data. Utilize the most recent 5 years of data available on RoadSoft. The analysis should be POB-POE if the geometric element in question is also POB-POE (e.g., shoulder width). All Fatalities (K) and Serious Injuries (A) within the limits of the design exception must be reviewed and commented on. Access High Load Hits database (maintenance) and include with analysis for vertical clearance design exceptions. Beyond the HSM crash analysis include the final "Crash Analysis" for the entire project limits. The project scoping "Crash Analysis" or "Road Safety Audit" (if required) are not applicable for design exceptions.

Additionally, Road Design Manual updates will be issued to clarify the necessity of the "predictive" and "highway safety manual" crash analyses for the DE/DV, along with an introduction to Performance Based Practical Design principals.

Status – This upcoming change has been vetted with the Statewide Design Alignment Team, the Traffic and Safety Statewide Alignment Team, and at conferences and committees. Additionally, once the changes are made, there will be outreach with the Project Management Community of Learning. Anticipate publishing final changes in May.

ACTION: Information only

3. Road diet on 1.2 miles of M-55/I-75 BL from Husted Drive easterly to Fairview Road in the City of West Branch, Ogemaw County – Garrett Dawe

Subject/Issue – Lane conversion (road diet) on 1.2 miles of M-55/I-75 BL in the city of West Branch, Ogemaw County.

Route/Location: M-55/I-75 BL
Job Number: 201118 (North Region R&R)
Letting: November 2022

Major Issue(s) – The Alpena Transportation Service Center (TSC) is planning a road diet on M-55/I-75 BL from Husted Drive easterly to Fairview Road in the city of West Branch, Ogemaw County, as part of a 2023 road reconstruction project. The existing roadway varies between four (4) and five (5) lanes, and the project proposes to convert the segment entirely to three (3) lanes. On-street parking currently exists for a three-block area in the core downtown and will be retained with the project. This proposal is being presented to the EOC for information only, per MDOT policy.

Background/History – A road safety audit was conducted in the summer of 2020 for the project area, and the top finding of the Road Safety Audit (RSA) team was to convert M-55/I-75 BL to three (3) lanes. The TSC followed up the RSA with a safety and operational analysis of the corridor and found that a crash pattern existed that would be mitigated by a road diet, and that impacts to traffic operations from removing a through lane in each direction were predicted to be insignificant. The TSC then proposed the road diet to the West Branch City Council and received a resolution of support. The TSC hosted a public informational session in August 2021 at which the road diet was a featured subject. The TSC received 13 online comments leading up to the informational session, 11 of which were opposed to the road diet. At the informational session, attendees acted with curiosity more than opposition, and most attendees left in support of, or impartial to, the road diet proposal. Since the public informational session, the TSC has received very little public feedback. Another public informational session is proposed for the summer of 2022.

Per the completed Road Diet Checklist, the proposed lane conversion does not present any significant operational concerns. The proposal is expected to improve the safety and mobility of non-motorized road users through shorter road crossings, greater separation from motorized users, and wider facilities; and the city is planning to enhance streetscaping elements with the additional space resulting from the road diet.

Recommendation(s) – The Alpena TSC recommends implementing the road diet on M-55/I-75 BL with the 2023 reconstruction project.

Status – The design of the project has reached the plan review milestone and is planned to be let in November 2022 for construction during the 2023 season.

ACTION: Information only

4. Exception request for a life cycle cost analysis (LCCA) on the flex route and rehabilitation of US-23 in Livingston County – Jack Rick

   Issue Statement – Exception request for a LCCA on the Flex Route and rehabilitation of US-23 in Livingston County

   Route/Location: US-23 from M-36 to Spencer Road
   Job Number: 204095 and 210068
   Control Section: 47013 and 47014
   Letting Date: March 2023
   Total Est. Const. Cost: $128.1M

   Major Issue(s) – Reduce further delay of the project and additional consultant cost needed to update the plans.

   Background/History – The US-23 Flex Route and rehabilitation project has a new letting date of March 2023 which now passes the threshold for needing an LCCA on the mill and overlay sections. The work consists of 7.4 miles of cold milling with a multiple course hot mix asphalt (HMA) overlay, joint repairs, widened shoulders for the Flex Lanes, reconstruction at Lee Road and Spencer Road for improved under clearance, interchange improvements at Silver Lake Road and M-36, bridge widening and replacements, drainage improvements, and intelligent transportation systems work. The overall package is a combination of freeway resurfacing, resurfacing and reconstruction, and Rebuilding Michigan funds.

   Project Timeline:
   Plan Review Date: April 6, 2022
   PCD: June 3, 2022
   Letting: March 3, 2023

   The US-23 project has moved from an original September 2022 letting to a March 2023 letting due to changes in the design schedule and scope of work related to railroad coordination, required maintenance of traffic modifications to meet the requirements of the new Work Zone Safety and Mobility Manual, addition of a retaining wall, addition of Spencer Road bridge request for action work, and to allot additional time for right of way acquisition. The reconstruction portions of the project are currently in the LCCA process and will be finalized upon determination of this exemption request. Adding the mill and two course overlay work to the LCCA would delay the project. The Plan Review meeting will be held April 6th, 2022, with a plan completion date of June 3, 2022. The design team will need to move quickly toward Final Plans with a final pavement design by the end of April/early May to stay on schedule.

   The LCCA alternative to the mill and two course overlay would be an unbonded concrete overlay. A change to a concrete overlay would require at least an additional month of design

time after completion of the updated LCCA (three-month delay). The new LCCA would not be completed until after the currently scheduled Plan Completion. After the plan revisions are complete the project may also require the project to have a supplemental plan review to address the concrete alternative and the impacts associated with the change in pavement design and revised maintaining traffic (additional 2 months). The anticipated delay to the plan completion date is expected to be five (5) to six (6) months.

This additional time is needed to create new typical sections, update the vertical alignment of US-23, revise ditch grading and culvert inverts, as well as adding edge underdrains. These impacts are due to the equivalent concrete pavement section being three inches higher than the currently proposed HMA section. There are also additional construction costs associated with this change. The under clearance on US-23 at the CSX railroad and Grand River Avenue bridges would be reduced, requiring reconstruction to maintain existing under clearance. The pavement under Lee Road and Spencer Road is already being reconstructed to improve bridge under clearance, but the added three inches would extend the reconstruction limits. Additional reconstruction would also be required to tie into existing bridge approaches and ramps. The additional wetland and floodplain impacts would most likely affect Department of Environment, Great Lakes, and Energy permitting.

Construction Impacts:

- An on-site batch plan would likely be needed for the concrete overlay, which would require an additional permit during the construction phase.

- A concrete overlay requires the newly poured concrete to cure prior to running traffic on it. The maintenance of traffic would need to be revisited to determine how to maintain peak hour movements along mainline US-23 due to this requirement.

- An HMA overlay of the I-96 ramps would likely be done with only nighttime closures, while a concrete overlay would require approximately 14 days of full closure. Using a temporary ramp widening could be an alternative to completely closing the ramps but would add significant cost and would not be as safe for traffic due to proximity of the existing bridges within the vicinity of the ramps.

- The current construction schedule is very tight for two seasons of work and the additional production and cure time would likely push this into a three-season construction project. This could potentially result in higher bids due to increased risk for the contractor and variability in pricing.

Summary

The expansion of the LCCA program to include multiple course HMA overlays and thin concrete overlays is currently scheduled for projects with a let date of January 1, 2023, and after. In summary, we are requesting an LCCA waiver for the mill and two course overlay sections of the US-23 Flex Route and rehabilitation project to avoid further delays, additional costs to the consultant contract due to plan updates, and additional construction costs. The pavement type for the full width mainline and ramp reconstruction areas will still be determined by the results of the forthcoming LCCA.

Recommendation(s) – The University Region and Brighton Transportation Service Center request an exemption to the soon to be implemented LCCA requirements on this US-23 Flex Lanes and rehabilitation Design-Bid-Build project.

Addendum
Since the original agenda item was submitted, the LCCA on the reconstruction sections of this project was completed. The resulting low-cost alternative is HMA, by 7.52%. This falls within the range where Alternate Pavement Bidding (APB) is usually considered. The University Region and the Brighton TSC would like to request an exemption to APB for this project and proceed with plan development using only the low-cost LCCA outcome. Justification for requesting an APB exemption:

1. APB would cause a further delay to design schedule of this project.
2. The is mainly a rehabilitation project with some sections of reconstruction to provide for improved bridge under clearance, so APB does not make sense.
3. Bridge work will be the controlling item of the project schedule, as the mill and resurface and reconstruction portions of the project can be performed within a couple of months, versus the 6-9 months required to perform a temporary widening followed by reconstructing each bridge at US-23 and M-36.

ACTION: Approved the exemption request to the soon to be implemented LCCA requirements for rehabilitation projects. The APB exemption was discussed and did not require action by the EOC because the project does not meet all the APB selection criteria (i.e., APB will not be pursued).

5. Road diet on M-1 (Woodward Avenue) between 8 Mile Road and Oakridge in the cities of Ferndale and Pleasant Ridge – Lori Swanson

Issue Statement – Road diet on M-1 (Woodward Avenue) between 8 Mile Road and Oakridge

Major Issue(s) – The cities of Ferndale and Pleasant Ridge are requesting a road diet on this corridor to increase pedestrian safety and accessibility of their downtown areas.

Background/History – The Oakland TSC had their consultant (Bergmann) perform a traffic study to determine if the road diet would be feasible in the area or not. After a couple geometric changes from the original design, the road diet was determined to be feasible and would not result in excessive delays.

Recommendation(s) – The Oakland TSC and Metro Region leadership agree with the results and are in favor of the road diet.

Status – The road diet checklist has been finalized by the city, and a resolution of support has been provided by Ferndale's City Council. After presenting the project to the EOC in September 2021, the designer prepared detailed design at the intersections as requested and MDOT held a public meeting on February 7, 2022.

The Oakland TSC is requesting final approval from the EOC for the Woodward Avenue road diet.

ACTION: Information only

6. ABSORB-M temporary water-filled impact attenuator modifications – Carlos Torres

Subject/Issue – ABSORB-M Temporary Impact Attenuator Modifications

Major Issue(s) - Request for approval of the ABSORB-M temporary water-filled impact attenuator with the following minor modifications:

A. Laser etching the letters "L" and "R" on the ABSORB-M steel transition straps.
B. UV stabilizing additive mixed with the plastic used to manufacture the ABSORB-M fill caps for additional UV protection and improved longevity of the plastic fill caps.

The Barrier Advisory Committee (BAC) reviewed the information provided by the manufacturer and recommends approval of the ABSORB-M attenuator with the mentioned modifications. Since these modifications are so minor, BAC believes a professional opinion letter from a certified crash testing facility is not necessary in this case.

Background/History – The ABSORB-M is a temporary water-filled impact attenuator manufactured by Lindsay Transportation Solution. The ABSORB-M was successfully crash tested under MASH, TL-3 criteria and was issued the Federal Highway Administration (FHWA) eligibility letter CC-153, dated 6/25/19. MDOT reviewed and approved the ABSORB-M attenuator for statewide use in 2020.

In March 2022, BAC was contacted by the manufacturer and informed of the mentioned modifications.

The manufacturer decided to laser etch the letters "L" and "R" on the transition straps to avoid installation errors, since the transition strap on each side of the attenuator is unique and should not the placed on the opposite side of the attenuator. Currently, installers need to exercise caution to avoid incorrect placement of the straps. Laser etching the letter "L" or "R" on each strap should eliminate this issue.

According to the manufacturer, laser etching does not cut into the metal. Instead, it changes the surface finish, so the galvanizing adheres differently to produce a visible letter (L or R) on the surface. Therefore, the BAC concurs with the manufacturer's opinion that laser etching "L" or "R" on the attenuator's metal transition straps should have no effect on the attenuator's crashworthiness.

It should be noted that the ABSORB-M plastic attenuation elements (filled with water when the attenuator is in operation) are manufactured with the same UV stabilizing additive used in the new fill caps. Also, the fill caps are only intended to keep the attenuation elements sealed, and do not serve a role in the attenuator's function or performance during a crash. As a result, BAC concurs with the manufacturer's opinion that using fill caps made with a UV stabilizing additive would have no effect on the attenuator's crashworthiness.

Due to these modifications being so minor, the BAC believes a professional opinion letter from a certified crash testing facility would not be necessary in this case. Furthermore, this recommendation would not conflict with the draft MDOT roadside safety hardware assessment and implementation plan, since the plan contains provisions allowing the approval of devices based on engineering judgement and specifies that the evaluation of devices may vary on a case-by-case basis.

Recommendation(s) – Approval of the ABSORB-M impact attenuator with specified modifications. EOC review and approval is recommended in this case, since the manufacturer cannot obtain a revised eligibility letter from FHWA due to federal guidelines concerning product modifications after issuance of an eligibility letter.

Status – New submittal.

ACTION: Approved

Carol Aldrich. Secretary
Engineering Operations Committee

RA:lrb

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

Appendix A – Safety Topic

BE PREPARED FOR A TORNADO

Tornadoes can destroy buildings, flip cars, and create deadly flying debris.

FEMA

FEMA V-1010/ March 2018

Tornadoes are violently rotating columns of air that extend from a thunderstorm to the ground.

- Can happen anytime
- 200+ MPH — Bring intense winds
- Can happen anywhere
- Look like funnels

IF YOU ARE UNDER A TORNADO WARNING, FIND SAFE SHELTER RIGHT AWAY

- Go to a safe room, basement, or storm cellar.
- If you can safely get to a sturdy building, do so immediately.
- If there is no basement, get to a small, interior room on the lowest level.
- Do not get under an overpass or bridge. You're safer in a low, flat location.
- Stay away from windows, doors, and outside walls.
- Watch out for flying debris that can cause injury or death.
- Use your arms to protect your head and neck.

HOW TO STAY SAFE

WHEN A TORNADO THREATENS

Know your area's tornado risk. In the U.S., the Midwest and the Southeast have a greater risk for tornadoes.

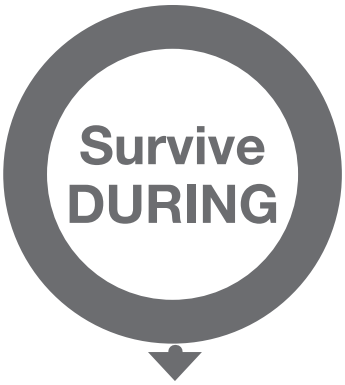
Know the signs of a tornado, including a rotating funnel-shaped cloud, an approaching cloud of debris, or a loud roar—similar to a freight train.

Sign up for your community's warning system. The Emergency Alert System (EAS) and National Oceanic and Atmospheric Administration (NOAA) Weather Radio also provide emergency alerts. If your community has sirens, become familiar with the warning tone.

Pay attention to weather reports. Meteorologists can predict when conditions might be right for a tornado.

Identify and practice going to a safe shelter for high winds, such as a safe room built using FEMA criteria or a storm shelter built to ICC 500 standards. The next best protection is a small, interior, windowless room in a sturdy building on the lowest level.

Consider constructing a safe room that meets FEMA or ICC 500 standards.



Immediately go to a safe location that you identified.

Take additional cover by shielding your head and neck with your arms and putting materials such as furniture and blankets around you.

Listen to EAS, NOAA Weather Radio, or local alerting systems for current emergency information and instructions.

Do not try to outrun a tornado in a vehicle.

If you are in a car or outdoors and cannot get to a building, cover your head and neck with your arms and cover your body with a coat or blanket, if possible.

Keep listening to EAS, NOAA Weather Radio, and local authorities for updated information.

If you are trapped, cover your mouth with a cloth or mask to avoid breathing dust. Try to send a text, bang on a pipe or wall, or use a whistle instead of shouting.

Stay clear of fallen power lines or broken utility lines.

Do not enter damaged buildings until you are told that they are safe.

Save your phone calls for emergencies. Phone systems are often down or busy after a disaster. Use text messaging or social media to communicate with family and friends.

Be careful during clean-up. Wear thick-soled shoes, long pants, and work gloves.

Take an Active Role in Your Safety

Go to **ready.gov** and search for **tornado**. Download the **FEMA app** to get more information about preparing for a **tornado**. Find Emergency Safety Tips under Prepare.

FEMA

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