



**ENGINEERING OPERATIONS COMMITTEE  
MEETING MINUTES  
SEPTEMBER 13, 2019, 9:00 A.M. – 11:00 A.M.  
MULTI-MODAL CONFERENCE ROOMS**

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Present:	Carol Aldrich Mark Bott Matt Chynoweth Mark Dionise	Jason Gutting Tony Kratofil Ryan Mitchell Kristin Schuster	Will Thompson Gorette Yung (phone)
Absent:	Gregg Brunner Mark Geib	Rebecca Curtis Brandy Solak	Hal Zweng Brad Wieferich
Guests:	Ethan Akerly Ben Krom	Chris Potvin Jon Stratz	Carlos Torres

**OLD BUSINESS**

1. Approval of the August 8, 2019, Meeting Minutes – Tony Kratofil - *Approved*
2. Michigan Department of Transportation (MDOT) New Materials and Products – Jason Gutting - *Information only*

**NEW BUSINESS**

1. Pavement Selection - US-31 – Life Cycle Cost Analysis (LCCA) – Ben Krom

Route/Location: US-31: from Norwood Rd to Barnard Rd, Charlevoix County  
Job Number: 200957  
Control Section: 15011  
Letting Date: 12/4/2020

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

The paving industries had no comments on this LCCA.

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 Engineering Operations Committee (EOC).

The reconstruction alternatives being considered are a Hot Mix Asphalt Pavement (HMA Alt #1) and a Jointed Plain Concrete Pavement (JPCP Alt #2). The pavement designs being considered are as follows:

**Alternative #1: Reconstruct with Hot Mix Asphalt Pavement**

1.5" HMA, 5E1, Top Course (mainline)  
2" HMA, 4E1, Leveling Course (mainline)  
3" HMA, 3E1, Base Course (mainline)  
1.5" HMA, LVSP, Top Course (shoulders)  
2" HMA, LVSP, Leveling Course (shoulders)  
3" HMA, LVSP, Base Course (shoulders)  
6" Aggregate Base  
18" Sand Subbase  
6" Subbase Underdrain System  
30.5" Total Section Thickness

Present Value Initial Construction Cost \$683,188/directional mile

Present Value Initial User Cost \$137,376/directional mile

Present Value Maintenance Cost \$271,945/directional mile

**Equivalent Uniform Annual Cost (EUAC) \$42,216/directional mile**

**Alternative #2: Reconstruct with Jointed Plain Concrete Pavement**

8" Non-Reinforced Conc Pavt P1 Modified, 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 \$1,240,268/directional mile

Present Value Initial User Cost \$133,663/directional mile

Present Value Maintenance Cost \$291,668/directional mile

Present Value Remaining Life Value -\$44,338/lane-mile

**Equivalent Uniform Annual Cost (EUAC) \$62,648/directional 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 EUAC 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 EOC.

*ACTION: Approved*

**2. Pavement Selection – M-24 – Life Cycle Cost Analysis – Ben Krom**

Route/Location: M-24: from S of Drahn Rd to N of Harriet St, Oakland County

Job Number: 121505

Control Section: 63112

Letting Date: 1/10/2020

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

The paving industries had no comments on this LCCA.

Pavement selection was determined using the procedures outlined in the MDOT Pavement Selection Manual. Department Policy requires that the pavement alternate with the lowest 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 be replaced. Also for both alternatives, the proposed plan grade will be lowered approximately two (2) inches lower than the existing plan grade elevation.

The pavement designs being considered are as follows:

**Alternative #1: Reconstruct with Hot Mix Asphalt Pavement**

1.5" HMA, 5E10, Top Course (PG 70-22P)

2" HMA, 4E10, Leveling Course (PG 70-22P)

3.5" HMA, 3E10, Base Course (PG 58-22)

16" Open-Graded Drainage Course

Geotextile Separator

8" Sand Subbase

6" dia. Open-Graded Underdrain System

31" Total Section Thickness

Present Value Initial Construction Cost \$324,153/lane-mile

Present Value Initial User Cost \$36,157/lane-mile

Present Value Maintenance Cost \$129,550/lane-mile

**Equivalent Uniform Annual Cost (EUAC) \$18,929/lane-mile****Alternative #2: Reconstruct with Jointed Plain Concrete Pavement**

8" Non-Reinforced Conc Pavt, High Performance, w/ 12' jt spacing

16" Open Graded Drainage Course

Geotextile Separator

6" dia. Open-Graded Underdrain System

24" Total Thickness

Present Value Initial Construction Cost \$368,097/ lane-mile

Present Value Initial User Cost \$53,701/ lane-mile

Present Value Maintenance Cost \$135,912/ lane-mile

Present Value Remaining Life Value -\$16,144/lane-mile

**Equivalent Uniform Annual Cost (EUAC) \$20,927/ lane-mile**

The pavement designs for both alternatives are based on the 1993 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 EOC.

*ACTION: Approved*

**3. Pavement Selection – I-94 – Life Cycle Cost Analysis – Ben Krom**

Route/Location: I-94 from W of Britain Ave to E of I-196, and US-31 from N of Napier Ave to I-94, Berrien County

Job Number: 130008, 205792

Control Section: 11016, 11017, 11112

Letting Date: 3/6/2020

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

The Michigan Concrete Association (MCA) provided three issues they had with this LCCA: two regarding pavement design practices, and one requesting that this project proceed as an alternative pavement bidding (APB) project outside of MDOT's APB guidelines. MDOT staff responded to MCA's comments, and no changes were made to the LCCA.

Pavement selection was determined using the procedures outlined in the MDOT Pavement Selection Manual. Department Policy requires that the pavement alternate with the lowest 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). The pavement designs being considered are as follows:

**Alternative #1a: Reconstruct I-94 with Hot Mix Asphalt Pavement**

1.5" HMA, 5E50, Top Course (mainline)  
3.5" HMA, 3E50, Leveling Course (mainline)  
7" HMA, 3E50, Base Course (mainline)  
1.5" HMA, 5E3, Top Course (shoulders)  
3.5" HMA, 3E3, Leveling Course (shoulders)  
7" HMA, 3E3, Base Course (shoulders)  
6" Aggregate Base  
18" Sand Subbase  
6" dia. Subbase Underdrain System  
36" Total Section Thickness

**Alternative #1b: Construct US-31 (and Ramps A & G) with Hot Mix Asphalt Pavement**

2.5" HMA, 4E10, Top Course (mainline & inside shoulder)  
3" HMA, 3E10, Leveling Course (mainline & inside shoulder)  
3.5" HMA, 3E10, Base Course (mainline & inside shoulder)  
2.5" HMA, LVSP, Top Course (outside shoulder)  
3" HMA, LVSP, Leveling Course (outside shoulder)  
3.5" HMA, LVSP, Base Course (outside shoulder)  
6" Aggregate Base  
18" Sand Subbase  
6" dia. Subbase Underdrain System  
33" Total Section Thickness

**Alternative #1c: Construct Ramps B, C, D, E & A-Left with Hot Mix Asphalt Pavement**

1.5" HMA, 5E3, Top Course  
2" HMA, 4E3, Leveling Course  
3" HMA, 3E3, Base Course  
6" Aggregate Base  
18" Sand Subbase  
6" dia. Subbase Underdrain System  
30.5" Total Section Thickness

**Alternative #1d: Reconstruct I-196 Ramps with Hot Mix Asphalt Pavement**

1.5" HMA, 5E30, Top Course  
3" HMA, 3E30, Leveling Course  
6" HMA, 3E30, Base Course  
6" Aggregate Base  
18" Sand Subbase  
6" dia. Subbase Underdrain System  
34.5" Total Section Thickness

Present Value Initial Construction Cost \$522,222/lane-mile

Present Value Initial User Cost \$79,783/lane-mile

Present Value Maintenance Cost \$124,102/lane-mile

Present Value Remaining Life Value -\$11,651/lane-mile

**Equivalent Uniform Annual Cost (EUAC) \$25,829/lane-mile**

**Alternative #2a: Reconstruct I-94 with Jointed Plain Concrete Pavement**

13" Non-Reinforced Conc Pavement, P1 Modified, w/ 16' joint spacing  
6" Open Graded Drainage Course  
Geotextile Separator  
10" Sand Subbase  
6" dia. Open-Graded Underdrain System  
29" Total Thickness

**Alternative #2b: Construct US-31 (and Ramps A & G) with Jointed Plain Conc Pavement**

9" Non-Reinforced Conc Pavement, P1 Modified, w/ 14' joint spacing  
6" Open Graded Drainage Course  
Geotextile Separator  
10" Sand Subbase  
6" dia. Open-Graded Underdrain System  
25" Total Thickness

**Alternative #2c: Construct Ramps B, C, D, E & A-Left with Jointed Plain Conc Pavement**

8" Non-Reinforced Conc Pavement, P1 Modified, w/ 12' joint spacing  
6" Open Graded Drainage Course  
Geotextile Separator  
10" Sand Subbase  
6" dia. Open-Graded Underdrain System  
24" Total Thickness

**Alternative #2d: Reconstruct I-196 Ramps with Jointed Plain Concrete Pavement**

10.5" Non-Reinforced Conc Pavement, P1 Modified, w/ 14' joint spacing  
6" Open Graded Drainage Course  
Geotextile Separator  
10" Sand Subbase

6" dia. Open-Graded Underdrain System  
26.5" Total Thickness  
Present Value Initial Construction Cost \$646,762/lane-mile  
Present Value Initial User Cost \$61,243/lane-mile  
Present Value Maintenance Cost \$130,247/lane-mile  
**Equivalent Uniform Annual Cost (EUAC) \$30,305/lane-mile**

The pavement designs for both alternatives are based on the 1993 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 EUAC 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. Pavement Selection – I-96 Flex Lanes – Life Cycle Cost Analysis – Ben Krom

Route/Location: I-96 Flex Lanes: from Kent Lake Rd to I-275, Oakland County  
Job Number: 124103  
Control Section: 63022  
Letting Date: 1/10/2020

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

The paving industries had no comments on this LCCA.

Background/History – Pavement selection was determined using the procedures outlined in the MDOT Pavement Selection Manual. Department Policy requires that the pavement alternate with the lowest EUAC be selected. Final pavement selection requires approval by the Engineering Operations Committee.

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 suitable for retention. It will be removed, stockpiled, tested and replaced. Also for both alternatives, the proposed plan grade will be raised approximately three (3) inches higher than the existing plan grade elevation. The pavement designs being considered are as follows:

**Alternative #1: Construct Flex Lane with Hot Mix Asphalt Pavement**

1.5" HMA, 5E3, Top Course (PG 64-28)  
2" HMA, 4E3, Leveling Course (PG 64-28)  
3" HMA, 3E3, Base Course (PG 58-28)  
16" Open-Graded Drainage Course  
Geotextile Separator  
8" Sand Subbase  
6" dia. Open-Graded Underdrain System  
30.5" Total Section Thickness

Present Value Initial Construction Cost \$331,416/lane-mile

Present Value Initial User Cost \$242,298/lane-mile

Present Value Maintenance Cost \$111,737/lane-mile

Present Value Remaining Life Value -\$8,756/lane-mile

**Equivalent Uniform Annual Cost (EUAC) \$24,464/lane-mile**

**Alternative #2: Construct Flex Lane with Jointed Plain Concrete Pavement**

9" Non-Reinforced Conc Pavt, High Performance, 14' Joint Spacing  
16" Open-Graded Drainage Course  
Geotextile Separator  
6" dia. Open-Graded Underdrain System  
25" Total Thickness

Present Value Initial Construction Cost \$432,330/lane-mile

Present Value Initial User Cost \$256,598/lane-mile

Present Value Maintenance Cost \$114,254/lane-mile

**Equivalent Uniform Annual Cost (EUAC) \$29,037/ lane-mile**

The pavement designs for both alternatives are based on the 1993 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*

5. Increase Freeway Lane Line Widths to 6 inches – Mark Bott

Project Information (if applicable): Increase the width of freeway lane lines to 6 inches and add on-ramp dotted lane extensions.

Issue(s) – In support of Connected and Automated Vehicles (CAVs), the National Committee on Uniform Traffic Control Devices has proposed several changes to the Manual on Uniform Traffic Control Devices in the area of pavement markings to benefit both human and machine vision drivers. The proposed changes are attached. They consider line width, ramp extensions, cycle length, and ramp cross hatching.

Based on the background information the immediate change the department can make is increase the width of freeway lane lines to six (6) inches as part of the FY 2020 annual pavement marking program. Nationally this is a trend DOTs are either evaluating or pursuing. The cost for this is \$200,000 using existing materials. The annual program addresses 85 percent of the system. The remaining freeways would be addressed by the road program in FY 2021. Their costs would be an increase of \$0.20 per foot for polyurea and modified urethane. For wet reflective tape the cost increase would be \$1.25 per foot. To increase the width to six (6) inches on all remaining trunkline would be \$1,000,000. While the proposed language calls for all roadways posted 45 mph or higher the percentage of roadways 40 mph or lower is approximately 10 percent thus calling for the need for uniformity and minimal impact on the contractor would make it appropriate to apply to all state trunklines. This effort would require further coordination, in particular, for yellow markings this would require a change from the three-gun system to the more universal 2-gun system where the two to six-inch lines are separated by a four (4) inch gap. Removal of exiting markings to accept this change versus the coordination of making the change on new paintings would have to be further investigated.

Regarding ramp dotted lane extensions MDOT already provides this guidance for offramps. The addition of on-ramp would provide guidance to both human and machine vision drivers. 27 of 32 states responding to a recent AASHTO survey already do this. The department can implement this as part of the FY 2020 annual pavement marking program for a cost of \$450,000. The remaining freeways would be addressed by the road program in Fiscal Year 2021.

Background – In 2013, an FHWA-directed research project was published that included a focus on the safety effects of six-inch wide edge lines. This study included safety analyses of crash, roadway, and vehicle data from Michigan, Illinois, and Kansas. For two-lane, two-way roadways, the study showed that 6-inch-wide edge lines reduce fatal and injury crashes from 15 to 38 percent. As a result of this study, the FHWA Crash Modification Factor

(CMF) Clearinghouse adopted CMFs for converting 4-inch-wide pavement markings to 6 inch (CMF=0.635 for all crash types in rural areas). Subsequent studies in Missouri and North Carolina have confirmed the benefits of 6-inch-wide pavement markings that were derived from Michigan, Illinois, and Kansas data.

It is projected that by 2020, lane departure warning (LDW) technologies will be standard on 40-80% of new car sales, and that number increases to 70-99% by 2025. Similarly, by 2020 lane keep assist (LKA) technologies will be standard on 10-24% of new car sales, and 30-73% by 2025. LDW and LKA are intended to keep vehicles on the road and in their lane. These devices address roadway departure crashes which are the largest category of crashes involving highway fatalities (approximately half of all highway fatalities). Roadway departure crashes as a result of distracted and/or impaired drivers are one of the most significant safety concerns that CAVs can positively impact.

Research has demonstrated that six-inch wide pavement markings consistently improve machine vision detection under adverse visibility conditions; and when combined with results from pending studies, demonstrates that six-inch wide pavement markings can improve machine vision detection on high-speed roadways where potentially conflicting signals may confuse machine vision systems from detecting pavement markings. This includes areas with remnants of previously removed markings, pavement scarring due to removal activities, blackout markings, crack seal, longitudinal seams in the pavement, varying road surfaces, cracking, rutting, horizontal curves, or areas where glare is common and impacts marking visibility.

Research has also shown that six-inch wide pavement markings are good for human drivers too, making for an ideal infrastructure-based solution in the “mixed-fleet” era. In 2010, the Texas A&M Transportation Institute published a study evaluating the trade-off between increased pavement marking width versus increased retro reflectivity levels. A closed course study using metrics including vehicle lateral placement, speed, and lane keeping glances showed that with increased pavement width, the likelihood of edge line encroachment decreased by 60 percent and the percentage of non-lane keeping glances also decreased.

Recommendation(s) – Increase freeway lane line widths to six inches and add on-ramp dotted line extensions to the FY 2020 annual pavement marking program and the FY 2021 Road Program.

*ACTION: Approved*

6. Construction Manager General Contractor (CMGC) Delivery for Railroad Bridge Replacement Over Manistee River – Ryan Mitchell

**Project Information:** Complete bridge replacement of railroad bridge, B02-83350.66, over the Manistee River. There is significant risk to the project due to the following; maintaining rail freight traffic throughout construction, limited site access and

surrounding environmental constraints

**Route/Location:** State-Owned Northern district railroad corridor

**Job Number:** 206489 NI (Multi-modal, no phase funding)

**Control Section:** 83900

<b>Key Dates:</b>	
Design Services NTP	September 2019*
CMGC RFQ Posting	October 2019+
Plan Turn-in	August 2021+
Letting	November 2021+
Construction Start	January 2022+
Construction Completion	November 2022+
	*Scheduled      +Anticipated

**Est. Const. Cost:** \$6,000,000.00 (*Subject to change*)

**Issue Statement** - Use of CMGC delivery for railroad bridge replacement, bridge B02-83350.66 over the Manistee River.

**Major Issue(s)** – Due to the identified project risks related to the requirement to maintain rail freight traffic throughout construction, limited site access and surrounding environmental constraints, early contractor involvement for constructability review and discussion of staging/means/methods is necessary for project success.

**Background/History** – Most railroad bridge construction in the United States is done on the existing railroad bed and alignment under active traffic. Accelerated bridge construction techniques are commonly employed to minimize rail traffic disruption. The freight traffic density on this rail corridor is light, but no alternative routing/detouring is available to service rail freight customers between Cadillac and Traverse City/Petoskey. Scheduled rail service outages not exceeding seven (7) consecutive calendar days are acceptable. However, a significant amount of the construction effort will still be required to be performed around and underneath the existing bridge under active traffic. The current bridge is in critical condition and has been speed and load restricted to preserve the railroad corridor until the bridge is replaced.

Selecting the most qualified contractor and early contractor involvement is necessary to manage project risk due to the need to minimize rail traffic disruption, limited site access and surrounding environmental constraints. The means and methods of the contractor, and timeframe to complete the defined scope of work are critical during the design phase in order to develop constructible bridge, site access and project staging plans, and construction schedule. Due to the environmental constraints the need to minimize the construction impact area is critical to managing project risk, yet adequate site access must be provided to facilitate construction. Based on the need to minimize rail traffic disruption, the limited site access and the surrounding environmental constraints, Office of Rail recommends early contractor involvement as the right way to move forward. The contractor will also be

engaged in discussions with the public, other state agencies, and impacted private property owners.

**Identification of Risk**

**Permits:** Department of Natural Resources (DNR), Department of Environment, Great Lakes and Energy (EGLE), National Pollutant Discharge Elimination System (NPDES), and local permits will be required. Due to the environmental constraints a minimal construction impact area will be necessary to manage project risk.

**Environmental:** Due to the limited site access, temporary and/or permanent impacts to high-quality forested wetlands are likely. If permanent impacts are required to the high-quality forested wetlands in the construction impact area, a 10:1 remediation ratio would be required as part of the mitigation plan. This remediation ratio has been identified as a significant project risk requiring early contractor involvement. Minimizing the construction impact area and restricting site access points will be necessary to manage project risk.

**Maintaining Traffic:** Maintaining acceptable levels of freight rail and recreational boat traffic on the Manistee River are critical to the success of the project. Developing an economical bridge design while considering accelerated bridge construction techniques will be critical to managing project risk.

**Third Party Involvement:** DNR and EGLE permit approval and coordination with the operating railroad, Great Lakes Central Railroad Company (GLC), will be required. Project risk attributable to DNR and EGLE permitting is assigned in the permit category and the project risk attributable to GLC is assigned in the railroad category.

**Other:** The Office of Rail may apply for a federal grant to assist in the funding of the construction and construction engineering costs. Environmental clearances are being processed under Federal Railroad Administration guidelines to manage this project risk, if MDOT is successful in obtaining a federal grant.

**Recommendation(s)** – The Innovative Contracting Committee recommends approval of the use of CMGC. The unique risks and complexity of the delivery warrant close collaboration between MDOT, the design team and contractor to ensure a constructible design and to mitigate risks.

*ACTION: Approved*

7. Sulfate and Chloride Discharge in Storm Water Workgroup – Christopher Potvin

Issue Statement – The EGLE has introduced a workgroup to discuss sulfate and chloride discharge in storm water.

Major Issue(s) – The implementation of these rules may impact MDOT business, including winter operations and construction activity

Background/History – This is a national trend, although this is the first such effort in Michigan.

Recommendation(s) – Awareness only for now. The Environmental Committee is engaged and will likely create an internal MDOT work group to identify potential concerns. RBMT should also be engaged.

*ACTION: Information only*

8. Implementation of Type 6 and 7 Bridge Railing Standard Plans – Carlos Torres

Subject/Issue – Implementation of Type 6 and Type 7 bridge railing standard plans.

Major Issue(s)/Potential Complication(s) – This is a follow-up to the bridge railing action plan that was presented to the EOC on 12/6/18. The Standards Unit developed draft standard plans for the new Type 6 (Standard Plan B-29-Series) and Type 7 (Standard Plan B-28-Series) bridge railings that are intended to replace the current Type 4 (Standard Plan B-17-Series) and Type 5 (Standard Plan B-20-Series) bridge railings.

Draft versions of Standard Plans B-29-A and B-28-A were submitted to the Michigan Infrastructure and Transportation Association for review and no comments were provided by Industry.

Background – Refer to the 12/6/18 EOC agenda item related to MDOT’s proposed bridge railing action plan and the document titled MDOT Draft Action Plan for Bridge Railings on Projects Let after December 31, 2019, dated November 20, 2018, for more information and detailed explanations on the issues associated with bridge railings.

Recommendation(s) – Proceed with approving Standard Plans B-29-Series (Type 6 bridge railing) and B-28-Series (Type 7 bridge railing).

The Bridge Barrier Railing, Type \_\_ pay item from the 2012 Standard Specifications for Construction will be used to measure and pay for Type 6 and 7 bridge railings. Also, special materials and construction methods are not required, so a special provision is not required when specifying Type 6 or 7 bridge railing.

*ACTION: Approved*

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Carol Aldrich, Secretary  
Engineering Operations Committee

RA:lrb

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