



**ENGINEERING OPERATIONS COMMITTEE
MEETING MINUTES
October 2, 2014 – 9:00 A.M.
MULTI-MODAL CONFERENCE ROOM**

Present: G. Johnson R. Van PortFliet M. Bott
S. Bower B. Wieferich K. Schuster
B. O'Brien M. Geib T. Marshall (FHWA)
M. Van Port Fleet

Absent: P. Ajegba M. Chynoweth

Guests: C. Youngs B. Krom J. Firman
G. Perry S. Hawker M. Bramble
T. Burch (FHWA)

OLD BUSINESS

1. Approval of the July 10th, Meeting Minutes – G. Johnson

ACTION: Approved with minor changes to Old Business – Item 2

2. Pavement Selection M-24 Reconstruction - B. Krom

Route/Location: M-24 at the Silver Bell Road and Clarkston Road Intersection
Project Cost: N/A
Letting Date: January 2016
Job Number: 108096
Control Section: 63112

Department Policy requires that a Life Cycle Cost Analysis (LCCA) be used to determine the most cost effective pavement design.

The Michigan Concrete Association (MCA) objected to multiple items & established procedures followed in the LCCA. Staff responded to their objections.

Pavement selection was determined using the procedures outlined in the MDOT Pavement Design and 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). The existing subbase is suitable for retention and will be left in place at the Clarkston Road intersection, while it will need to be removed and replaced at the Silver Bell Road intersection. The pavement designs being considered are as follows:

Alternative #1: Reconstruct with Hot Mix Asphalt Pavement

1.5"	HMA, 5E10, Top Course (mainline & shoulders less than 8' wide)
3.5"	HMA, 3E10, Leveling Course (mainline & shoulders less than 8' wide)
3.5"	HMA, 3E10, Base Course (mainline & shoulders less than 8' wide)
1.5"	HMA, 5E03, Top Course (shoulders 8' wide or greater)
3.5"	HMA, 3E03, Leveling Course (shoulders 8' wide or greater)
3.5"	HMA, 3E03, Base Course (shoulders 8' wide or greater)
16"	Open-Graded Drainage Course Geotextile Separator
8"	New Sand Subbase (Silver Bell Road Intersection)
8"	Existing Sand Subbase (Clarkston Road Intersection)
6" dia.	Open-Graded Underdrain System
32.5"	Total Section Thickness

Present Value Initial Construction Cost	\$397,581/lane-mile
Present Value Initial User Cost	\$46,623/lane-mile
Present Value Maintenance Cost	\$105,263/lane-mile

Equivalent Uniform Annual Cost (EUAC) \$22,565/lane-mile

*excluding the reconstruct areas, a mill & HMA resurface is planned: BMP 1.479 to EMP 6.537

Alternative #2: Reconstruct with Jointed Plain Concrete Pavement

9.5"	Non-Reinforced Concrete Pavement, P1 Modified, w/ 14' joint spacing
16"	Open Graded Drainage Course Geotextile Separator
6" dia.	Open-Graded Underdrain System
25.5"	Total Thickness

Present Value Initial Construction Cost	\$481,639/lane-mile
Present Value Initial User Cost	\$98,317/lane-mile
Present Value Maintenance Cost	\$101,209/lane-mile

Equivalent Uniform Annual Cost (EUAC) \$27,381/lane-mile

The pavement designs for both alternatives are based on the 1993 AASHTO "Guide for Design of Pavement Structures" and use the AASHTO pavement software DARWin Version 3.1, 2004. 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 Design and 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

3. Evaluating Differential and Non-Differential Freeway Truck and Bus Speed Limits & Outcomes of raising all vehicle speed limits. – J. Firman

Location: Statewide

Job Number: 121279 (Research Project)

This is a request to release the speed limit research report for the subject project and associated spotlight article.

The trucking industry asked MDOT to look into the possibility of increasing truck speeds to 65 mph. A research project was initiated in February 2013 to determine the impacts of raising freeway truck and bus speed limits from the present 60 mph to 65 mph or 70 mph. Michigan is one of only a handful of states that have a differential speed limit between passenger and truck/bus vehicles.

MDOT was made aware that speed limit legislation was going to be proposed that could impact all routes and therefore added additional scope to the existing research project to look at these potential changes.

MAY 1, 2014 EOC Meeting: WSU's Dr. Peter Savolainen updated EOC on the progress of the research. EOC also provided some additional direction on conducting further analysis of the multi-state data available on this issue.

JULY 10, 2014 EOC Meeting: WSU's Dr. Tim Gates summarized the further analysis that EOC requested and summarized the research conclusions.

The research report is complete and a summary document has been developed. A second phase of the research has been initiated to examining critical rural non-freeway roadway features and crash frequencies limiting speed limits on select routes. Initial speed studies have included 100 locations including US 2.

ACTION: Approved

4. 2015 Storm Water Permit – K. Schuster

The draft plan for the 2015 NPDES MS4 permit are due to MDEQ by September 30, 2014.

The following outlines new requirements that will result from the 2015 National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit.

Post-Construction Storm Water Management Minimum Measure

The MS4 permit requires that MDOT have a Storm Water Management Plan that includes six minimum measures to improve storm water quality statewide. This submittal addresses Post Construction Storm Water Management, which is the one of the six that has the most significant changes versus our previous permit.

Two compliance standards must be met for Post Construction Storm Water Management.

- a) Water Quality Treatment Performance Standard–applicable to all projects

Treat the first one inch of runoff from the entire site or Treat the runoff generated from 90 percent of all runoff-producing storms.

And

Reduce post-development total suspended solids loadings by 80 percent or achieve a discharge concentration of total suspended solids not to exceed 80 milligram per liter.

b) Channel Protection Performance Standard—applicable to projects with widening or new construction

The post-construction runoff rate and volume of discharges must not exceed the pre-development rate and volume for all storms up to the two-year, 24-hour storm at the site. At a minimum, pre-development is the last land use prior to the planned new development or redevelopment.

These standards are similar to the proposed rulemaking that was introduced by the EPA in 2010. In March of 2014, the EPA decided not to pursue this rulemaking. Therefore, these numeric performance standards are not part of the Federal regulation. MDEQ has stated in subsequent discussions that they still will require these standards on all new MS4 permits issued in Michigan.

The highlights of our Post Construction Storm Water Plan are:

- Adopt and recognize the Water Quality and the Channel Protection Performance Standards.
- Commit to the previously agreed date of 2018 construction season for substantial compliance with the Water Quality Standard only.
- Commit to investigate and develop procedures to comply with the Channel Protection Standard, without specific dates or programmatic goals.
- Remove the section that details the Early Coordination process.
- Remove dates that were relevant to the previous permit.

ACTION: Approved. EOC also directs that additional training be provided to MDOT/Consultant Designers, MDOT/Consultant Construction staff and Contractors regarding this issue.

NEW BUSINESS

1. Proposed new configuration for centerline rumble strips on concrete pavements to address concerns about milling on the concrete pavement joint – M. Bott/M. Bramble

During the FY 2008 - 2010 MDOT Rumble Strip Initiative over 5,700 miles of centerline and 1,700 miles of non- freeway rumble strips were milled. Only 100 miles of these centerline rumble strips were milled on concrete pavement, all of these miles in 2010. Additional concrete roads were scheduled to be milled, but in three documented instances the centerline joint shattered as soon as milling began. Since that time, there have been very few installations of centerline rumble strips on existing concrete pavements.

Concerns still exist regarding both the immediate and long-term integrity of the pavement when centerline rumble strips are milled across the joint. Additionally, contractors are often unwilling to accept responsibility for related concrete pavement warranties once the centerline joint is modified by the rumble strip installation.

Rumble strips have been milled on concrete freeway shoulders since the 1980s, with no reports of detrimental effects to the pavement. When the non-freeway rumble initiative was undertaken there was no information regarding the installation of centerline rumble strips on concrete pavements,

including the effects of the installation on the pavement. Centerline rumbles strips are a proven low-cost crash-reduction treatment, providing vibratory and auditory warnings to motorists that cross the centerline, and also provide the benefit of wet-night retroreflectivity for the pavement markings placed in the rumble pattern. Other states have successfully obtained these benefits with rumble strip installations as narrow as 4 inches. The proposed pattern has been reviewed and supported by the Department's pavement construction area.

ACTION: Approved

2. The use of a Construction Manager/General Contractor (CMGC) on a railroad project between Battle Creek and Jackson – C. Youngs

Route/Location: MDOT owned railroad line near the I-94 corridor, from Battle Creek to Jackson

Project Cost: \$13.2 Million (\$9.4 Million from FRA Tiger Grant, \$3.8 Million State)

Letting Date: TBD

Job Number: TBD

Control Section: NA63112

The project is on a railroad line near the I-94 corridor, between Battle Creek and Jackson. MDOT owns this segment of railroad. Double track facilities are in place near a few rail yards, however, most of the corridor is a single main track.

Most railroad work in the United States is done on the existing railroad bed, and construction methods for this work are common. Improving the curves on this project will require a new railroad bed to be established, which significantly impacts rail traffic. Maintaining passenger and freight rail traffic is critical. The freight rail in this corridor supplies Michigan's auto industry with just in time delivery of materials. The passenger rail currently supports 3 round trip trains between Pontiac and Chicago, and Rail ridership has steadily increased in recent years. Significant coordination between MDOT, Amtrak, NSR Company, CN railroad and the contractor will be necessary for the success of the project. The means and methods of the contractor, and timeframes needed to complete work will be critical to identify during the design phase in order to develop project staging, the construction schedule, and to determine the available windows for construction work. It is believed that having a contractor engaged through the CMGC process would add value to the project.

If CMGC is approved by the EOC, the Director's Leadership Team and the Federal Railroad Administration would need to approve the use of CMGC

Project Cost: \$13.2 Million (\$9.4 Million from FRA Tiger Grant, \$3.8 Million State)

Anticipated Construction Schedule: 2015 - 2016

Job Number: TBD

Control Section: NA

ACTION: EOC grants conditional approval pending the Director's review and concurrence.

3. The use of a Public-Private Partnership procurement for an Intermodal Station in Metro Region – C. Youngs

Project Cost: To Be Determined

Letting Date: Issue an RFP in 2014

Job Number: To Be Determined

Control Section: To Be Determined

The Detroit Intermodal Station is envisioned as the Detroit Metropolitan Region's major public transportation passenger terminal, with facilities for an existing intercity rail system, bus services including intercity services, and the M-1 light rail line service. The station will be developed in Mid Town Detroit at an area the existing AMTRAK station is currently located.

MDOT desires to procure the services of a Master Developer, through a Public-Private Partnership, to assist with the planning and development, and facilitate private sector investment and participation in the development. MDOT is seeking Transit Oriented Development that focuses on both transportation and private real estate development within its project delivery toolkit.

MDOT's primary objective of this project is to provide sufficient usable space for intermodal transportation tenants, facilitating material improvements to the region's transportation network. Space for intermodal tenants can consist of areas within the main structure and also areas needed to efficiently access and connect to the main station facility. In addition to facilitating the construction of a new regional transit hub, MDOT's secondary objective is to help spur redevelopment of the area adjacent to the proposed facility for purposes other than solely transportation needs. Specifically, MDOT seeks to aid economic development partners' access to the thousands of existing and potential customers utilizing the proposed facility.

A Master Developer is anticipated to partner with MDOT in the planning, development, design, financing, construction, and property management. A Master Development Agreement is anticipated to include multiple phases in order to complete the project. This agreement would be negotiated and amended over time as each distinct phase of work is ready to be performed. At the conclusion of each phase of work, MDOT expects to negotiate an amendment to the Master Development Agreement for the next phase of activity.

ACTION: EOC directs that the Office of Rail discuss this project with the Bureau of Planning to ensure that local involvement requirements are met including TIP and STIP requirements. EOC grants conditional approval pending addressing these action items. The Director will grant final approval.

4. The use of Design-Build procurements on multiple projects – C. Youngs

Route/Location: US-10BR in the City of Midland, Road Rehab and Reconstruction

Project Cost: \$7,305,888

Letting Date: December 19, 2014

Job Number: 123046

Control Section: 56051

Route/Location: I-94 BL in the City of Marshall, Road Rehab and Bridge Repairs

Project Cost: \$3,000,000

Letting Date: December 19, 2014

Job Number: 124825

Control Section: 13042

It was determined to use design-build contracting on a number of projects in order to expedite the development and/or delivery of several projects. Due to the expedited development requirements, these projects were not evaluated through the normal ICC review process.

MDOT identified 2 Design-Build projects funded by Michigan's Priority Road Investment Program (PRIP). These 2 projects are:

I-94BL Road Rehabilitation in the City of Marshall, Southwest Region

US-10BR Road Rehabilitation and Reconstruction in the City of Midland, Bay Region.

MDOT identified 12 potential 2015 "shelf" design-build projects. These projects are listed on the following spreadsheet.

ACTION: EOC grants approval for the two PRIP projects. The additional projects discussed will be addressed at a future EOC meeting.

5. Value Engineering (VE) Requirements on Design-Build projects – C. Youngs

Upcoming changes to Federal Regulations eliminate the requirement for VE on Design-Build projects.

On September 6, 2012, the EOC approved continuing the current policy of requiring VE studies on all Federal Aid Projects with an estimated total project (corridor) cost greater than \$25 million for a road project, or \$20 million total cost for a bridge project. EOC also stated that future projects (corridors) that have a cost between \$25 million and \$50 million or stand-alone bridge projects with a cost between \$20 million and \$40 million may be exempt from VE on a project by project basis, if approved by EOC.

MAP-21 eliminated the VE requirements on Design-Build Projects, and a final rule codifying this change (see attached) is effective on October 6, 2014.

ACTION: Approved

6. US-31 Reconstruction – B. Krom

Route/Location: US-31, from South of 8th Street to North of Quincy Street

Project Cost: N/A

Letting Date: January 2016

Job Number: 88876, 90076, 90077

Control Section: 70013 & 70021

Department Policy requires that a Life Cycle Cost Analysis (LCCA) be used to determine the most cost effective pavement design. The paving industries had no comments on this LCCA.

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 and will be left in place for 85% of the project limits. The pavement designs being considered are as follows:

Alternative #1a: Reconstruct US-31 with Hot Mix Asphalt Pavement

1.5" HMA, 5E10, High Stress, Top Course (mainline & shoulders <8' wide)

3.25" HMA, 3E10, High Stress, Leveling Course (mainline & shoulders <8' wide)

3.5"	HMA, 3E10, Base Course (mainline & shoulders <8' wide)
1.5"	HMA, 5E03, Top Course (shoulders 8' wide or greater)
3.25"	HMA, 3E03, Leveling Course (shoulders 8' wide or greater)
3.5"	HMA, 3E03, Base Course (shoulders 8' wide or greater)
6"	Open-Graded Drainage Course
18"	New Sand Subbase (~15% of project length)
18"	Existing Sand Subbase (~85% of project length)
32.25"	Total Section Thickness

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

1.5"	HMA, 5E03, High Stress, Top Course
2"	HMA, 4E03, High Stress, Leveling Course
3.25"	HMA, 3E03, Base Course
6"	Open-Graded Drainage Course
18"	New Sand Subbase (~15% of project length)
18"	Existing Sand Subbase (~85% of project length)
30.75"	Total Section Thickness

Present Value Initial Construction Cost	\$311,718/lane-mile
Present Value Initial User Cost	\$143,974/lane-mile
Present Value Maintenance Cost	\$112,951/lane-mile

Equivalent Uniform Annual Cost (EUAC) \$23,353/lane-mile

Alternative #2a: Reconstruct US-31 with Jointed Plain Concrete Pavement

9.5"	Non-Reinforced Concrete Pavement, P1 Modified, w/ 14' joint spacing
6"	Open Graded Drainage Course
10"	New Sand Subbase (~15% of project length)
10"	Existing Sand Subbase (~85% of project length)
25.5"	Total Thickness

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

8.5"	Non-Reinforced Concrete Pavement, P1 Modified, w/ 12' joint spacing
6"	Open Graded Drainage Course
10"	New Sand Subbase (~15% of project length)
10"	Existing Sand Subbase (~85% of project length)
24.5"	Total Thickness

Present Value Initial Construction Cost	\$441,187/lane-mile
Present Value Initial User Cost	\$171,130/lane-mile
Present Value Maintenance Cost	\$114,287/lane-mile

Equivalent Uniform Annual Cost (EUAC) \$29,207/lane-mile

The pavement designs for both alternatives are based on the 1993 AASHTO "Guide for Design of Pavement Structures" and use the AASHTO pavement software DARWin Version 3.1, 2004. 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 Design and 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

7. US-10 BR Reconstruction – B. Krom

Route/Location: US-10 BR from North of Sugnet Road to M-20

Project Cost: N/A

Letting Date: September 2014

Job Number: 123046

Control Section: 56051

Department Policy requires that a Life Cycle Cost Analysis (LCCA) be used to determine the most cost effective pavement design.

This is a design-build reconstruction project, being done with PRIP funding. The Michigan Concrete Association (MCA) objected to multiple items & established procedures followed in the LCCA. Staff responded to their objections.

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 sand subbase has adequate depth, is suitable for retention, and will be left in place for 40% of the project. The pavement designs being considered are as follows:

Alternative #1: Reconstruct 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 (40% existing, 60% new)
6" dia.	Underdrain System
30.5"	Total Section Thickness

Present Value Initial Construction Cost \$747,736/mile

Present Value Initial User Cost \$52,694/mile

Present Value Maintenance Cost \$426,490/mile

Equivalent Uniform Annual Cost (EUAC) \$50,386/mile

Alternative #2: Reconstruct with Jointed Plain Concrete Pavement

8"	Non-Reinforced Concrete Pavement, P1 Modified, w/ 12' joint spacing
6"	Open Graded Drainage Course
	Geotextile Separator
10"	Sand Subbase (40% existing, 60% new)

6" dia. Open-Graded Underdrain System
24" Total Thickness

Present Value Initial Construction Cost	\$1,002,897/mile
Present Value Initial User Cost	\$113,947/mile
Present Value Maintenance Cost	\$421,037/mile

Equivalent Uniform Annual Cost (EUAC) \$61,818/mile

The pavement designs for both alternatives are based on the 1993 AASHTO "Guide for Design of Pavement Structures" and use the AASHTO pavement software DARWin Version 3.1, 2004. 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 Design and 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

8. Beneficial Reuse Statute – K. Schuster

Recent legislation has potential to encourage proposals for industrial byproducts to be included in transportation projects. House Bill 5400 outlines several materials that can be included in the pavement structure (Ben Use 1) or into the fill, base, or below shoulder where covered by pavement (Ben Use 2). Additionally, foundry sand (or inert material) can be mixed with compost to manufacture soil (Ben Use 5). The other uses in statute relate to agriculture application (Ben Use 3) and waste water sludge (Ben Use 4). MDOT is considering what potential impacts are created and process for evaluation of proposals.

Future generator status is being reviewed by AG's office, as statute is inconsistent regarding future of Ben Use 1. Statute is in conflict with statewide storm water permit regarding allowable leachate from instances where a Ben Use 2 material is in a section of the roadway that is drained via underdrains. MDEQ is working to assist MDOT with revised allowable discharge limits regionally which are still expected to be a fraction of what is allowable in statute. This risk is expected to be small, based on the assumption that most of the products proposed for Ben Use 2 are not expected to pass absorption criteria (related to frost heave issues) to be in the pavement section but buried some distance below. When a material is used as Ben Use 2, tracking will be required to be set up for future design, permit requests in the area and other possible notification requirements.

An interim action was taken as of the October 2014 letting. A special provision was added to all local and MDOT trunkline contracts that prohibited any substitution unless specifically allowed by another contract specification.

ACTION: EOC directs the following additional actions be initiated,

- a) The Environmental Section will conduct informational presentations at the Winter Construction Conference and the Winter Operations Conference.*
- b) Construction Field Services will draft a review and approval procedure to address material usage requests. This will be communicated to construction staff after finalized.*

9. Bee Habitat in the Right-of-Way – Randy VanPortfliet

MDOT will be piloting landscaping approaches that will encourage plant pollination in the right-of-way.

Action: EOC directs the Design Division to develop a recommendation for two 2015 pilot projects. The Environmental/Roadside Committee will also be consulted.

Steven Bower, Secretary
Engineering Operations Committee

cc: K. Steudle D. Jackson R. Jorgenson (FHWA)
 L. Mester W. Tansil R. Brenke (ACEC)
 EOC Members D. Wresinski G. Bukoski (MITA)
 Region Engineers C. Libiran D. DeGraaf (MCA)
 TSC Managers R. Lippert D. Hollingsworth (MCA)
 Assoc. Region Engineers B. Shreck J. Becsey (APAM)
 D. Parker T. Phillips M. Newman (MAA)
 M. DeLong J. Murner (MRPA)