

Minutes for TEOPMC Meeting Saint Cloud, MN

March 6, 2013

Attendees:

Ken Johnson, Traffic, CO
Mitch Bartelt, Traffic, CO
Janelle Anderson, Traffic, CO
Brad Lechtenberg, Maintenance, CO
Bruce Daniel, Maintenance, CO Striping
Michelle Rognerud, Traffic, District 2
Tony Hughes, Construction, District 3
Tiffany Dagon, Traffic, Metro District
Heather Gardner, Traffic, Metro District
Sheila Johnson, Maintenance, Metro District
Luke Bourassa, Traffic, District 6
Ken Wenkel, Traffic, District 7
Mike Lownsbury, Traffic, District 8

Minutes prepared by: Mitch Bartelt, Pavement Marking Engineer, CO Traffic

QPL update

Wet-reflective markings

3M All Weather Elements Series 70E for Epoxy Pavement Markings was granted full approval. Potters Visimax Plus Type IV beads had Provisional Approval extended to two additional projects and expires August 1. We want to evaluate the installations that were put down in 2012 further before making a final decision on it.

The Potters Visimax Plus Type IV installations on MnDOT were as follows:

Locations and MnDOT State Project Number	Material	Lines to measure
TH 4 from RP 79.399 – 94.212 (SP 6205-15)	Latex (WR)	Edgelines and Centerline
TH 4 from RP 94.892 – 105.050 (SP 6503-19)	Latex (WR)	Edgelines and Centerline
TH 4 from RP 105.050 – 107.608 (SP 4701-25)	Latex (WR)	Edgelines and Centerline
TH 22 from RP 157.617 – 167.063 (SP 7326-14)	Epoxy (WR)	Edgelines only

The TH 4 segment is in District 8, which the TH 22 segment is in the very southern part of D3.

Both segments had comprehensive readings taken on them: dry, wet-reflective, and wet-recoverable.

Epoxy

- LS-65 had provisional approval extended, mostly as a stop gap. However, because they haven't been on a NTPEP test deck, I will likely extend their PA until they've been on one to provide a fair analysis.

- Mark 55 and Mark 55.3 were brought back down to Provisional Approval because of a change in their product formulation.

NTPEP requirement 2013

~~As Ken said at the last TEOPMC meeting, being on the NTPEP test deck will be a requirement for inclusion on the MnDOT Pavement Markings QPL. We will also have a wet-reflective test deck installed.~~ Update 4/8/2013: After receiving feedback from industry, the requirement was tweaked so that a product needs to have been on a recent northern-state snow-belt test deck. This would include results from 2008 PA and 2010 MN.

There were a few other items that came up for discussion on the subject of the QPL.

Multiple District members suggested that the way the **Epoxy – Recoverable** and **Latex – Recoverable** lists are currently organized could be better. Some suggested that only the reflective elements/optics be listed in one category; another was to include the entire system. The consensus was that regardless of the change, it could be better organized.

*Action item: Reorganize the **Epoxy – Recoverable** and **Latex – Recoverable** categories of the Qualified Products List.*

Heather G reiterated her request for thermoplastic pay items for pavement messages.

Action item: Contact Technical Support (Tim Swanson) to request an addition of thermoplastic pavement message pay items.

Ken W reiterated a request to have the word “Contrast” in the contrast pavement marking pay items. Currently, they are the 7” and 11” items.

Action item: Contact Technical Support (Tim Swanson) to request a change in wording for 7” and 11” wide pavement marking pay items.

Rumble stripes / fog seal / grooving markings concerns – Jim M

In adopting the new [Rumble Tech Memo](#), Jim Miles likes to groove in wet-reflective markings within the rumble. However, he also faces pressure from the materials office in his district to fog seal the rumble strip. Our current practice makes it nearly impossible to both fog seal the rumble and groove in a centerline marking. Thus, he wanted to discuss this amongst the group.

We found that among committee members, this wasn’t a huge issue. Jim Miles wasn’t at the meeting. District 8 has voice the same concerns, but Ryan Barney and Nate Pederson in D8 Design mostly deal with this.

In D8, they used the “concrete” design in the Rumble Tech Memo, where the rumbles are split 4” away from each other, and 2” off of the centerline joint in each direction. They might have fog sealed the centerline joint, but not the rumble, last season. One concern they raised was that they had to do all of the grooving, rumble, and striping work on the same day, because it was done via supplemental agreement. It worked out well because it was a supplemental agreement, but going forward, they wondered if it would become a cost and logistical issue.

This is also exacerbated by the requirement in the Boiler Plate Special Provisions to wait at least 10 days after placing the new bituminous pavement prior to grooving.

Both fog sealing the rumble strip and grooving in a pavement marking are essentially mutually exclusive. In order to meet the tolerances of the pavement marking groove depth, one must cut the groove prior to cutting the rumble. However, in order to get a marking to stick, one must groove the pavement after the fog seal is applied to get below the fog seal. But, one would have to place a fog seal *after* cutting a rumble.

I did come up with an idea after watching either a BMW or Audi commercial. In the commercial, there was what appeared to be an 8" rumble strip between the double-yellow centerline. The centerline appeared to be 2" outside the rumble on either side.

Ken J and I discussed this, and we felt that that design would be a way in which both the rumble strip could be fog sealed and the marking could be grooved in. The disadvantages would be:

- On a double-yellow centerline, each line would probably have to be grooved in and striped separately. Most grooving and striping equipment in Minnesota is set up for a 4" gap between the double-yellow centerline.
 - This could take more time, be more costly, and be more time-consuming and costly to restripe.
- This would put the marking more into the driving lane than before.

However, one advantage might be a reduction in nuisance hits of the rumble and noise complaints.

Ken J said that we would support any District that wanted to experiment with such a design. (Bruce D proposed calling it the "European Rumble.") If a District wanted to try it, they would have to request an exception to the Rumble Tech Memo and have it approved by Sue Groth.

Ken W advised that when striping over a fog seal, he likes to stripe 15 mils of latex, and then cover it with another 15 mil coat of latex two weeks later.

Epoxy thickness for construction applications – should it be thicker? – Jim M

Varying vendor specifications for thickness

I got the following e-mail from Jim Miles regarding epoxy thickness.

Mitch,

I noticed that the manufacturer's spec for Epoplex epoxy recommends a 20 mil thickness minimum on all pavements. A thicker application is required on some surfaces. I could not find the specs for the other "approved" epoxies. Our standard epoxy special provision requires a 15 mil thickness except on Superpave surfaces where it is bumped up to 20 mils. Should we revise our spec to match the manufacturer's spec?

This might be a good topic for discussion.

Thanks for the acceleration lane typical. We are adding some acceleration lanes as part of a permit and we will use the typical (minus the arrows).

Have a good weekend!

Jim

I did some research of the epoxy products on the QPL. I also surveyed surrounding states to ask how thick they put epoxy down for new construction on their projects. A thorough analysis and explanation can be found in the attached document titled *20130306 epoxy application thicknesses*.

Long story, short: among slow-dry epoxy products, only Ennis HPS-2 had a specified minimum thickness of 15 mils. However, their product representative suggested a thickness of between 20-22 mils for better performance. Also, WI, SD, and IL specified at least 20 mils thick, while MI specified 17-20 mils for modified urethane (HPS-4).

I warned that the downside of MnDOT adopting a thicker would be an increased cure time in initial application and to an increased cost in construction (but that savings might be made up in maintenance). The committee was comfortable with that.

The committee agreed the following changes **in red** should be made to the Boiler Plate Special Provisions for Spec 3590: Epoxy Pavement Markings? The following is under [3590.3A](#):

Thickness:

The epoxy pavement marking wet film thicknesses shall be a minimum of ~~380 μ m [15 mil]~~ 508 μ m [20 mil] on all pavement surfaces. For the Spec 2360 SUPERPAVE wearing courses the epoxy pavement marking wet film thicknesses shall be increase from a minimum of ~~380 μ m [15 mil]~~ 508 μ m [20 mil] to a minimum thickness of ~~508 μ m [20 mil]~~ 635 μ m [25 mil] wet film.

Action item: I sent Technical Support a request to change this in the Special Provisions on March 21. As of this morning, the change still hadn't been made to the Boiler Plates. I followed up this morning.

Action item: communicate this change to the striping contractors.

Pavement Markings Under Challenging Conditions – Phase 2

Update on test section selection

Multilane microsurfacing – TH 52 from RP 115.6 (CSAH 42) to RP 101 (north of CSAH 86)

Two-lane, two-way microsurfacing – TH 3 from south of TH 50 to CSAH 47, just north of Northfield. This is about 11 miles long.

Two-lane, two-way chip seal - We were still looking for a chip seal project, but there will be one in Metro on TH 61 between the two junctions of TH 316.

It was determined in meetings after the meeting that CO Maintenance will stripe the test sections. This will be much easier than placing it into a contract. Kudos to Paul Nolan for volunteering all of the test sections.

Possible funding issues with IDIQ projects

We will meet with Kevin Kosobud from COIC on this. He has some concerns about projects that are not completed in a “routine” manner possibly losing this funding. We were able to work through them the next day.

Also, upon request of the Committee, here is [Phase 1 Report: Pavement Markings in Challenging Surfaces](#) from the [MnDOT pavement markings web site](#).

Boiler Plate Special Provisions update

The following changes were added to the Boiler Plate Special Provisions.

- **Language inserted into 2102 regarding water- or sandblasting**
- **10-day grooving requirement inserted into all 2582 grooving pay items**
- **Inserting high-build section into 3591**
 - Needs to be on Latex WR projects as well. We’ve probably been fine because we call out categories on the QPL, but this was an oversight from before.

I asked for Spec 2580 – should I remove the reference to 3-minute dry alkyd paints? Committee members were indifferent on this.

DLS and MRM special provisions

Ken J and I asked the District members the following questions:

How often are you using these on your projects?

Most committee members said they were requiring the DLS on all jobs longer than 1 centerline mile, but picking and choosing the MRM. Heather G said she had some issues with the MRM unit being lineal feet and would prefer to change to Lump Sum.

Are the BP SPs easy to decipher and use for jobs in which you’re NOT using the DLS or MRM?

Nobody expressed any problems with this.

Chipseal and microsurfacing practices over existing tape

This question came from District 6. They had a job where a chip seal was to be applied over existing tape on US 61, and they wanted to know what their options were. Jeff Rieder and I eventually worked together and he decided to remove the tape before applying the chip seal. This is due to adhesion issues. Also, it is actually cheaper to remove the tape than to try to mask it and save it for future use.

All of the committee members agreed that removing the tape prior to applying a chip seal was an appropriate practice. And though this was not the topic of discussion, all of the District representatives present for the meeting wanted OTST to reconsider the tape requirement in the [Pavement Marking Tech Memo](#) when it is up for renewal in May. Many of them noted that I needed to include that in the meeting minutes.

Pavement Marking Training update

Albeck and Associates will be conducting Pavement Marking training on March 27-28, a Wednesday and Thursday. At last glance, only 3 MnDOT folks were signed up for it. We did open this up for anyone, thankfully.

Those attending will receive a Pavement Marking Field Guide. Bruce D did a lot of good work on this, and the consultant is helping us put finishing touches on it.

We found out that one cause for confusion was that people who were signed up for the original offering in December assumed they were still signed up for the rescheduled version. I sent a note out to committee members clarifying that.

Pavement Marking Management Tool update

Greg W was to lead a discussion on how to use the Tool, but he was sick the day of the meeting.

I introduced that while the PMMT is in production, it still has a notable glitch in it. This glitch didn't show up during testing. There is a migration to ArcGIS 10 that is taking place, and it is surmised that is causing our unanticipated problem. The PMMT will be migrated over into ArcGIS 10 and hopefully fixed by MNIT. I don't know exactly how long this will take.

There is one common data spatial error that will show up if the Tool is not queried in the correct order. The three key things to remember are:

1. Pick your District first.
2. Pick your District first.
3. Pick your District first.

The biggest thing that I want to note is that, while the PMMT is currently flawed in a way it shouldn't be, it will work well enough that a District should be able to put together its striping plan for the upcoming season.

Greg developed a guide to use the Tool in its current form that I forwarded to TEOPMC members on March 7, 2013. If you have any trouble using the Tool, Greg is the best contact for that.

Round Robin

Refer to *20130305 I-94 at TH 25 TimJ 102716003.pdf*.

Tim Janski from D3 called me a day before the meeting with a question of how to stripe the ramp in ramp merge area in the attached drawing. The MUTCD gives you two options for how to do it. I decided to put it to the Committee to ask for advice.

The Committee unanimously agreed their preference was to stripe both EB on-ramps in accordance with [Figure 3B-9c in the 2011 MnMUTCD](#). Tim already had chosen that, as you can see in the drawing. I called him after the meeting to let him know the feedback from the committee.

Markings in roundabouts

In advance of the TEM re-write, Ken J set up a meeting of the Roundabout Task Force to discuss signing and markings at roundabouts. Ken J noted the recommendation of the Task Force to use standard arrows and not fish hooks. He also noted that many contracts with roundabouts require the presence of a District pavement marking representative to provide spotting for markings and pavement messages.

Ken W noted that notice is needed to meet such a requirement. He recommended one week advance notice be written into the contract.

Committee members felt a multilane figure should be added to Chapter 7 as part of the TEM rewrite.

Best Practices on Rumble StripEs: Evaluation of Retroreflectivity and Installation Practices update – Ken J

Ken J said that we were looking for projects to observe this next construction season. We would like to allow Iowa State to videotape the bead installation on a project, and also let a contractor use their zero-velocity bead gun to see if that makes a substantial difference in retroreflectivity, particularly on centerline.

Please contact Ken J if you have any jobs you're willing to let be used in the study.

Note: this was my last TEOPMC meeting as the pavement marking engineer. I have accepted a position with MnDOT CO State Aid (SALT) as a Senior Engineer in Construction. As part of the job, I will be a liaison for local projects in Districts 6, 7, and 8. My last day in my current job as pavement marking engineer was April 5.

It has been a pleasure to work with all of you. Thank you all for your help and support in this job.

Remaining meetings in 2013 (All in the St. Cloud Conference Center, various rooms):

May 21, 2013

September 10, 2013

December 12, 2013