



Midwest Bridge Preservation Partnership

Agenda – Monthly Teleconference

April 7, 2020

1:00 – 2:00 PM CST

- Roll Call –**

Name	Organization		Name	Organization	
Darlene Lane	NCPP	x	Javier Romero	Cook County, IL	
Ed Welch	NCPP	x	Adam Post	Indiana DOT	x
John Hooks	NCPP	x	Scott Neubauer	Iowa DOT	x
Chris Keegan	NCPP	x	Joe Stanis	Iowa DOT	x
Bill Oliva (<i>Chair</i>)	Wisconsin DOT	x	Don Whisler	Kansas DOT	
Sarah Sondag (<i>Vice Chair</i>)	Minnesota DOT	x	John Culbertson	Kansas DOT	
James Leaden (<i>Secretary</i>)	Kansas DOT	x	Joe Molinaro	Missouri DOT	x
Jeremy Hunter (<i>Past Chair</i>)	Indiana DOT	x	Jacob Creisher	Michigan DOT	x
Sarah Wilson (<i>Director</i>)	Illinois DOT	x	Jason DeRuyver	Michigan DOT	
Josh Rogers (<i>Director</i>)	Kentucky TC	x	Paul Pilarski	Minnesota DOT	x
Glenn Washer (<i>Director</i>)	U of Missouri		Kent Miller	Nebraska DOT	x
Patrick Conner (<i>Director</i>)	Indiana LTAP	x	Mark Traynowicz	Nebraska DOT	
Nick Graziani (<i>Director</i>)	Watson Bowman		Nancy Huether	North Dakota DOT	x
Tom Donnelly (<i>Vice Chair Non-State Agency</i>)	Transpo	x	Barry Kinnischtzke	North Dakota DOT	x
John Bunderson (<i>Social Media WG</i>)	Metal Fatigue Solutions		Mike Brokaw	Ohio DOT	
Scott Stotlemeyer (<i>Systematic Preventive Maintenance WG</i>)	FHWA	x	Andrew Blower	Ohio DOT	x
Brandon Boatman (<i>Preservation Matrix WG</i>)	Michigan DOT		Walt Peters	Oklahoma DOT	x
Fouad Jaber (<i>Deterioration Modeling WG</i>)	Nebraska DOT		Todd Thompson	South Dakota DOT	x
Tim Anderson (<i>Director</i>)	FHWA	x	David Coley	South Dakota DOT	x
Larry O'Donnell	FHWA		Richard Marz	Wisconsin DOT	x
Raj Ailaney	FHWA	x	Tim Woolery	Adv. Chem. Tech. Inc.	
Dick Dunne	GPI	x	Lorella Angelini	Angelini Consulting	x
David Heilman	Jet Filter System		Pat Martens	Bridge Preservation and Inspection Svcs.	x
Greg Heilman	Jet Filter System		Jason Fogg	HDR Inc.	
Mark Swiderski			Paul Jensen	Jensen Engr & Cnslt	x
Matthew Keilson			Dave Juntunen	Kercher Group	x
Derrick Castle	Sherwin Williams Co.		Drew Storey	Kercher Group	x
Basak Bektas		x	Kyle Bartfay	Phoscrete Concretes	x
Katelyn Freese		x	Philip Meinel	Wisconsin DOT	x
Kevin Irving	Int. Zinc Assoc.	x	Paul Vinik		x
Kevin Stalz	Washer Coatings	x	Patrick Conner		x
Kevin Stumpf	Uretek U.S.A.	x	Jennifer Harper		



Midwest Bridge Preservation Partnership

- **Approval of Minutes – March 3rd, 2020 Monthly Meeting**

The minutes from the March 3rd, 2020 meeting were distributed via email on April 2nd, 2020. Bill Oliva quickly scrolled through those minutes and made a motion to approve the minutes. Josh Rogers seconded it. There was no opposition. The motion passed.

- **Introduction of Chris Keegan, Washington DOT & Ed Welch's replacement**

Introduction, Interest in moving into Bridge Preservation role, and thoughts on moving forward

Chris has been with the Washington State DOT for 41.5 years. At the Washington DOT, Chris has been involved with Bridge Design, Bridge Inspection (construction) and moved into the Bridge Maintenance world. In 2007/2008, Chris was invited by the FHWA to go to Evanston, Ill. where they started the bridge portion of TSP2 and NCPP. Shortly thereafter Ed Welch gave him a call, and Chris became the first Chair of the West Bridge Preservation Partnership (WBPP). He remained the Chair for seven consecutive years, a WBPP (and Guinness World) record.

He learned a lot from his experiences as the WBPP Chair and it helped them quite a bit to change the Washington DOT from a totally reactive bridge maintenance program to one where they utilize the advantages of preservation work. They saw the advantages of doing bridge washing on steel truss bridges, using deck seals to extend the life of bridge decks, replacing expansion joints, using borate on timber bridges to extend life, using an expansion tool to stop T-cracks on bridges, and so on. When Chris heard that Ed Welch was looking at retirement, Chris said that he was interested, and the rest was history.

Chris has met some of the MWBPP members from attending the MAC meetings and looks forward to growing those relationships as well as making new ones as he takes on his new role.

Bill Oliva welcomed Chris and said we are looking forward to the leadership that Chris brings with him to this position.

- **2020 MWBPP Annual Meeting (Lexington Kentucky) – September 9th – 11th 2020** Josh

Josh Rogers and John Hooks -

- Call for Presentations (John) - <https://www.surveymonkey.com/r/NRQBKKZ>.

John Hooks started out by giving updates from the other partnerships regarding how the Covid 19 Pandemic has altered the schedules of their annual meetings:

The Southeast BPP cancelled the March 2020 date, and rescheduled to August, 2020.

The West BPP cancelled the May 2020 date, and rescheduled to November, 2020.

The Midwest BPP is still scheduled for September 9th-11th, 2020 in Lexington KY.

The Northeast BPP is still scheduled for October 5th-7th, 2020 in Harrisburg, PA.

The new rescheduled dates have not been officially announced, so these days are considered tentative.

In the meantime, the agenda is still being developed for the MWBPP annual meeting. John Hooks continued by stating that he sent out an email requesting additional ideas for presentations for the MWBPP's annual meeting. He has 35 topic ideas so far but stated that it's not enough. He asked for members to please submit ideas for topics to add to the agenda soon. John said he will send this request out to the partnership members again shortly after this meeting. Bill Oliva added that it might be helpful to share the agendas of the other partnerships to everyone to help trigger ideas, and to inform the members of our partnership of what the other partnerships are considering.

- **Monthly Preservation Topic:**

Do Midwest DOTs use Thin Polymer Overlays (TPOs) to protect/preserve new bridges/decks. (Bill Oliva-WisDOT) The question and discussion that I would like to pose and have with the group is how many DOTs use TPOs on new construction to preserve the decks by minimizing the intrusion of chlorides? In Wisconsin, we are contemplating a policy to use TPOs on our high ADT and high value infrastructure as part of a life treatment plan to extend the life of the bridge deck starting from initial construction – What are other Midwest DOT practices and thoughts?

Bill O. started off by stating in Wisconsin, they have been contemplating and implementing protection on new bridge decks. From their manual; protection systems may be desired to minimize future rehabilitation, thereby preserving it. One or a combination of systems might be used:

HPC – High Performance Concrete (mainly for expensive projects).

TPO – Promoting Thin Polymer Overlay (on relatively new bridge decks as a preservation tool).

PPC – Polyester Polymer Concrete Overlay (as a preservation tool).

Stainless Steel Deck Reinforcement (expensive, may be beneficial).

Regular crack filling and deck sealing (on a 4 year cycle). It's problematic, is it being done consistently, and within the time window for re-application. Worried about having a new deck out there without any protection from the chlorides. Treatments range from preservation to rehabilitation. One of the research projects going on is to address the idealized treatments to a bridge thru it's lifecycle.

One of the treatments Bill would like to focus on is the use of a Thin Polymer Overlay (TPO) as a treatment on new bridge decks.

In the Wisconsin DOT, TPO is offered as a treatment on high ADT roads. Ideally applied in the first couple of years of the deck to shield it from chlorides. They're expected to last from 7 to 15 years. WisDOT periodically uses them on projects for a friction treatment. WisDOT prefers to place them after initial concrete cracking (whether it be from shrinkage or initial loading), usually within the first 2 years. The use of TPO is discouraged on bridge decks that are more than 10 years old or on Decks that have an NBI Rating less than 7.

Polyester Polymer Concrete (PPC) Overlay provides a much greater service life (20 – 30 years). Its much more permeable. Putting them down is a rapid process.

A historic treatment for the WisDOT is Deck Sealing. It is used as an alternative to the use of TPOs. Their objective is to seal 25% of all eligible concrete decks at 4-year intervals. By doing this, they hope to extend the life of the bridge deck by 10-12 years.

Comparison of deck protection treatments from chapter 40 of their bridge design manual, and a Wisconsin highway research study (2016) (TPO, conventional low slump overlays, PPC Overlays, Polymer Modified Asphalt Overlays): There is a whole range in application cycles available. Need to consider impacts to traffic, costs (not compared is traffic control costs).

Some topics Bill would like other DOTs to share are:

When **using TPOs right away**, do you put them on the same contract that built the bridge deck? Put them down after 28 days? Wait 2 years? Advantages: reduced traffic impact. Disadvantages: cracks develop and propagate thru the TPO.

When using TPOs in the **following construction** season **with the same contractor**: Advantages: Permits, and environmental coordination is under the same contract, cracking develops in the concrete deck before the TPO is applied, the TPO should bond well to the concrete deck (no moisture).

Disadvantages: Increased traffic impacts, increased construction and engineering costs, staffing conflicts.

When using a TPO the **next season** with a **new contractor**: Advantages: Initial contract can be closed, cracks can develop then be addressed by the new TPO more effectively, bundling. Disadvantages: New project requiring new permits, additional plans and specs, additional traffic impacts.

When using TPO **applied by County Forces**. Advantages: Fewer permits, initial contract can be closed, cracks should be developed, no bonding issues, lower costs (County more efficient). Disadvantages: shifting what could be an improvement project to a maintenance project (which historically has lacked in funding), some of the counties may not be able to do this, increased traffic impacts, plans will still need to be created and bridges would have to be rated to abide by policies.

Bill Oliva opened the floor for other DOT Members to provide input.

Sarah Wilson of the Illinois DOT provided the following:

Installing a TPO at the very beginning was very rare for them (if so, only on major bridges). TPOs are received differently. Some Areas don't like them, some do. In the Chicago Area, TPOs are used occasionally (mainly on newer decks not requiring patching (they don't put up with patching at all)). They had an interesting project where the contractor poured a bridge deck in the rain. Not good. The settlement required the contractor put a TPO on the bridge deck right away. The parallel bridge had no TPO. The overlay is beginning to fail now (after 17 years). It is a good comparison study within the DOT. Illinois DOT is not doing deck sealing as much as they should. They prefer polymer overlays (it's something you can see, vs. some invisible chemical that is supposed to seal).

Paul Pilarski of the Minnesota DOT provided the following:

They are trying to come up with some guidance. They've been erratic on how they have deployed the various procedures. And have been learning lessons. Some Districts have soured on using polymer overlays. They've gone to doing some flood sealing with methacrylates via better price negotiations. They have a focus on getting decks as crack-free as possible and getting away from TPOs. They are working on getting guidance on where to deploy a treatment and what treatment to use. They will use TPOs and Polyester concrete on bridges that aren't up for replacement for a while (box girders / post-tension superstructures).

Nancy Huether of the North Dakota DOT provided the following:

They have used linseed oil to seal decks in the past (back in the '70s). They later switched to silanes for sealing decks in the '90s -ish. They apply silane at the time of construction, right before it's open to traffic. They've adjusted their timelines on application a couple years ago. They now do crack sealing. There was a big push to do this in the last 3 to 4 years. They got "buy-in" from the Districts and are doing it with maintenance crews. They do this right at construction. They rarely do any other types of overlays. They've seen too many failures with TPOs (TPO failures seem to happen and you don't ever understand the reasons). NDDOT did their first HMWM flood coat crack sealing on a new bridge deck overlay last summer. They are waiting to see how it goes. They pretty much do only concrete overlays when it is needed rather than applying a TPO.

Scott Neubauer of the Iowa DOT provided the following:

They have done a few projects recently using a TPO on some bridge decks that were 20 years old that had epoxy reinforcing in them. It's been a couple years, and they will be reviewing them. They did

two PPC Overlays recently. They did a very early strength latex modified concrete overlay last year which is seeing some cracking issues already (more expensive than the PPCO). Scotts thoughts - bridge decks with epoxy reinforcing - if a you see problems after 20 years, remove the top 1.5” to get rid of the chlorides, then apply a dense concrete overlay. Iowa DOT is considering stainless steel in design. A couple have already been done (a Mississippi River bridge, and an Interstate bridge where the twin has epoxy coated steel). Stainless Steel rebar could save on traffic control and maintenance costs. Paul Pilarski added that he agrees and that MNDOT is looking at using stainless steel in decks too and going further by placing stainless steel in substructure elements under expansion joints.

Bill O. mentioned a 2016 Wisconsin DOT research report looked at performances of TPOs. His point was that if you are consistent with deck sealing, then TPOs are really effective.

Tom Donnelly noted that Kansas, Michigan, Missouri, and South Dakota should comment since most of these states have been dealing with TPOs for up to 30 years now.

Jacob Creisher of the Michigan DOT provided the following:

Michigan DOT have been having success doing TPOs and Healer-Sealers in-house using their own equipment and maintenance staff. They don’t do it on new bridges. They wait for 10 years or so when the NBI Deck Rating gets in the 6-7 range. For new decks, they use a new denser concrete (mainly in the big city areas).

Bill Oliva invited others to email-in their comments later and have Jim Leaden (Secretary) put them in the meeting minutes (*since the teleconference on 4-7-20, no additional comments were sent to me, so nothing was added*).

- **Monthly Preservation Conversations**

- 2020 TRB – Jeremy Hunter
- Purdue Center for Aging Infrastructure – Jeremy Hunter

Jeremy had the floor at this point in the teleconference and provided Indiana DOT’s input for the TPO discussion above. He also provided the following information related to this topic from his recent visit at the 2020 TRB Meeting. It was Jeremy’s first time attending TRB, he thanked the Partnership for the opportunity to go, and highly recommends others to absorb the overwhelming amount of information provided. TRB was an excellent conference. He was exposed to new technologies, and new research which will benefit all in bridge preservation. There were a lot of topics presented at TRB, and Jeremy will share his notes if they are requested. But he wanted to focus on the Partnership’s Monthly Preservation Topic from this teleconference. He started off by discussing Indiana DOT’s policies on the use of TPOs:

Jeremy Hunter of the Indiana DOT provided the following:

Indiana uses an initial sealing process at the end of construction (flood coat with silane). They’ve been doing this for many years. They have some older bridges that have dense concrete overlays which are performing well. They had some structures in the middle of their life, like older reinforced concrete girder bridges, that were treated with an asphalt overlay. Those with the asphalt overlay alone didn’t perform well (these bridges were typically at the end of their service life). But when a membrane was placed under the asphalt, the concrete maintained a surprising amount of integrity. Indiana has tried a little bit of everything. They got into TPOs extensively in the last 5 to 10 years. They are not placing them after initial construction. They typically put it on after 3 to 5 years. When

applying TPOs, they target high ADT structures because the maintenance traffic costs are a lot less than a more robust treatment and also for the enhanced friction it provides.

Jeremy continued with a topic he never really thought about until he was at the TRB meeting which was the idea that the States farther north have more problems than Indiana when it comes to the deterioration of structures. But, it's the freeze / thaw effect that has a deleterious effect on our structures. The cracks develop, then open up, water penetrates, then refreezes, causing deterioration. The cycles create a challenge for those in that region. Having different ways to prevent cracks, or seal cracks that develop, are really valuable tools to the DOTs.

Jeremy continued, stating that Indiana hasn't used polyester concrete much but are doing a pilot project soon. They have been doing latex modified almost exclusively as their concrete overlay treatment and expect to pay up for the polyester concrete treatment when it is initiated.

Jeremy also brought up discussion on a recent tour he attended at a new Center within Purdue University – The Center for Intelligent Infrastructure (just opened in the last two months). One of the things they are focusing on involves mixing computer science with electrical engineers with infrastructure, it's a new concept. Their mission is to create infrastructure where there is two-way communication between the infrastructure and us. They have three main areas of focus:

Sustainability – developed self-healing concrete (a design they're promoting to close the cracks).

Adaptability – learning how to integrate / communicate with / monitor the structure.

Autonomy – self driving vehicles.

They are developing interaction with Industry. There are Industry Partners with the Center. There are also Education Goals: innovation to Industry and the DOTs via webinars, and outreach to student participation. There are 4 different colleges within Purdue that are participating (Mechanical, Computer Science, Electrical, Civil). They have 25 faculty members. During his visit, Jeremy provided the Center with insight from his involvement with TSP2 and our partnership as well as from his role at the Indiana DOT.

- **Other New Business**

- *Monthly Preservation Topics for April - volunteers*

How have the DOTs been operating with the Stay-At-Home orders, and Social Distancing? What is the office protocol? The participating DOT members were asked to share their experiences and lessons learned with the group.

Bill Oliva of the Wisconsin DOT noted that they are utilizing telework with very little staff in the office. They are using 2 cars for inspections (one person per car). They are using Skype, and Vox.com for doing meetings.

Jeremy Hunter of the Indiana DOT noted that they were already doing teleworking as a pilot for the last two years. A huge number of people were proficient and went out to help those who don't have experience using it. It has been fairly seamless for office personnel. Field personnel are learning how to work in this environment.

Chris Keegan of the Washington DOT stated that 3 weeks ago they started sheltering at home. Sacrifices they've experienced are that inspection, maintenance, and construction has stopped. But it is helping reduce the virus spread.

Scott Neubauer of the Iowa DOT said they have been teleworking the last couple weeks. They were set up with laptops and were able to take desktops home. They are creating a “continuity of effort document” for different types of things that need to be done and their processes. They will be doing this at least thru April.

Jim Leaden of the Kansas DOT (this was not mentioned in the call but provided for these minutes) Inspections have started back up in mid-April. Social distancing guidelines have been followed with two inspectors per team, each in a separate vehicle. Offices were closed since March 28th. Essential personnel were provided laptops (taking home their desktop was optional) to enable teleworking from home.

- **Next Monthly Meeting**

- **May 5th , 2020**

Bill Oliva reiterated his pitch for conjuring up a preservation topic for the month of May. He asked that a DOT member step up to the plate and hit a dinger for our team.

Meeting Adjourned

The meeting adjourned uncharacteristically late at 2:12 PM CDT.