New Hampshire Department of Transportation

# BUREAU OF BRIDGE DESIGN

Office Meeting Minutes – July 10, 2019

In Attendance ( X ):

| | Administration | | | Design Section | | | Design Section | |
|---|---|---|---|---|---|---|---|---|
| X | Bob Landry | LRL | X | Bob Juliano | RAJ | X | Kevin Daigle | KFD |
| | Lynn Paquette | LP | X | Joe Adams | JCA | X | Chelsea Noyes | CKN |
| | | | X | John Sargent | JAS | X | Pete Parenteau | PJP |
| | **Existing Br Section** | | X | Mike Licciardi | MGL | X | Angela Hubbard | ABH |
| | | | X | David Scott | DLS | X | Phil Brogan | PAB |
| X | Nick Goulas | NBG | X | Bill Saffian | WPS | X | Tony Weatherbee | ANW |
| | John Poisson | JTP | X | Jason Tremblay | JAT | | | |
| X | Aaron Janssen | ACJ | X | Mark Wagner | MGW | | | |
| X | Dzijeme Ntumi | DAN | X | Sue Guptill | SMG | | | |
| X | Jerry Zoller | JSZ | | | | | | |
| | Ken Morrison | KLM | | | | | | |

**Trainees**

## Discussion:

**DLS:**

- Dave welcomed Dzijeme Ntumi to the Bureau. Dzijeme is working under the Existing Bridge Section.
- Doug Locker's last day with the Bureau of Bridge Maintenance is today.
- Consultant notifications may be sent through Richard Arcand of the Front Office.
- Dave S. notes of AASHTO COBS June 2019 meeting are attached to the end of the minutes (pdf version).
- FHWA has published, *"Manual for Refined Analysis in Bridge Design and Evaluation"*, May 2019, FHWA-HIF-18-046 located at: https://**www.fhwa.dot.gov/bridge/pubs**/hif18046.**pdf**
    - Abstract: This manual provides guidance on performing refined analysis of bridges. The manual describes "refined analysis" and the methods allowedby AASHTO LRFD. Guidance for the modeling of typical girder bridges at various levels of complexity are provided. Additional guidance is provided for modeling prestressed and post-tensioned concrete girder bridges, fatigue and mechanical connections in steel bridges, andmodeling of substructures as well as for more advanced topics such as soil-structure interaction and nonlinear and dynamic analyses.Methods and examples of verifying and validating the output from an analysis software are provided. Discussion of the various loads bridges are subjected to and how to apply the loads in refined analyses is included. The last chapter discusses how to take the results from the refinedanalysis and go forward to the design of a structure. Also included are seven example problems and comparison of the results from differentlevels of analysis. The seven examples are: 1. Three-span, Precast Concrete I-Girder Bridge made continuous for live load, 2. Three-spanContinuous Steel I-Girder Bridge, 3. Three-span Continuous Curved Steel I-Girder Bridge on skewed supports, 4. Three-span Continuous Concrete Box Girder Spine Beam, 5. Dynamic Analysis of a Curved Steel Girder Bridge, 6. Stability Analysis of a Tall Concrete Pier Column, 7. Four-span Continuous, Precast Segmental Concrete Box Girder Bridge.

- FAST Act Emergency Vehicles (EV):
  - Federal-definition bridges on the interstate and within reasonable access to the interstate (within one mile of exits/interchanges) must be re-rated and posted if necessary, for emergency vehicles (very heavy vehicles that greatly exceed legal loads) by December 31, 2019.
  - This would require a lot of new postings which are specifically tailored for these emergency vehicles. The emergency vehicles are to be rated at "full operating capacity, single lane loaded" which means that most bridges will have a higher capacity for emergency vehicles versus normal rating loads.
  - These postings have brought up questions and resistance in other states since they are specific to emergency vehicles. In other words, a bridge may be posted for "Weight Limit 20 Tons" and "Emergency Vehicle Weight Limit 26 Tons". This inconsistency is confusing to the trucking industry and could lead to trucks (non-emergency vehicles) ignoring the lower posting and instead following the higher limit.
  - NHDOT, among many other states, have asked clarification on the law. More info on this topic can be found at the following links:
    - https://www.fhwa.dot.gov/bridge/loadrating/161103.cfm
    - https://www.fhwa.dot.gov/bridge/loadrating/fast1410_qa.pdf

- Risk Based Inspection:
  - NCHRP 782
  - Low risk bridges, good condition could inspections every 48 months instead of 12.

**Round the Table:**

Chelsea:
- Need guidance on how to document shop plan reviews (paper and/or electronic).

Bill:
- There is a new procedure for determining if asbestos is on a bridge. See email from Bill dated 7/15/19. The email is also at the end of the minutes (.pdf version).

Bob L.:
- Final stage of R&R Rehab list will be posted soon.
- Build Grant 2019 for Hindsdale-Battleboro bridge has a July 15 submittal date. Asking for $20 million shared with percentage of Vermont and NH.
- Bob is retiring January 31, 2020.
- Working on annual report
- Bob Aubrey will be leaving the 18th because new permit process system performs the audits now.
- Ken Morrison was presented with a certificate of 35 years of service.

Prepared by: ABH

AASHTO COBS Meeting Minutes

Monday, June 24, 2019 8 AM

T-5 Loads

Ballot item for Risk based rail safety and NCHRP 12-xx.

It proposes 3 options, one of which is a risk based analysis to see if the Vehicular Collision Force (CT) is reasonable at the particular location.

Option 1 is full 600k force. There are also provisions for an analysis for what happens to the bridge if the substructure were to be struck.

Option 2 Pier protection by traffic barrier (42" high MASH TL-5 barrier with minimum offset of 3.25'. (Research focused on new construction.)

Option 3 is the risk based analysis discussed above. This Option is located in the Commentary. Risk analysis may allow you to reduce the TL-5 barrier to, say, a TL-4 barrier.

One state noted that it is unusual to specify load factors outsid of Section 3.4. This observation was made too late in the review for T-5 to make revisions.

Discussed 3.6.1.2.6a (Distribution of Wheel Load through Earth Fills). Currently, the direction of travel doesn't change the way the load is treated.

There was a question regarding whether the Article ought to be retitled.

Discussed Truck Platooning Study by Wagdy Wassef, WSP. It anticipates Connected and Autonomous Vehicle (CAV), where automated vehicles travel with only 10 feet of separation.

The objective is to produce a report for FHWA that covers the technical aspects of truck platooning impacts on bridges with focus on structural safety.

They believe it will require a new fleet of trucks; retrofitting is not anticipated to be cost-effective.

They are considering WIM data and platoons of up to 4 vehicles. They investigated the NBI data to do a broad investigation (parametric study) of the impact on the nation's bridge inventory (similar to NCHRP 20-07 Task 390). They focused on Item 5B, 104, and 110 (the National Network for Trucks), since these bridges are carrying the most trucks and are most likely to experience platoons.

Task 3 will include a Sample Bridge Analysis of 42 NHS structures. Once it is complete, they will apply the process to "1000+ bridges".

Task 4 Propose a Load Rating Methodology.

Task 5 Investigate Potential Impacts fo Platooning on Design.

The study also includes varying the space between vehicles in the platoon.

Discussed Andy Nowaks research. He mentioned platooning the possibility of one of the platooned vehicles being an overload is low. His project is for CalTrans to develop an analytical review of impact of truck traffic on concrete decks. Considering the load spectrum based on WIM considering that axle load or tandem. Also developing an analytical tool for the deck and probabilities of cracking from shrinkage, etc. and how traffic enhances damage.

Nowak is also considering FDOT's study for the impact of permit vehicles on bridge damage. They found the % of vehicles that should have permits (10% of the vehicles that should have permits actually have permits). They also want to monetize damage so that they can adequately charge for permits.

DIs went to T-9 Preservation after AM break.

Using Cathodic Protection for bridges.

It is misunderstood. Gas Industry has used it since the 1920s.

Galvanic bulk anode 50 lb to protect steel jacketed pile.

Conventional repairs don't work because chloride compromised concrete is sometimes not removed.

NCHRP 398.

CP is underused. There are only 389 CP systems in North America. (half is in FL and OR)

Each structure has to be handled separately and a site specific corrosion assessment and mitigation plan completed.

Can be impressed current or passive CP.

It can be used in all parts of the bridge.

He showed a solar powered system (impressed current).

Howard Frankland Bridge built 1955. Late 80's deficient St Pete to Tampa

Early 90's ICCP pile jackets installed.

Bridge is still in service.

New bridge is $750M with a 75 yr design life, which represents $10M/yr that they haven't spent since 1990's.

QC/QA is important. NACE is developing a class.

Paul Vinik (pvinik@gpinet.com)

David Miller, Louisiana DOT, presented MaC (Bridge Working Group). Maintenance Committee Bridge Working Group. MaC has "children" such as TSP2. (This was an update of their committee work.)

He mentioned NCHRP 12-100 " Guidelines for Maintinaing Small Movement Bridge Exp Jts" to be published as an AASHTO document.

Raj Ailaney discussed FHWA activities.

He showed a recently released FHWA video promoting bridge preservation.

He also mentioned Pocket Guides for ThinPolymer Bridge Deck Overlay Systems, Bridge Cleaning, and Bridge Coatings.

Jean Nehme discussed LTBP. They are working on 3 bridge deck deterioration models. Showed a photo of The Beast at Rutgers, which hopes to apply 15 years of deterioration in 1 year.

He noted 3 pooled-fund studies.

https://Infobridge.fhwa.dot.gov/ . This site allows for data query of NBI data.

Jeff Pouliotte discussed TSP2, in place of Ed Welch. He mentioned the NCHRP project "Effective Use of Duplex Coating Systems to improve Steel Bridge Structure Durability".

He noted that much of the work is being done in working groups (WG).

He noted the Deck Preservation WG chaired by Steve Austin of TXDOT.

He also noted the Bridge Mgmt System WG. Dan Muller, NCDOT, is the chair.

The NEBPP meeting is Sept 9-11 in Burlington, VT.

Jim Nelson, T-9 chair, briefly discussed T-9 research priorities. Namely, Jeff Pouliotte mentioned that MD, OH, and OR have used duplex coating systems. He recommends a bond (two years out and 25% of the value) to inspire quality. The parameters need to be clear and attainable, or the Contractor will bid the work incredibly high.

Lunch

T-12 Sign Supports

Agenda Items, which will go to ballot later this week if they make it out of this current meeting, were discussed.

Karen Peterson, KDOT, discussed KDOT Experience with HMLT. They are designed by Fabricators.

Approved by KDOT and placed on Prqual List.

3'-6" drilled shaft.

KDOT added towers to help truckers identify sleeping locations.

The lowering devices had many issues at the top due to fatigue.

While making these repairs they noticed cracks at hand holes in a pole only 6 months old.

March 13, 2019 was Bomb Cyclone Ulmer causing Peak to Peak Dispacement of 52"(cool video) with 40 mph wind with 53 mph gusts.

Kansas University Prof Caroline Bennet took over the presentation. KU performed destructive testing on the ¼" pole and another version at 5/8". Cracks occurred at the root of partial pen weld and the toe of reinforcing fillet. Base plate thk is 2.25". Prelim conclusion pole should have been 5/8" thick. This situation and analysis generated a lot of discussion.

Break (PM)

Randy Kissell of Trinity Consultants gave a presentation recommending changes to the aluminum portion of the spec for luminairres. No fundamental changes are recommended. He recommends streamlining the material callouts. He recommends dropping radiographic inspection as it is not req'd by ASTM, and it isn't req'd for steel. He proposes referencing the galvanized steel bolts (A325 or A307) specs instead of repeating it. It was fairly detailed and will be easier to review as the technical committee moves these closer to balloting.

Scott Hidden, NCDOT geotech, discussed a loose sandy soil supporting 65' mast arm (signals not signs), They get 5' diameter shafts that are 40' long. They hired a UNC prof to do a synthesis. They asked all states from TX to VA and found that only FL and NC use the new (larger) windloads for torsion. NC noted that FL was changing the geotech design to get the answer they want. NC wants to cut wind load from 140 mph to 100 mph. He only found 3 potential issues where the pole rotated due to torsion. Jay noted that velocities changed but the map has an assumed 1.0 LF on wind. Jay said you must look at the LF and the wind loads have not changed much. The group seems to believe Scott is comparing apples and oranges between the old wind speed and the new wind speed.

Wind Maps may be updated in 2020 to stay current with ASCE.

Discussion came up about whether or not the LTS should sunset in favor of the LRFD. This may be a good topic for the Bridge Engineer's Survey. Maryland Transportation Authority got a lot of pushback since the consultant's software (Sabre) hasn't caught up. They are going to have their consultants reconsider the state of the practice. Jay noted that the market is very small. Sam, T-12 chair, wondered if NCHRP could assist.

signal lights traffic signs

Retightening Anchor Rods of Support Structures for SLTS by An Chen of Iowa State Univ. MnDOT found loose anchor rod nuts two years after being tightened. They are recommending a Smart installation and monitoring system.

Phase 1 (completed) investigated the causes of loosening, and develop best practices.

They also did field monitoring and lab study, as well as determining the torque/tension relationship.

Taske 1 – Loosening typically attributed from improper (under OR over) tightening. Their survey found that other States are experiencing loose nuts worse than MnDOT.

Snug-Tight is critical to final pretension.

Field monitoring of new OH sign in Roseville, MN including wind speed/direction and anchor rod stress.

Max stress range experienced was 73 ksi.

They also did a lab test with specimen laid on its side.

After 600 cycles they could observe washer movement in two rods. At one rod, the upper nut was loose, and at the other, the leveling nut was loose.

They recommend updates to the AASHTO Spec to address tightening procedures.

They also want the Spec to account for the grip length and include a verification form for contractors to complete.

1

Tuesday, June 25, 2019 1 PM

T-14 Steel

Mike Grubb discussed all the ballot items that T-14 will vote on to move to the full COBS.

There was a lot of discussion regarding whether or not a three-girder bridge with spacing greater than 12' ought to be considered fracture critical. Brian Kozy, FHWA, believes they should be FCM. There was discussion about a memo that will be discussed later today.

Heather , HRV, discussed the fabrication specification. T-17 (formerly Welding) has expanded from welding to fabrication. This takes some of the Construction Spec and moves to T-17's domain.

Tom Murphy, M&M, discussed AI 26 regarding Concrete Filled Steel Tubes and response to the comments from 5 States.

Tony Ream, HDR, discussed Final LRFD Spec for Noncomposite Box Section Members Containing Longitudinally Stiffened Plates, AI 31. This started as an FHWA Task Order in Aug, 2014. It addresses compression capacity of stiffened flanges (axial and flexural capacity). FHWA-HIF-19-063 should be out July 2019 (Proposed LRFD Specification for Noncomposite Box Section Members). [Think of a box section (HSS)forming an arch, like Chesterfield-Brattleboro.] It will provide a consistent design methodology. Dr. Don White, Georgia Institute of Technology, explained further.

Dr. White continued by discussing Proposed Advancements for 2019 Ballot. He hopes to develop recommendations that will affect the rating of these elements. There is a new Appendix E proposed to discuss longitudinally stiffenened plates (6.9.4.1).

He also wants to provide guidance on how to avoid the need for considerations of slender longitudinally stiffened plates. The improvements are based on NCHRP 20-07/415, for which, I believe, Dr. White was the PI.

Mike Grubb discussed some miscellaneous changes to AI 31. Sam reiterated his concern that since this affects so few bridges, he believes this should be a separate document. Tom wants to continue because it would take years to put it into a Guide Spec.

Ronnie Medlock, High Steel, and Brandon Chavel, , discussed collaboration documents at NSBA. There is a discussion on bolting qualification (TG 9) led by Mike Culmo.

They are also discussing data exchange (TG15 & one other).

There is a G4.1 QC/QA Guide Document (AI 33) to be balloted.

G13.1 is an update of Girder Bridge Analysis update. He discussed comments from the States and their responses. (AI 35).

Steel Bridge Erection Task Force is being updated. (AI 34)

They are trying to clean up the Hot-Dip Galvanizing Spec and will likely be ready for consideration by AASHTO T-14 next year.

Ronnie noted the desire and funding for DOT participation.

Brandon Chavel, NSBA, is Marketing Director and discussed how NSBA can provide assistance. He mentioned April 22-24, 2020 Bridge Syposium in Atlanta with Workshop on April 21. Oct 22-24 in Savannah, GA is AASHTO-NSBA Collaboration. He also plugged the Modern Steel Construction for bridge ideas. (Search the web site.)

They have a study-in-progress for a market pricing study. 12 States are involved. John Hastings, NSBA, is leading the study.

They are developing a Design Guideline for straight, low skew, steel girder bridges led by Domenic Coletti, of HDR, and Mike Grubb. NSBA is involved in Bridges to Prosperity and tackled a project in Bolivia.

Matt Farrar discussed his T-18 End Shear Capacity ballot item. This is only for bridge evaluation, not design. They ran extensive examples to show how the research can be applied.

Brian Kozy, FHWA, discussed Fracture Critical Policy Update. In 6/20/2012 they issued "Clarification of Requirements for FCMs".

FHWA just posted Guidelines for Refined Analysis ( https://www.fhwa.dot.gov/bridge/pubs/hif18046.pdf)

They are working on memo called Requirements for Classification and Treatment of Steel Bridge Members for Fracture Control and it was with industry for review and comment. They will release, hopefully, within a month and then follow up with Technical Advisories for specific bridge types.

It will incorporate LPRM, IRM, SRM, and FCM.

It recognizes Internal Redundancy

Accepts (but not require) the use of new AASHTO IRM and SRM Guide Specs.

FHWA currently allows the use of SRM Guide Spec to post-1978 bridges.

His presentation included definitions of LPRM, which AASHTO is currently intending to incorporate into their documents.

*(begin definition)* A steel primary member in tension, or with a tension element, that has redundancy based on the number of main supporting members between points of support, such that fracture of one cross section of one member will not cause a portion of or the entire bridge to collapse."

Note: LPRMs are usually longitudinal and parallel, such as girders or trusses. Redundancy can be determined by engineering judgement or simple calculation. **Primary members in common girder bridges with three or more girders are classified as LPRMs in most cases.** *(end quote)*

There was a lot of discussion regarding the proposed definition. Are floor beams considered LPRMs? Matt Farrar suggested an explicit exception for floor beams spaced < 14'.

4 or more girders are LPRM.

Brian noted that the language came from T-14.

Internally Redundant Member (IRM) was discussed next.

System Redundant Member (SRM) was also mentioned quickly.

Brian specifically discussed Twin Tub Girders. He will get a draft to T-14.

See FHWA memo from June 8, 2018 for risk-based interval for routine inspection.

Tom Maccioci suggested T-14 convening at 7:30 AM to discuss AI 32.

Wednesday, June 26, 2019 8 AM

State Bridge Engineers meeting

Trisha gave the AASHTO update.

Invoices are going out next week.

FAST Act Reauthorization (AASHTO will be encouraging Congressional action regarding the following:)

Tier 1 - AASHTO is requesting that States only be accountable for bridges we are responsible for.

Tier 1 - Buy America adjustments are also requested.

Tier 2 – Minimum Condition Levels for NHS could encourage a worst-first asset mgmt approach.

Tier 2 - Roadside Hardware (more later)

Tier 2 – Emergency and Tow Vehicles

Tier 2 – Request FHWA review every other year.

Tier 2 – Coordination with RR

Tier 2 – More flexibility with drones.

Contact your state Congress to tell them how these issues affect us. (House – OR, MO, DoC, IL; Senate leadership is WY, Delaware, WV, Maryland)

AASHTO Publications – Ryan Holman

AASHTO is stepping away from web-based.

Ryan noted that AASHTO .pdfs are usable (or will be?) in Bluebeam.

They are trying to push your electronic notes from the previous version to the next.

SBE survey – Results are available online.

Scot Becker discussed a BIM pooled fund study, currently at 17 States contributing. Goal is to develop standards. It includes academia, and software (AASHTOWare, Bentley, and a couple others). This is COBS opportunity for standardization. Scot notes we need to keep up with the vertical industry to maintain appeal to new graduates.

Carmen updated the group on Bridge Demolition practices. (NCHRP 536)

Union Pacific told MO that any bridge they touch in their ROW will need to span the ROW. MODOT can not even expand the deck area, which would increase the shadow. UP has laid off all their engineering

review staff. Alex noted that highways support the RR's competition. Denis will update next year. (During break, Tim Keller suggested MODOT fund a Union Pacific position for plan review.)

Tim Keller discussed MASH, which was passed in 2009. He noted MASH is and *incremental* increase in safety. It is NOT –

Requirement for which test levels are to be used for a sysem or location

"How To" for computer simulations

Approval for hardware

FHWA/AASHTO Implementation Plan signed 1/7/16, Rev 1 - 8/6/18, Rev 2 – 6/28/18 12/31/19 bridge rails and transitions – letting date after which these systems must be evaluated using MASH.

Crash test is on-going. Demand is high.

"Beg for forgiveness but tell them we have a plan." – Tim Keller

Test results can be found at the following locations:

FHWA Office of Safety. As of today, FHWA is still doing eligibility letters, but it requires the full suite of tests. FHWA will be getting out of the business, though.

Roadside Safety Pooled Fund – One for TTI, and one for Midwest. Tim strongly encourages all States to get in the fund. (https://www.roadsidepooledfund.org/ )

Tim recommended that every State has a plan for their compliance. Tim will put those on the T-7 portal. Tim believes that having a defendable plan is the right thing to do.

NCHRP 22-12(03) recommends guidelines for the Selection of TL 2 through 5. It is only electronic and is dated 2/10/14.

TPF-5(115) identifies best practices wher length of need for bridge approach rails cannot be met.

NCHRP 20-07 Task 395 MASH Equivalency of NCHRP Report 350- Approved Bridge Railings (Nov. 2017) (A MUST READ!) OH, as part of their plan, is using this document to self-certify.

NCHRP 22-35 is a continuation to get the "maybes" from Task 395 to "yes". It is not yet published.

NCHRP 22-36 is a Synthesis of the Performance of Portable Concrete Barrier Systems. This electronic only report is dated Dec. 2018.

Iowa State Univ has a Iowa DOT Pooled Fund Study for development of a MASH compliant Precast Concrete Barrier System for Bridges (on-going).

NCHRP 22-41 is a re-write of LRFD Chapter 13. M&M is the PI. Hopefully ready to ballot in two years.

Jim McDonnell, Program Director, Engineering at AASHTO. He recognized Alex Bardow, Arielle (MnDOT) and two others who represent COBS at the CORS (Roadside Safety).

He noted that for bridge rail, MASH 2009 and MASH 2016 are equivalent.

The joint implementation update included sunset dates for NCHRP 350. The 12/31/19 deadline is only for NHS. Some categories of devices are not available as MASH compliant.

He mentiond the Development of New Review Process – Desired attributes of a new process to provide a "one-stop shop", and to review compliance with MASH criteria. AASHTO is discussing with Underwriter's Laboratory for a "3rd party".

Joey Hartman, FHWA, has been covering this role for the last 2 weeks.

Tim Keller said ODOT is bifurcating their rail requirement by allowing locals w/o roads on the NHS to stick to NCHRP 350. ODOT will be completely MASH. Rich verified that Tim was self-certifying based on NCHRP 395, and Tim confirmed.

Tim noted that eligibility letters were never required by FHWA, but some States, by way of policy, req'd eligibility. TX has never gotten eligibility letters.

Kevin Western asked what he would need to do to certify and ODOT rail in Minnesota. Tim said he would share documentation so Kevin could review and use that documentation as MinnDOT's documentation. (He isn't sure how this would work if another State did not want to share.) Tim is anticipating a letter to the file indicating their self-certification. Matt Farrar asked Tim if it was okay to just find available MASH compliant rails and adopt them – with no certification letters. Joey said they were self-certifying, in case they knew it or not. Tim said their FHWA division did not want ODOT's self-certification letters, although they may audit as part of their process review. (Tim isn't sure he would have a file of self-certification letters, if FHWA hadn't suggested it.) Carmen asked which States have a plan and 15 States, or so, had a plan. However, Jim McDonnell noted 48 or 49 States have submitted plans by June 2018's deadline, although they may have been submitted by our roadside safety group.

Carmen turned the meeting to an open discussion. Matt Farrar asked about overheight overweight automated permitting. T-18 ought to be the repository for this. Scot said Wisconsin has been automated for 15 years. Dennis Heckman noted a Missouri hybrid system. They don't automate the superloads. Ohio is automated. They had a great system, and then, Bentley bought them. He spoke highly of their experience with AASHTOware. Florida is automated up to 300k. IL uses a homegrown system. They also automate up to 300k.

Scot asked Matt Farrar and T-18 about the EV and asked if it might be helpful to submit an AASHTO letter to Congress suggesting that EV get rescinded from the next highway appropriation bill. Matt likes the idea. Joey thinks it will get more attention if we write to our individual representatives, rather than AASHTO.

Tim Keller noted that we have a deadline to load rate the EVs, and they are posting accordingly. They have posted about 100 bridges. FL is going to post a few. Jeff Pouilott notes that since the EV is a legal load, and their State statutes only address permit loads, the EV is outside their legislative control. Tim notes their posting will allow commercial vehicles and prohibit fire trucks. Rich Pratt noted that they are proceeding as OH. Alex says Mass is rating bridges and he has an issue with the size of the sign req'd by all the separate vehicles. Ohio posts for GVW by number of axles.

Lunch

Carmen's opening comments – She has a new position at UDOT and is glad that it still allows her to be with COBS.

Scot's opening comments were very brief.

Tim Colquett welcomed his boss who gave some introductory comments. There is a Hyundai plant here. Mercedes, Honda, and Hyundai are now here. Mazda and Toyota are coming. AL is the #3 auto exporting State in the nation and vehicles are AL's #1 export. From 1986-1992 there were loads of bridges rated SD. They made a concerted effort to improve that, and industry came.

?

FHWA Update by Joey Hartman –

Bridge Program Language – He discussed updated definitions and discussed some grant programs.

FHWA has "really latched on to" NCHRP 782 – risk based frequency of inspection. It could extend the inspection interval up to 48 months.

The 30 day posting req'd is being considered in view of risk.

There is a draft FC Policy Update, which was discussed at T-14 yesterday.

He discussed a Critical Findings database.

FAST Act Emergency Vehicles (EV) – Group 2 Bridges must be re-rated by Dec. 2019.

FIU Ped Bridge Collapse was a restatement of NTSB 2nd Investigative Update. There was a design error. Hearing is scheduled on 10/22/19, which will determine the probable cause.

There is a new FHWA Br. Mgmt System Workshop.

Voting commenced.

Break

Tom M discussed PA's 558 bridge replacement contract.

There were 110 multi-spans included. PennDOT considers 40 of the bridges to have been "complex".

Bundling reduced costs for bridges from $2.0M to $1.6M per bridge, but culverts cost more.

PennDOT had to review 70 ATCs.

PA provided travel way geometry, geotech (one boring per substructure), traffic restrictions.

Project started in 2014.

Project has 25 year maintenance requirement. Dec. 2043 Project Handback is complete.

There was no co-location. Designer in Pittsburgh. Reviewers in Harrisburg.

PennDOT was not satisfied with fabrication inspection and increased diligence after year 1.

All rebar detailing was outsourced to India.

Contractor had to replace two of their new culverts due to setting them at the wrong elevations.

80% of bridges were built without issue.

PennDOT expected the Contractor would build to a quality level above the bell curve, but the Contractor didn't.

$899M was for design and construction. $1.8M was the total bid.

Change orders were $20M, such as adding a sidewalk per NEPA input.

Tom had some inspection issues (Contractor tried to drive piles without leads but, rather, with the bucket of an excavator. Tom's inspector's failed to stop them.)

Tom wishes they had included an incentive for early opening.

Contractor is responsible for inspection for 25 years and maintenance. The thought was that if PennDOT was responsible for the inspection, the Contractor would say that they didn't maintain something because the inspection didn't note it. PennDOT "accepts" the inspections. The Contractor needs to turn over 98% of the bridges in Good condition. Tom does not believe there is contract language to decide how to resolve disagreements regarding the rating at year 25.

Voting recommenced.

T-10 noted editorial comments from several States, including NH, and Kevin Western said that T-10 made all those changes.

Waseem presented TRB/NCHRP. AASHTO got 46 of 77 problem statements funded. State's got 11 of 34 problem statements funded. 3 of the 4 bridge related problem statements were funded ($1.75M).

22-41 Proposed Modifications to AASHTO LRFD Br Des Spe, Section 13 – Railing ($250k)

C-01 Bridge Deck Overhangs with MASH compliant Railings

C-05 Developing High Strength Corrosion Resistant Steel Strands for Prestressing

C-04 Rational Tolerances for Fabrication of Steel Bridge Members

C-23 (14-45) Model Procedures for Post-Event Bridge Damage Assessment and Engineering Evaluation.

Ben Graybeal presented the FHWA Bridge Engineering Research.

He focused on Ultragirder, Homopolar Generator Welding, & ASR Test

Ultragirder – UHPC, 0.7" strand, refined section properties. 10' deep could span 300'.

FHWA is testing smaller versions of these girders. Their test girders are omitting the shear reinforcing. They expect that this method will reduce end zone concerns.

Homopolar Generator Welding – (Justin Ocel is pursuing this.) A 3" thick, 30" wide steel plate takes 30 hours w/ SAW. He gave a broad explanation of the process, which provides a large current very quickly by turning a motor backwards AND forces the two plates together (think anvil). They are trying to figure out the results of the poor results of the Charpy V-Notch test (They suspect they aren't forging the steel together adequately.)

Submerged Arc Welding

ASR Testing – (Terry is pursuing this.) FHWA is trying to develop a better, quicker, and more reliable method to assess ASR susceptibility. FHWA is using a chemistry analysis.

Voting recommenced.

Ann began her ballot presentation by discussing how T-11, Technical Committee on Research, works. They want to be more strategic and less reactionary.

T-12 withdrew AI 13.

Signs Luminaires & Traffic Signals

Table 6.5.1-12

Thursday, June 27, 2019 8 AM

AL presented a $710M bridge replacement project in Birmingham ($440M for the bridge portion of the contract). They used segmental construction. Contractor rec'd $10M incentive for being on time so they could shut down I-59/I-20 full closure for up to 14-months. Next Contractor of this new contract has $250,000 I/D with $15M max incent and no cap to the disincentive. The superstructure was 6 lanes in some sections and 4 in some. They achieved most of it by varying the wings width of the segmental boxes. Spans are 135' to 165'. Contractor used span-by-span with shoring towers, rather than a gantry and tower, since the bridge is not high above the ground. When one span of one barrel is complete, the shoring towers are moved laterally to erect the other barrel was built. Contractor is erecting over 100 segments per week. (2,300 segments in the entire project.)

Voting resumed. AI 15 was withdrawn. by T-13 (WAI 19-01) JAS, JEH

Jenny (Louisiana DOT) discussed 10/12/18 – 2 AM Sunshine Bridge hit by a crane barge. Bridge is a truss carrying LA70 with 70k vpd. A lower truss chord was bent. Chord was carrying 1.7M lbs in compression. Laterals were also damaged. They performed a detailed inspection, including 3'D scan, and req'd barge with crane to lift inspectors. While the plan was being developed they were assembling work platforms suspended from the bridge. The repair consisted of the following, which consisted of a 50 step procedure:

installed a load bypass system.
Applied jacking load to the estimated remaining compressive force in the chord and then cut middle section of damaged chord (10 days to cut).
Jacking the structure to the original geometry was a 100 step procedure. They installed strain gages on other members to track where the loads were going.
They heat straightened remaining ends and installed new chord.

Repair took 49 days (24/7)
Lessons learned -
Consider thermal loads in the design of the jacking system.
Heat straightening of Impact damaged member is more challenging than heat damaged member.
3D scanning is a useful tool in damage documentation, conflict/clash detection and checking geometry during jacking.
Attaching new members to existing damaged/distorted members is a challenge.
Fortunately, bridge was already under rehab so the contractors were mobilized.

Rich Pratt, Alaska DOT, presented 11/30/18 earthquake. His day started with a tsunami warning for Anchorage. M7.0 event. (300,000 people live in Anchorage. 600k in all of AK.) Event occurred 30 miles down. He showed a photo of a ramp (earth not structure) that settled (dropped) 10 feet. They had a standard Inspection Marking system that they grease crayoned on to each structure. Most roads were reopened in a week.

Lessons learned – Recommend a continually updated copy of all bridge files on a portable hard drive.

Break

During the break Kevin Western personally thanked me for NH's comments.

Voting continued.

Regarding AI 30, Tom Macioce, PennDOT & T-14 chair, recognized NH's comments.

Dennis Heckman presented the Champ Clark Bridge across the Mississippi River. US 54. 77 mile detour when closed. It replaced a 90 year old truss and the approach was under water regularly. 20' roadway for 2 lanes. It was a D/B contract, and IL has a law mandating a no-rise during construction for the 10 year flood. MoDOT included a risk sharing so that if they had to down post the existing bridge, the Contractor would be given some consideration, since it would limit his access. The innovation was the Contractor's selection of substructure configuration. $68.2M budget. It was a best value proposal that mandated 12' lane and 4' min shoulder, but D/B offered 10' shoulder. 420' steel girders. Use two 13' diameter drilled shafts per pier. The cage was lowered and stirrups tied as it was being inserted. Used 45' wide 10" thick precast (not prestressed) deck panels. (DBE supplier of panels initially had quality control issues (30 panels were rejected of the 180 panel order), but the Contractor had an employee 24/7 to alert (but not direct) the workers if they were doing something stupid.) They did a diamond grind with a polyester polymer concrete overlay, which pleased MoDOT. Road has been closed 6 or 7 times in the past few months due to flooding. Tim asked about the 400' spans. Kevin Western, MnDOT said he runs 500' spans. This part of the River is more like a lake, due to levee placement.

Voting continued with T-15 & T-16.

Lunch

Mobile River Bridge - Mike LaViolette, HDR – Want to increase capacity of I-10 due to traffic volume. Will have 250' vertical clearance, which Mike believes is the tallest in the country.

Kevin Western discussed Electrically Isolated Tendons (EITs) in European Highway Structures. They went to Switzerland and Italy. The technology is for PT bridge structures. Study was May 20-24, 2019. It creates a circuit so it needs plain reinforcement. The system monitors the electrical resistance.

## Hubbard, Angela

**From:** Paquette, Lynn
**Sent:** Monday, July 15, 2019 8:07 AM
**To:** Adams, Joseph; Brogan, Philip; Daigle, Kevin; Goulas, Nicholas; Guptill, Sue; Hozza, Jacqueline; Hubbard, Angela; Janssen, Aaron; Juliano, Robert; Landry, Robert; Licciardi, Michael; Morrison, Kenneth; Mozer, Michael; Noyes, Chelsea; Ntumi, Dzijeme; Paquette, Lynn; Poisson, John; Richardson, Mark; Saffian, Bill; Sargent, John; Scott, David; Tremblay, Jason; Wagner, Mark; Weatherbee, Anthony; Zoller, Jerry
**Subject:** FW: Developing Contracts for Asbestos During PE Phase UPDATED!
**Attachments:** NHDOT Project 42484: Asbestos Testing at Charlestown Bridge 181/058; WOA Charlestown 181-058.docx

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**From:** Saffian, Bill
**Sent:** Monday, July 15, 2019 8:06 AM
**To:** Paquette, Lynn
**Subject:** Developing Contracts for Asbestos During PE Phase UPDATED!
Lynn, please forward to all in Bridge Design. Thanks.
**********
All,
The previous version was missing one of the attachments I referenced.
**********
All,
As noted during our last staff meeting, all In-House and Consultant Design bridge projects should be doing an asbestos review to determine if it exists on a bridge and whether the scope of work will impact it. Part of that process is making annotations in a Master ACM Spreadsheet. The latest one includes the date 10-30-14 in the file name which represents the last date the spreadsheet functionality was changed. The purpose of this spreadsheet is to be a central depository of testing and mitigation work done on bridges. The master ACM spreadsheet is located here. The file is read only unless you have the super-secret password which is ACM. There are several tabs in the spreadsheet but you should only ever be the "Master" tab. When you input data, put it in at the bottom of the list and then sort the list. It is already set up to sort by Town. There are 6 sections in the spreadsheet divided by headers in Row 1. The list of these sections and explanation of their intent is as follows:

- **Bridge Information**
  - Town, Bridge number, feature crossing and feature crossed
- **As-built Plans and Maintenance Records Review**
  - This section lists the original project number that built the bridge if known and provides a summary of the review of existing plans and maintenance records to determine if asbestos is present on the bridge. The locations where asbestos has the potential to be found are: Deck asphalt; deck membrane; deck over backwall interface; bridge shoes and utilities. You should review for all of these categories even if you don't think you will impact one or more of them. Under the notes, you can add anything you want to make your review clear as most of the other input is short answers from pull down lists. The following is a list of things I look for on the bridge that has been developed over time. I don't know of any other list:
    - Asbestos potential based on year of construction: 1957 to early 80's (1983??).
    - Asbestos Items: 533, 333, 47 (membrane, <=1980), 532.48 (paint waterproofing, >= 1980) and 403.911 (asphalt), 538 (barrier membrane) - all within date range
    - Look for notations of asbestos in asphalt, membrane, bearings, deck over backwall, abutment wing interface, etc.
    - Look for notations of asbestos in hanging utilities or utilities in deck, check utility verification reports

- Maintenance records or inspection reports may indicate work that was done to remove the asbestos concern such as preservation work, joint replacement (at a deck over backwall scenario), bearing replacement etc that occurred after the date range of concern. These should be checked and if determined to remove the concern should be annotated in the notes section of the spreadsheet

- **Sampling**
  - Sampling is typically only done on deck asphalt/membrane.
  - It is difficult to separate the asphalt from the membrane during testing so if a sample comes back positive, the whole thickness is assumed positive.
  - M&R is no longer doing sampling or overseeing any testing as is noted in the sampling section title on the spreadsheet. If you want testing done, you need to coordinate it through the on-call consultant (Roger Francoeur, RPF: roger@airpf.com).
    - M&R still does issue and oversee the state wide contract that allows RPF to sample and do the work so you still have to contact M&R to see what the current contract number is and whether the contract limit has been reached. I used to do this through Chuck Dusseault but since he is now retired, I don't know who is doing it.
    - My procedure is:
      - Solicit from the Highway District as to whether they can provide traffic control for the sampling operation. If not, then RPF will also have to provide traffic control and this needs to be in their estimate.
      - Solicit from RPF an estimate of what it will cost to sample and test the bridge. I do this through email and have attached the last one I did. The request includes a bridge location map and a sampling location map. Nine (9) sampling/testing locations seems to be the typical number to ask for.
      - Sampling/testing location plan: Typical locations for sampling are the curb lines, mid shoulders, edges of TW and CL Rdwy. The curbline samples should be within 4" of the curbline and should be specifically requested as such. This is to capture any sealers that might have been used to seal the membrane edge at the curblines that has asbestos where the membrane may not. Mid shoulder is done in case the curb is positive and the mid shoulder is not, which means we can limit the amount to be removed under the asbestos items.
      - When you receive the estimate, and with final approval from PM, you need to add RPF as a vendor in ProMis utilizing PE funds matching the estimate amount and reduce the DOT PE funds accordingly and rout the estimate for approval.
      - Once the estimate is approved in ProMis, issue an Work Order Authorization (WOA) - see attached – which is the official notice to RPF to do the work.

- **Current Project Information**
  - This section provides information on the project that will do the ramediation of part or all of the asbestos found on the bridge.
  - Input required is self-explanatory except:
    - "Removal Estimate provided to Bridge Design" was titled when M&R was doing or overseeing the testing so now is basically means that the removal estimate has been received from RPF.
    - "Pre-con meeting notification" is refers to whether the asbestos remediation needs of the project have been highlighted at the pre-con meeting.

- **Remediation**
  - This section is overseen by BoE so Bridge Design has no input here.

- **Remediation Cost**
  - This section is overseen by BoE so Bridge Design has no input here.

The hope is that in the future, this spreadsheet can be used to summarize what has or hasn't been done to remediate asbestos at our bridges.

Some rows are color coded and there is an explanation of what the color coding means in cell A3 but I'm not sure what it is used for and have never used it.

Let me know if there are any questions.