

ACEC/Maine DOT Bridge Design Subcommittee

MEETING MINUTES

December 14, 2017

Location

MaineDOT, Room # 317 A/B

Time

1:00 PM to 3:00 PM

Purpose of Meeting

4th Quarter Meeting 2017

Attendees

Wayne Frankhauser, MaineDOT
 Jeff Folsom, MaineDOT
 Leanne Timberlake, MaineDOT
 Rich Myers, MaineDOT
 Garrett Gustafson, MaineDOT
 Laura Krusinski, MaineDOT
 Kathy Parlin, MaineDOT

Ben Foster, MaineDOT
 Jim Wentworth, Kleinfelder
 Tim Merritt, Stantec
 Mike St. Pierre, SW Cole
 Tim Cote, HNTB
 Bob Blunt, VHB

This was the fourth quarterly ACEC/MaineDOT Bridge Design Subcommittee meeting for 2017.

1. Introductions

- a. The subcommittee welcomed Garrett Gustafson to the group. Tim Cote shared that this was Tim Merritt's last meeting with the subcommittee and thanked him for his participation and for sharing his knowledge. Teresa McAuliffe from McFarland Johnson will be rotating onto the committee in March to fill the open seat.
- b. Tim M. noted that Mike St. Pierre was scheduled to rotate off once a decision on the next geotech committee member is made.
- c. The draft September meeting minutes were reviewed. Minor corrections were offered with respect to a few typos. The meeting minutes were accepted.

2. Information Dissemination by MaineDOT

a. Contracting

- i. MaineDOT's 18/19/20 workplan will be published on January 2nd. The additional bridge funding added to the workplan is \$113 million. Jeff noted there's a large supplemental need; quite a few active jobs have gone over budget and the current workplan includes a fair bit of PE work that now needs to be funded for construction.
- ii. The workplan includes \$36.4 million worth of new projects including: 6 PE only jobs, 11 bridge replacements, 17 bridge preservation projects, and 14 bridge rehabilitations. Most of the new work is on priority 1, 2 and 3 roadways.
- iii. Based on funding constraints the Department will be looking to economize projects occurring on priority 4 and 6 roadways.

b. MaineDOT Workload / Staffing update:

- i. Garrett Gustafson is the new Senior Bridge engineer for team south.
- ii. AJ Paradis has been hired as a technician for team north. An additional technician position remains open.

- iii. One opening remains for an assistant engineer position, a second opening may be created. The bridge program also needs to fill the two Engineer II positions that were vacated when Joe Stilwell and Garrett Gustafson were promoted.
 - iv. The bridge program's goal remains to have two PM 1's per team.
3. Summary of Designer Meetings

The Department has held five designer meetings since the last ACEC meeting. Garrett provided a brief summary of key highlights. The minutes from each meeting area attached for reference.

a. September 13

- i. Robbin Lanpher led a discussion regarding projects with concrete wearing surfaces. The curb stirrups and transition barrier reinforcing needs to be adjusted to correct for the difference in depth between a concrete and bituminous wearing surface. Don't use the tables in the standard details for bar lengths.
- ii. Robbin also suggested reviewing the standard details for transition barriers for bridges with high skews. Some issues have been noted in the past. Adjustments to bar layout, lengths and overall transition barrier may be necessary for highly skewed bridges.

b. September 27

- i. The group received a presentation on MMFX reinforcing steel

c. October 11

- i. A discussion was had regarding electrical supply services on bridges. The group was advised to be aware of challenges associated with bridges that are split between two towns – only one power supply is allowed per bridge.
- ii. The group had a discussion regarding GFRP reinforcing.

d. November 8th

- i. The group discussed special provisions that are frequently required. The Department has decided to maintain some of the more frequently used special provisions such as: drainage geo-composite, GFRP, composite drains, and asphaltic plug joints. Consultants will need to contact the project PM or senior designer to get the latest version for inclusion in their bid packages. Consultants are asked to leave the date on these special provisions unchanged to assist in version control. Any proposed changes should be submitted to MaineDOT in Word form with track changes.
- ii. The group received an update on delivery percentages relative to goals.
- iii. The group received direction regarding bridge projects located on lower priority roadways. The Department's goal is to minimize cost through practical design, including design exceptions, to keep costs down and appropriate for the corridor and use.
- iv. The Department continued its review of the standards notes. This effort is essentially complete and should be wrapped up soon.

4. Discussion Topics

- a. Bridge Project Development & Delivery – ideas for streamlining the process including feedback from GCA consultants (continuation of last meeting discussion)
 - i. The subcommittee discussed whether it would be worthwhile to make good sample PDRs available to the Bridge GCA firms for typical projects. Doing so may help establish expectations regarding what the Department is looking for. MaineDOT will consider this as a possible action.
 - ii. The subcommittee discussed whether it be worthwhile to have PDR & PIC checklists that consultants fill out and include with submittals. This would be similar to what the Highway Program does. If checklists are developed, what should the content be? The subcommittee discussed how the highway checklists were developed – were they created by MaineDOT, or with input from the ACEC highway subcommittee. Bob offered to reach out to Tony Grande for insight into how these were developed. The following points were deliberated:
 1. What would be included in the checklists? Could the list be developed to reasonably accommodate the large variety of projects MaineDOT is advancing?
 2. The checklists would be most helpful to firms that are relatively new to MaineDOT.
 3. Should it be a checklist submitted at each milestone, or simply a document intended to provide guidance? If a checklist is required to be submitted would it eventually just become a “check the box” exercise?
 4. Jim distributed checklists highway program uses for discussion. He noted that the highway checklist is very specific and defined. However, bridge PDRs are more conceptual than a highway PDR. This fact may make creating a bridge checklist challenging.
 5. The group discussed the use of coach point meetings as an alternative to checklists. Coachpoint meetings are very helpful in steering major items/questions in the right direction ahead of submittals.
 6. Jeff shared his goals and expectations for PDR's. He noted that the content contained within summary of preliminary design narrative can vary significantly between jobs. This is to be expected but Jeff would like to see the narratives be concise and to the point, longer is not always better. He'd also like to see some improved consistency in what's included in the write-ups. A brief paragraph or two at the beginning of the narrative is also often helpful as it primes the reader regarding what will be covered in the narrative. Jeff liked the idea of including a short executive summary ahead of the write-up.

Tim M reminded the group of the e-mail sent out by Rich Myers in January 2017 outlining Rich's expectations for what's included in a PDR. Tim suggested that perhaps this outline could be expanded upon.

Jeff noted that most missed PDR conclusions involve options that were not considered but that turned out to be viable – in most cases had MaineDOT been consulted the additional options could have been identified. Jeff cautioned against starting the PDR process with too narrow of a focus. He noted that there's a balance between scope, schedule and budget and suggested coordination with MaineDOT in helping to find this balance. The goal should be to start with a very broad range of options and narrow them down quickly to a few for more refined study. To some degree this is done as part of proposal development. On more complex projects, an alternatives screening memo may be worthwhile.

Jeff said a continued focus is on cost estimating. He'd like to see greater consistency and reliability in these estimates.

7. Based on the group discussion MaineDOT was leaning toward developing a narrative outlining guidance and expectations for development of a PDR in accordance with MaineDOT process, technical standards & preferences.
 8. As a related topic, MaineDOT noted that an update to the BDG is needed. They're working on determining how best to develop the update. MaineDOT is also considering having the planning group develop a purpose and need statement for all projects. Jeff noted that any job with extensive permitting should have purpose and need statement developed by the Department.
- iii. The group discussed the other remaining items included in the bullet list of activities the consultants developed that may help streamline project delivery, and whether any should be discussed in greater detail.
1. Garrett noted that he expects submittal review times will be improving now that there are two senior engineers.
 2. Jeff and Wayne like brief PDR review meetings where the consultant outlines the project findings and recommendations. No formal PPT required, just a basic walkthrough and discussion. It may be possible to use Skype or other web conferencing software to facilitate these review meetings. MaineDOT has Skype on all computers. Jeff noted that there's a time and a place for web and in person formats, it's up to the consultant and MaineDOT to determine which format is appropriate given the topics to be discussed.
 3. Cost estimate data – MaineDOT is still considering whether and how their database of bid price data can be shared with the Consultant community. Jeff would like to make it available if possible.
- b. Corrosion resistant reinforcing (CRR): The subcommittee continued this discussion from the last meeting. They reviewed the draft MaineDOT chart for determining the use of CRR in superstructure and substructures under different exposure conditions, traffic level, and corridor priority. Jeff led off with a summary of MaineDOT's current perspectives:

- MaineDOT keeps coming back to stainless on many projects. They've also identified at least one precast girder project that will likely include stainless steel mild reinforcing in the beam element.
 - MaineDOT has received bids for 270,000 pounds of stainless steel reinforcing over a range of project sizes. The average price of the stainless bar is \$2.55/lb fabricated and delivered. The highest bid price received to date is \$3.00/lb. Jeff noted the cost has been consistent regardless of quantity.
- Stainless clad is not produced in the U.S. and is being removed from list.
- Many MaineDOT staff have low opinion of epoxy coated steel. There have been quality issues with the epoxy application and it's easily damaged in the field. Touchup is a hassle and results in questionable durability. Epoxy may still be a good fit for some applications.
- ZBar is included on the list but it's not being made anymore.
- Galvanized is on the list but needs to be used everywhere if specified – it can't be placed in contact with ungalvanized bars, or other metallic bars, or galvanic action occurs.
- GFRP is on the list. GFRP bar costs tend to be more variable than stainless. The average unit price for GFRP is \$1.19/foot. For reference, a one foot long #5 bar weighs about a pound. Garrett mentioned that crack control requirements can be hard to satisfy with GFRP.
- The Department is having good luck using GFRP in combination with solid stainless steel. GFRP is used for the straight bars and stainless is used for the bent bars. Garrett noted that for staged construction projects the use of stainless bar in combination with GRFP can result in ugly/congested reinforcing details at construction joint locations. For these projects, the use of all stainless steel reinforcing is suggested.
- Last year MaineDOT evaluated options for a bridge project in Gorham. The cost of an integral wearing surface bridge deck with all stainless reinforcing, or with GFRP, was compared to a paved bridge deck with black bar. The cost premium for the stainless option was about \$50,000 on a \$2,000,000 job. The GFRP option provided costs comparable to the black bar option.
- MaineDOT asked that, for now, consultants quantify CRR separately to aid in tracking of unit pricing. If black bar is specified it's OK to include the reinforcing in the lump sum deck item.
- MaineDOT noted that consultants should be aware of what the unit prices they're using includes. If you're itemizing rebar separately don't use concrete unit prices from a project that had the rebar incidental to the deck concrete pay item.
- MaineDOT needs to coordinate internally about the use and trust placed in MMFX. MMFX is about \$1.00 more per pound than black bar.
- MaineDOT welcomes feedback on what other agencies are doing.
- Consultants can start using the recommendations in the CRR table. However, it was noted that this is a living document. Rich and Garrett should be consulted on a project-by-project basis.

c. Current practice on use of metallizing

The subcommittee discussed metallizing of steel beams. MaineDOT likes it. NSBA just put out a thermal spray coating specification but MaineDOT hasn't read it yet. MaineDOT has a boilerplate SP for metallizing.

MaineDOT generally considers galvanizing and metallizing equivalent. If aesthetics are a concern hot-dip galvanized beams may need a painted top coat to hide the line formed if double dipping of the beams is required.

Metallizing is considered a class B coating for faying surfaces as long as masked off. MaineDOT becoming a bit more skeptical of weathering steel in some areas. They're beginning to lean toward metallizing for bridges passing over interstate roadways.

On the recent Augusta Ramp F emergency superstructure replacement project, a bid option was provided to either galvanize or metalize. The contractor chose to add a splice so that the girders could be hot dip galvanized. Even with the field splice added the girders need to be double dipped.. The contractor's decision as primarily driven by schedule.

The expected service life of metallizing was discussed. Some beams have been in the field 30 years with 6 mil coatings and still look good. MaineDOT believes metallizing could be a 50-year coating depending on the exposure conditions. MaineDOT expects most of their metallizing projects will include a clear seal coat. Colored top coatings can be specified if a specific need arises.

Tim M handed out a chart from MassDOT including coating specifications based on exposure category. Jeff noted that MaineDOT's spec generally requires a 14-17 mil coating everywhere. However, they're looking into NSBA's new guide spec and may be refining their recommendations.

d. Life Cycle Cost Analysis (LCCA)

- i. What are some of the issues or concerns that MaineDOT sees with LCCA by consultant's vs what is done in-house?
- ii. Is there a need for more guidance on do's and don'ts or more BDG content on LCCA?
- iii. Is MaineDOT finding it useful in final alternative analysis and decision making in the end?

The subcommittee discussed the use of LCCA's. Jeff shared two issues of concern with LCCAs:

1. Calculating residual value – everyone does it a bit differently. Need more consistency in approach. Several options:
 - a. Straight line interpolation
 - b. Exponential decay (rapid depreciation)
 - c. Slow decay (slow depreciation)

The approach used can really influence outcome.

2. Discount Rate – Jeff suggested presenting a range. MaineDOT has used 0%, 2% and 4%. The Department is debating whether using a discount factor greater than 0% makes sense. MaineDOT doesn't have any extra money to spend – anything not spent on one project

will simply be spent on another. At the same time MaineDOT is cognizant of the cost of deferred maintenance.

3. MaineDOT will be putting out guidance on this subject.

e. Lessons learned/collaboration on 3D FEM modeling/analysis efforts – continuation from last meeting discussion – **This item was tabled until next meeting due to time constraints.**

i. Types of models and software used

ii. Refined analysis for live load distribution/load rating

iii. Soil-structure interaction (integral abutments with heavy skews, mixed substructure/foundations)

f. Discussed 3D modeling and ability to show proposed contour lines around bridges. Has been an issue with stream connective projects. Talk with the PM on a project-by-project basis. Probably will be required on box culvert projects moving forward.

g. Questions from Consultant Community – **None**

h. Questions from the MaineDOT – **None**

i. Training Areas

The subcommittee discussed a potential training topic covering small diameter drilled shafts. MaineDOT is supportive of training on this topic but would like to better define the desired scope and length of the training.

The subcommittee offered to help identify potential speakers. The course could be led by a design expert supported by speakers from a drilling contractor such as HB Fleming, Maine Drilling & Blasting, Prock Marine, Hayward Baker (Donaldson), Nicholson, Case, etc. The subcommittee agree this would be a tailor-made course.

MaineDOT would like the training to focus on 9 5/8 inch diameter spun piles as well as 30" to 48" diameter shafts. The course should be tailored to Maine conditions including sloping rock, hard rock, fractured rock, fully cased shafts, areas where rock is too shallow to drive pile, or where water is deep. The course should include structural/foundation design aspects, outline several design examples, and be targeted to niche applications here in Maine,

MaineDOT envisions a 2-day course, no more than 3 days. they noted that the NHI course is theory intensive, focused heavily on geotechnical design?

5. Review 2017 goals and establish new goals for 2018 – **This item was tabled until next meeting due to time constraints.**

6. Subcommittee Rotation for Consultants

(2-yr rotations for new members joining 2014 and later)

a. Mike St. Pierre, SW Cole (Geotech Rep) Q1 2016 thru Q1 2018

b. Tim Cote, HNTB Q3 2016 thru Q2 2018

c. Jim Wentworth, Kleinfelder Q4 2016 thru Q3 2018

d. Robert Blunt, VHB Q2 2017 thru Q1 2019

e. Theresa McAuliffe, McFarland Johnson Q1 2018 thru Q4 2019

7. Next Meeting - Tuesday, March 13, 2018

September 13, 2017

Conference Room 317 A&B

1:00-2:05 PM

Attendance:

Garrett Gustafson, Josh Hasbrouck, Joel Veilleux, Taylor Clark, Kendra Nash, Roger Naous, Devan Eaton, Mark Gray

1. AASHTO Bridge Design Specifications 8th Edition Preferred Format

Garrett Gustafson/Jeff Folsom

10 minutes

Jeff Folsom is trying to gage preferences for the format of the soon-to-be-released latest AASHTO Bridge Design Spec. The options include a pdf file version, an on-line version and the familiar two-volume paper version. The group expressed interest in both the on-line and pdf versions as well as the paper version. Some questions to address when the 8th edition is officially released include:

Will updates be fully integrated into the text for pdf versions?

Can copies be made of pages from either the pdf or on-line versions?

Does the pdf version reside on the local computers? Will the pdf version work in the event of the network going down?

Can a limited number of the on-line version be purchased and shared? If so, the group expressed an interest in paper copies with shared access to the online version.

2. Existing Bridge Plans Available in MEPlans

Josh Hasbrouck

5 minutes

Josh shared that most of the archived bridge plans not currently in the Contractor's Internet database, have been moved to the MEPlans database accessed through the intranet home page. Click on applications at the top of the page and then on E-Plan Archives (now called MEPlans).

<https://mdotapps.maine.gov/meplans/>

3. Construction Issues

Robbin Lanpher and others (Robbin couldn't make it – paving today)
50 minutes

- Residents and Inspectors need to have input into the design process before plans go out to bid. This includes final review of plans and special provisions before they are bid.

The intended procedure on Team North and Team South is for PS&E review to occur 30 days before the PS&E date. This review should include the region Construction Engineer, the Construction Assistant Program Manager, and at least one Resident/Inspector assigned to the project. This should allow for everyone involved to catch potentially problematic details. PS&E review in some instances has been altered due to schedule. Project design teams should strive to provide adequate time for field review.

Designers are encouraged to consult residents and inspectors regularly. The coachpoint process supports input from construction oriented Program Management during the preliminary and final design phase. Input from construction staff is valuable during design. The group supports more input from construction personnel. Constructive criticism and suggestions to improve the project delivery process are always welcome.

- Curb stirrup dimensions

These bars should be detailed in Contract documents on a project specific basis and included in reinforcing schedules. Designers and detail checkers should always check curb stirrup dimensions since they are an issue so frequently.

- Should steel chairs supporting the bottom mat of concrete slab reinforcing be disallowed?

The group consensus supports changing our practice to require plastic chairs for the bottom mat. The cost difference is insignificant and if it supports a higher quality and more efficient construction sequence, then it makes sense to make this change. In the absence of a change in the Standard Specification, this must be implemented on a job-specific basis at the discretion of the designers.

- Skewed bridges and Standard Details

Skewed bridges often stretch the applicability of some of the Standard Details. The design team should review applicable Standard Details for project specific issues and provide additional details as necessary, especially at skewed bridge corners.

- Issues related to blocking elevations

This should be studied closer and reevaluated at a future meeting. Specific examples of projects with issues need to be identified and reviewed.

- Availability of Microstation files during construction.

The Team South Project Managers recently started requiring Microstation files with all submittals, including progress plans. It was suggested that having the final Microstation files in the MSTA folder be added to the PS&E form. There is a procedure in place for storing all project Microstation files received and keeping the most up to date versions in the MSTA folder. Microstation files should be in the project MSTA folder prior to bid.

- Designers need to come out into the field more often and see construction activities so that they can apply lessons learned to the future.

We agree. Design team members can review project progress meeting minutes for upcoming construction activities, however, field personnel can help by inviting design staff to witness construction activities that will help us understand how we can do our jobs better (a few days' notice would be most helpful).

- Transition barrier details need to be adjusted to account for MASH guardrail

Revisions to Standards will be subject to MASH requirements (effective January 1, 2016). Some designers are looking to move away from the concrete transition barrier and toward using a steel transition barrier. One upcoming project will include an adaptation of the New Hampshire steel transition detail with our 3-bar bridge rail.

- Skewed bridges and the 2" blockout shown on Standard Detail 526(23)

The specifics of this issue should be reevaluated at a subsequent meeting. This also relates to the skewed bridge/standard detail issue discussed above.

- Concrete Transition Barrier reinforcement, TB651 and TB652, dimensions for bridges with concrete wearing surfaces and 2 bar bridge rail

The 2'-9" dimension given in Standard Detail 526(37) for TB651 & TB652 should be addressed for bridges with a concrete wearing surface and 2-bar bridge rail. For now design teams should address this issue on a project specific basis.

END OF MINUTES

Designers' Meeting Minutes

September 27, 2017

Conference Room 317 A&B

1:00-2:05 PM

1. MMFX Corrosion Resistant Concrete Reinforcement Presentation

Jon Walter and Dr. Salem Faza, Ph.D.,
60 minutes

Dr. Faza gave a canned presentation emphasizing the 100 year corrosion resistance for concrete bridge structures with the use of their 9100 product. The 100 ksi yield can save money where concrete reinforcing is significant as there will be fewer pounds of rebar for the same strength. Argument is that their rebar will give a service life of 100 years based on testing, so why pay the extra for stainless steel.

The issue of the adverse test results from Vermont DOT was addressed by claiming that the conditions of the Vermont DOT tests are not reflective of in-place reinforced concrete.

Oldest bridge deck that they have in service is 15 years old and is a bridge deck in a marine environment but without added road salt. It looks good after 15 years.

They also offer two other grades of rebar with the same strength but with less corrosion resistance that are competitive with galvanized rebar and epoxy coated rebar, respectively.

The issue of proprietary product restrictions was discussed. Their patent expires in five years or so. They do not market directly to end users and work through rebar fabricators, so they claim that there is competition on that basis. The other way that the proprietary restriction could be overcome is to bid projects with equals of other types of corrosion resistant products. For example SS rebar and the 9100 product could be bid as equals; the 4100 product could be bid with galvanized rebar as an equal; and the 2100 product could be bid as epoxy coated rebar as an equal.

2. Electrical Supply Sources for Street Lighting on Bridges

Mike Wight – 5 minutes

Mike was unable to attend. We'll move this item to a future agenda.

END OF MINUTES

Designers' Meeting Minutes

October 11, 2017

Conference Room 317 A&B

1:00-1:35 PM

1. Electrical Supply Sources for Street Lighting on Bridges

Rich Myers for Mike Wight – 5 minutes

When bridge lighting serves a bridge with abutments in two different towns, the two towns often prefer separate meters to simplify the payment of the power bills. Serving the bridge with more than one power source (service) is not acceptable per the National Electrical Code. If two meters are required (one for each town), each meter must meter separate circuits from one electrical service.

2. Special Provision Section 530 - Glass Fiber Reinforced Polymer (Reinforcement Bars)

Garrett Gustafson – 5 minutes

Garrett presented a copy of the current draft of this Special Provision, with contributions from the consulting community and the Bridge Program. The intent is to converge on a stable specification requiring few if any project specific modifications. The current draft with comments can be accessed as follows. Please add any comments that you may have using track changes for discussion at a future designers' meeting.

[\\oit-teaqfsemc11.som.w2k.state.me.us\dot-swap\Garrett Gustafson\Special Provisions\SP 530 - GFRP Reinforcement \(10-11-17\).docx](\\oit-teaqfsemc11.som.w2k.state.me.us\dot-swap\Garrett Gustafson\Special Provisions\SP 530 - GFRP Reinforcement (10-11-17).docx)

END OF MINUTES

Designers' Meeting Minutes

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October 25, 2017

Conference Room 317 A&B

1:00-1:35 PM

1. **Special Provision Section 530 - Glass Fiber Reinforced Polymer (Reinforcement Bars)**
Garrett Gustafson

Garrett presented a revised copy of the current draft of this Special Provision, with contributions from the consulting community and the Bridge Program. The intent is to converge on a stable specification requiring few if any project specific modifications. Garrett will incorporate comments from the meeting and make the final version available for general use.

END OF MINUTES

Designers' Meeting Minutes

November 8, 2017

Conference Room 317 A&B

1:00-1:35 PM

1. **Special Provision Revision Dates and Recurring Special Provisions**

Garrett Gustafson – 15 minutes

Key points:

- Special Provisions should have dates that reflect the date of last edit (without consideration of editing project information in the header).
 - Proposed changes to recurring Special Provisions (FRP drains, APJ, drainage geocomposite, etc) should be submitted for review in Word with Track Changes and reference to which project Special Provision was used as the original.
 - Rich and Garrett are going to maintain a list of recurring Special Provisions with the latest version of each. Please contact them when starting Special Provision development.
 - Designers should check suppliers/manufacturers lists contained within Special Provisions to ensure they are current. Additional suppliers/manufacturers do not need to be sought out provided that an “or equal” clause is included.
2. Rich brought up the topic of on-time delivery of project bidding documents. As a department, we are measured on the percentage of projects that we bid in the promised time frame. 80% is the goal, but the Bridge Program has been doing much better than that in recent years; in the 90 percent ranges. This year we are flirting with making the 80% goal. Rich is requesting that designers be aware of these target dates, (CAP dates; PS&E dates; bid dates) and make project managers aware of project elements, whether internal to the bridge program or from our sister areas, that may impact our ability to perform on time.
 3. Jeff brought up the continuing shortage of capital funds which will increasingly impact bridges on corridor priority 5 and 6 roadways. There will be a need to compromise on target design criteria and construction elements to replace bridges economically with as little “program creep” as possible. This may take the form of less expensive bridge rail, shorter spans, compromises on ideal roadway geometry and hydraulic clearances. Design exceptions will be expected and more likely to be accepted in the context of the roadway that the bridge serves.
 4. The last set of Standard Notes for review includes Pier, Pier Design Criteria, Elastomeric Bearings, and HLMR Bearings. Comments and revisions will be reviewed at the next Designers Meeting. Please see the link below: [\\oit-isaefsemc01.som.w2k.state.me.us\dot-common\Bridge\Bridge_Public\\\$\Common-Bridge\Bridge Standard Notes\Review Distributions\Review 5\BRIDGE STANDARD NOTES \(May 2016 with Program Draft Revisions\) Distribution 5.docx](\\oit-isaefsemc01.som.w2k.state.me.us\dot-common\Bridge\Bridge_Public\$\Common-Bridge\Bridge Standard Notes\Review Distributions\Review 5\BRIDGE STANDARD NOTES (May 2016 with Program Draft Revisions) Distribution 5.docx)

END OF MINUTES