

**AASHTOWare Bridge Design-Rating (BrDR) Task Force Summary Meeting Minutes  
November 3 - 4, 2015  
St. Petersburg, FL**

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**General Information – Meeting of the Bridge Design & Rating Task Force**

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Date: Tuesday, November 3, 2015 – Wednesday, November 4, 2015

Participants:

AASHTO	Judy Skeen Tony Bianchi Bruce Johnson Wally Ballou	AASHTO AASHTO Oregon DOT Kansas DOT	Project Manager Assoc Program Director SCOJD Liaison T&AA Liaison
BrDR Task Force	Todd Thompson Joshua Dietsche Jeff Olsen Dean Teal Amjad Waheed Tom Saad	South Dakota, DOT Wisconsin DOT Montana DOT Kansas DOT Ohio DOT FHWA	Chair Bridge Rating (BrR) Bridge Design (BrD) Bridge Design (BrD) Bridge Rating (BrR) FHWA Liaison
BrDR Contractor	Jim Duray Herman Lee	Baker Baker	BrDR Contractor BrDR Contractor
BrM Task Force	Beckie Curtis Thomas Martin	Michigan DOT Minnesota DOT	Bridge Management Bridge Management
Guests	Tim Armbrecht Andrew DeVault	Illinois DOT Florida DOT	T-18 Liaison
Guests (Agenda Item 18 Only)	Lee Tanase Ron Love	Bentley Bentley	

Notes Taker: Josh Dietsche / Judy Skeen

**Agenda Item 0: Review Agenda/Assign Minutes**

**Recorder**

Todd Thompson opened the meeting at 8:00 AM. Andrew DeVault and Tony Bianchi were welcomed to the meeting. Task Force members did self-introductions. Joshua Dietsche was assigned as the meeting minutes recorder.

The agenda was reviewed. No additional agenda items were added.

**Agenda Item 1: Prior Business**

**1a. Review January Meeting Minutes**

Minutes from the August 6, 2015 Task Force Meeting in Albany, NY were reviewed and approved with no changes.

**1b. Review Action Items**

Jeff Olsen reviewed the Action Items and provided updates to the Task Force.



**Agenda Item 2: Financial Overview and Work Plan Summary**

**2a. Update on Phase 19 (FY2015)**

Baker advised that all tasks are 100% complete.

**2b. Update on Phase 20 (FY2016)**

Baker advised that FP1 Maintenance is 25% complete, TM3B Routine Maintenance is 32.5% complete, TM6B User Group Meeting is 100% complete, TM8B Cost Estimates is 71% complete, TM8C Minor Tasks is 26% complete, and TM12 Third Party Developer Support is 25% complete. TM13 Specification-related update estimate was provided.

**2c. Update on 6.8 Release Work Plan**

Baker advised that FP4 Maintenance Items is 50% complete and FP5 LFD DF 1994 Guide Spec is 30% complete through the end of September. However, through the end of October, both FP4 and FP5 are almost complete. The budget for several 6.8 Project tasks will be increased in the upcoming 6.8 contract modification. The existing FP7 will also be removed in the contract mod.

- Development is almost complete on the Michigan enhancement
- The study on rigid-link vs master-slave for 3D non-standard gauge was recently completed – will be discussed under agenda item 9c
- Approximately one week of effort remaining on FP8
- Some discussion on FP9 but no significant progress
- Additions to the 6.8 contract will be discussed under agenda item 12a

**2d. Update on P/S Design Tool Work Plan**

Baker advised that FP1 will be completed in the next few weeks.

- 30% completion represents near completion of the development phase

- In August, development was approximately one month behind schedule. The effort is currently two weeks behind schedule.
- The Prestressed Design Tool is still expected to be released in mid-March.
- Alpha testing of the user interface will begin next week

**2e. Update on FE Engine Modernization Work Plan**

Rob Moore is well beyond the 55% complete. The tool is completely converted and Rob is now moving forward with parallel activities.

- The Modernized FE Engine will be used by the P/S Design Tool.

**Agenda Item 3: Update on BrD/BrR Licensees (FY 2016)**

**3a. Product Report**

Judy Skeen presented a product license summary report developed from the Excel output from AASHTOWare Manager. The report included licenses ordered as of 06/08/15.

Judy directed the Task Force to the full report which is posted on SharePoint under the Br Design-Rating directory. Br Design-Rating -> BrDR Licenses -> FY2016 -> BrDR EndUserDesignee 102715 with Summary – CURRENT.

The full report includes FY2016 licenses ordered to date.

- sorted by Agency Name
- shaded by license type

**3b. Service Unit Report**

Baker presented the service unit summary report. Idaho DOT recently purchased 23 BrDR Service Units to support the development of the Rating Tool (see agenda item 8a below).



### 3c. Evaluation Software Report

The current summary of BrDR software evaluations was reviewed. The most recent version of this report is posted on SharePoint. Of note, Oregon DOT is currently evaluating BrR and BrD for possible use within their agency.

## **Agenda Item 4: Support and Maintenance Report**

### 4a. Incident and Support Summary

Baker presented the Defect History Report. 1,910 bugs have been reported. Currently there are 28 total unresolved BrDR bugs. (42 bugs were unresolved in October.)

### 4b. Progress on Bug Resolution

Baker reviewed Maintenance Progress reports for the 6.8 release as of 10/27/15. For the 6.8 Release, out of 142 total reported incidences, 28 remain open. A few of the bug fixes will be released with the Caltrans SP1 release at the end of January. Some items on the list were included in 6.7 or the 6.7 Maintenance Release 1.

### 4c. Enhancement List Update

The TAG Enhancement Buckets and BrDR Enhancement List were reviewed. Enhancements BrDR-641 and greater were added during and following the 2015 RADBUG meeting.

One Issue was added to the Enhancement Bucket.

- BRDRSUP-693 – Truss Commands for LRFR (Caltrans)

### 4d. Maintenance Issues

Two issues were added to the Maintenance Bucket.

- BRDRSUP-745 – Effective Area Used as Net Area Deduction in LRFR Truss Rating (Caltrans)
- BRDRSUP-780 – Single Lane DF and MPF not applied for truss LRFR (Caltrans)

### 4e. Bug Policy

The Bug Policy appears to be working as intended. No further discussion.

## **Agenda Item 5: Update on 6.8**

### 5a. Progress and Schedule Review

Baker advised that Baker has started working on tasks that are to be included in the contract mod #2 amendment (to include a portion of the Caltrans requested enhancements).

- Curved girder is in-progress with approximately one week remaining.
- The Caltrans enhancements are divided into 2 larger items and a couple of others. Baker has started work on the larger items. This development may not be completed by the end of January. If these are not finished for the 6.7 SP1, these will be included in 6.8.
- Baker is placing a priority on getting the 6.7 SP1 out by the end of January 2016. This service pack will be released even if all the items are not complete.
- The second portion of the 2015 spec updates are complete.
- Alpha testing will begin in a couple of weeks.
- Baker is still on track for 6.8 beta testing to begin in early April and release by June 30, 2016.

### 5b. TAG Update

Dean Teal provided an updated roster for the BrDR Beta TAG. Development is on track for the 6.8 release in June, beta testing begins in early April. Dates for the April Beta Testing meeting in Pittsburgh will be established during the January Task Force Meeting. Geoffrey Oramasionwu (Manitoba) and Daniel Yalda (Michigan) have been added to the Testing TAG.



## **Agenda Item 6: Update on P/S Design Tool and FE Engine Modernization**

### **6a. Finite Element Engine Conversion Status**

No additional discussion. This topic was discussed under Agenda Item 2.

### **6b. P/S Design Tool Update and Demo**

Baker presented a demonstration of the User Interface for the Prestressed Design Tool. Baker also provided an overview of the software functionality. The P/S Design Tool will be ready for beta testing in January. Jeff Olsen is assembling a group of potential testers. To date, Jeff has not received many responses from potential beta testers.

## **Agenda Item 7: Update on Modernization**

### **7a. Authentication**

The Task Force discussed the need to implement agency-defined user authentication for BrDR login. Baker described various options available to use in conjunction with agency Active Directory settings.

Todd Thompson advised that, for example, users need to have the ability to change their own password. BrDR should have the ability to set user access controls both using Active Directory as well as setting BrDR-defined security settings for agencies that do not use Active Directory. Third party software would still have to be installed separately.

### **7b. Enhancement List (2015-BrDR-53)**

Baker has worked through approximately half of the tier one items on the enhancement list to identify candidate enhancements that can be included in the modernization project. These have been divided into three categories:

- No obvious advantage to handling during modernization
- Definite advantage to handling during modernization (three items have been placed in this category to date -- items

that can be accomplished during the first three years of modernization at no additional cost)

- Unclear – need more investigation

Baker will post the enhancement list spreadsheet (with their review) on SharePoint. Baker will keep the list of items on the enhancement list in mind as they work through the modernization effort.

### **7c. Baker Staffing**

Baker handed out an updated Baker organization chart and current modernization development schedule. Staff augmentation will be employed to effectively staff the modernization project.

- Baker added the “Legacy MSE” contract work to the Modernization Development Plan
- Temporary development staff will be provided to the project from Catapult, a Baker subsidiary
- Baker is considering establishing small teams of 3 to 4 developers reporting to more senior level team members

## **Agenda Item 8: Enhancements**

### **8a. Rating Tool Update**

Baker presented an overview of Rating Tool Use Cases.

- Use Case 1: Rating using the Rating Tool
- Use Case 2: Rating using the BrR user interface
  - 2A: Ability to use BrR Bridge Explorer to select bridges to be rated using the Rating Tool. The existing Domain API is not used in this use case.
  - 2B: Use the Rating Tool for bridges that are in the precompiled database and use BrR for those that aren't. Both the Rating Tool and BrR must be installed
- Use Case 3: Rating using the BrR Analysis API



Idaho ITD currently has 23 service units available to support the development effort. Todd discussed the proposed project with Shanon Murgotio, advising that the Task Force would prefer moving the enhancement work forward via donated service units and contract as a modification to the 6.8 Work Plan to add an additional fixed price task. Shanon was fine with proceeding in this manner. Other states have expressed an interest in providing support for these enhancements (i.e. Tennessee and Illinois).

- The Indiana DOT may be interested, but would also be interested in LRFR, as is the Virginia DOT.
- The Rating Tool will be released as a separate project / module. It will not be included in the 6.8 release. Decisions on how the Rating Tool will be licensed in the future will be discussed during future Task Force meetings.
- Once the 6.8 contract mod is approved, development work could begin as early as December with a release planned for July 2016.
- Baker provided a summary of Rating Tool questions and answers submitted by the Illinois DOT.

#### 8b. Steel Design Tool Update – TAG Comments

Baker presented a summary of the comments received on the Steel Design Tool mockups. Comments were received from;

- Arielle Ehrlich – Minnesota DOT
- Brenda Crudele – New York State DOT
- Jeff Ruby – Kansas DOT
- Jeff Olsen – Montana DOT

Baker will develop proposed responses to the comments for Task Force review.

#### 8c. Release 6.8 User-Requested Improvements

Baker presented the cost estimates for enhancements requested and prioritized during the 2015 RADBUG Meeting.

- #2 JIRA 613 – LFR and LRFR for prestressed post-tensioned I beams
- #3 JIRA 687 – LFR for PT and RC multi-cell box beams
- #4 JIRA 553 – 3D FEM and 3D FEM-Vehicle Path analysis for superstructure with hinges

The Task Force made the decision to fund JIRA 687 and JIRA 553 under FP1 User Requested Improvements in the 6.8 Project Work Plan. Baker was directed to proceed with including these enhancements in the 6.8 development work.

#### 8d. 2016 Spec Updates

Baker presented a list of the 2015 Approved Ballot Items (LRFD Bridge Specifications and MBE Specification) as well as estimates for the six agenda items that specifically affect BrDR. The Task Force directed Baker to move forward with development to incorporate the six agenda items identified.

Bruce Johnson advised that the code will be published in 2016, and then every three years after that. However, AASHTO will still pass ballot items every year and will be “official”, but not published. AASHTO may also choose to publish an errata for items that are incorrect or deemed a safety issue.

FY16MSE TM13 Specification-related Updates will be used to support this effort. A contract mod will be requested later in the fiscal year to fully fund the tasks under TM13.



## **Agenda Item 9: Miscellaneous Topics**

### **9a. 3D Analysis Performance Measurements (2015-BrDR-15)**

Baker presented the summary of results from the AASHTO Engine Parametric Study. The study provides detailed information on system configurations and associated analysis time frames.

### **9b. Update Tutorials Based on 6.8 Release (2015-BrDR-83)**

Baker presented an estimate for updating the 89 tutorials available in the training section of the BrDR website to be consistent with the 6.8 release. The enhancement presented included the following:

- Update contents including calculations
- Update all the screenshots
- Use consistent formatting styles
- Rebranding as needed
- 6.8 bridge XML files for the tutorials

The Task Force made the decision to discuss adding this task to the upcoming 6.8 contract modification #2 and, going forward, to perform this task once a year to keep the tutorials up to date.

Replacing the PDF files on the BrDR website and adding links to download the bridge XML files are covered by the Routine Maintenance task in the FY16 MSE Work Plan.

### **9c. Master-Slave Constraint for Distribution Factor Analysis**

Baker presented a summary of the BrR Rigid Link Results Comparison in the STAAD study. The Task Force made the decision to include this enhancement to the Advanced Tier One Modernization List of enhancements to be considered during years one through three of the Modernization Project.

- Rigid link models non-composite behavior accurately.
- Master-Slave is more accurate for composite regions.
- Baker advised that they cannot say with certainty that the current method is conservative, but results are very close.
- The Task Force agrees that this item would be better handled during the modernization effort, during the first 3 years of the effort. Baker will add to their tier 1 priority list.

### **9d. Response to Stephen Hurston (NASA) Concerns**

Baker advised that Judy Skeen forwarded the response they prepared to Mr. Hurston's questions/concerns to Mr. Hurston with a cc to Susan Hida (chair of SCOBS T-5 Technical Committee). Mr. Hurston responded that he still has questions relating to the T-5 standards. Going forward, his questions are specific to T-5.

### **9e. JIRA 393 – How to Compute Concrete Shear for LRFR (Maximum or Concurrent Forces)**

This may be addressed through T-10 and could be included in the next spec update. The Task Force made the decision to hold off on taking any action to wait to see how T-10 addresses the issue. Moving toward MCFT and incorporating that into the design specification.

## **Agenda Item 10: Third Party Issues**

### **10a. Long-term Strategy**

No discussion.

## **Agenda Item 11: User Group**

### **11a. Summary Minutes from August Meeting**

The summary minutes for the August BrDR Task Force meeting in Albany, NY were provided but have not been reviewed by the Task Force. Judy will post the summary minutes on the SharePoint





discussion area for Task Force review and comment.

#### 11b. Non-Voting Users' Discussion Minutes Responses

During the 2015 RADBUG, the consultants met separately and developed a document summarizing their discussions. The document includes both comments and questions/concerns for Task Force review and feedback. Based on the questions submitted, it appears that we need to make a concerted effort to provide additional education to the BrDR community.

Baker mentioned the possibility of having a separate module for substructure. For the most part, the user is not aware that they can design a substructure without having to design the superstructure. This is an example of an education item that we should address in the future, possibly via the development of a subject tutorial.

#### Agenda Item 12: Work Plans

##### 12a. 6.8 Project Work Plan Amendment 2 Draft

The Task Force made the decision to fund the Idaho ITD Rating Tool Use Case 3

The following actions in the BrDR 6.8 Project Contract Modification #2:

- Remove FP7 LADOTD Enhancement
- Add FP11 POI Control Options
- Add FP12 Eff Supports for Concrete Members
- Add FP13 Const Joint for RC Tee Beams
- Add FP14 MCB Web Schematic
- FP15 Option to Disable Spec Output for MCB
  
- FP16 Range of Applic for LRFD Dist Fact Calc
  
- FP17 Idaho ITD Rating Tool Work Plan items
  
- FP18 Update Tutorials for BrDR 6.8
- Extend the 6.8 contract end date to 10/31/15

- 12b. Rating Tool Work Plan Draft

The Task Force reviewed the Project Work Plan developed for the Idaho ITD. The Task Force made the decision to roll this enhancement into the 6.8 Project via contract Modification #2. See discussion under Agenda Item 8a.

- Tim Armbrecht requested that, if a window for work opens up, the Illinois DOT would like to explore using Service Units to add in GFS (LFR only at this point) to the Rating Tool. However, ILDOT would not want to delay the release of 6.8 or the Rating Tool.
- The Rating Tool work plan goes through the middle of August. Contract will also be modified to run through the end of October.
- There is a portion of work to experiment with how pre-computed data is stored. Prototype of Rating Tool was done with text files (unique file for each bridge). During development, Baker will also experiment with no-SQL database and with an SQL database. SUPERLOAD uses a binary file.

##### 12c. P/S Design Tool Work Plan Amendment 1 Draft

The amendment will add the money from the remaining P/S design tasks original in the 6.6 work plan.

##### 12d. FY2016 MSE Work Plan Amendment 1 Draft

Baker has not yet developed the contract mod draft. The Task Force will revisit this contract amendment during the January 2016 Task Force meeting.

##### 12e. Planning Estimates

Dean Teal discussed the process currently in place for planning estimates: when the Task



Force didn't want to lose track of an enhancement item that was not funded, the enhancement would be pushed to the next year in the planning estimates spreadsheet. With the modernization effort essentially placing all functionally enhancements on hold, the Task Force made the decision to push unfunded enhancement estimates to the third year of modernization work for consideration for during year four of the modernization effort.

#### 12f. Future Work Plans

- FY2017 will be 6.8.1
- FY2018 will be 6.8.2
  - Also have first modernization release – 7.0?
  - Tim Armbrecht suggested that we could consider re-naming the new product...XXX 1.0.
- FY2019 will be 6.8.3
  - Modernized would be 7.1? or XXX 1.1?
  - Announce that 6.8.3 will be supported for one more year, dropped from catalog after that.
- After the fourth year, with enhancements – 8.0? or XXX 2.0?
- The FY2017 MSE Work plan must be finalized and ready for submittal to SCOJD by mid-February.
- The Task Force will have a conference call in mid-December to discuss progress of modernization and determine what needs to be done for next year's work plan.

#### Agenda Item 13: FHWA Update

Tom Saad provided the FHWA updates to the Task Force.

#### LRFR Webinar Series:

On October 21, 2015, FHWA hosted the 17<sup>th</sup> webinar in a series to advance best practices and

procedures in bridge load rating utilizing LRFR. The subject for this webinar was 'Federal Bridge Formula Weights and State Specific Legal Loads' to emphasize that bridge owners need to be aware of the ever increasing loading conditions on highway bridges and the need to use proper load models for legal load/posting evaluations. All seventeen webinars have been recorded and are available for you to view at the following website:

<http://www.fhwa.dot.gov/bridge/loadrating/>

#### New FHWA Publications for Bridge Engineers:

Two FHWA publications are now available to assist bridge design and analysis engineers; the *Post Tensioned Box Girder Design Manual* and *Engineering for Structural Stability in Bridge Construction* can be downloaded at <http://www.fhwa.dot.gov/bridge/>. The latter manual is the reference manual for a new 4-day National Highway Institute on the subject of bridge construction engineering.

#### NHI Course on Load Rating of Highway Bridges:

The 4-day National Highway Institute Course 130092, *LRFR for Highway Bridges*, was delivered to State, local agency and consultant engineers in Baton Rouge, LA, the week of October 26, 2015 as a requirement of LA DOTD to have engineers who perform load ratings in their State to have proper training. The course is scheduled to be delivered in Frankfort, KY, in December, Austin, TX, in January and in Orlando, FL in February. You may sign up for open seats for any of these courses through the NHI website.

#### Guidance on Structures Subject to NTIS:

On October 27, 2015 an FHWA memorandum was distributed to provide additional guidance for States, federal agencies, and tribal governments to better identify highway tunnels that are subject to the NTIS. This will not cover unique structures you may face in your area of



responsibility, but is intended to provide additional guidance to supplement the definition of a tunnel in the NTIS. This memo provides further guidance on different structure types that are or are not subject to the NTIS and can be used to guide efforts to inventory all highway tunnels by December 11, 2015, as required by the regulation. Guidance on how State transportation departments, federal agencies, and tribal governments should submit their preliminary inventory data will follow soon.

#### **LTBPP Bridge Portal:**

An October 1, 2015, FHWA memorandum announced the availability of the Long Term Bridge Performance Program's Bridge Portal to State and local agencies. The Portal is currently populated with historical NBI data (1992 to present), National Bridge Element data and LTBPP field collection data to support the collection of bridge performance data. Future versions of the Portal will include capabilities such as deterioration and forecasting models and enhanced GIS mapping tools to provide research engineers with quality bridge performance data. State DOT employees can access the Portal with ORC credentials. Guidance for acquiring credentials can be found at <http://fhwaapps.fhwa.dot.gov/upacsp/>.

#### **NDE Web Manual:**

The FHWA Nondestructive Evaluation Web Manual, Version 1.0 is available to assist bridge owners and inspectors in understanding the many tools available for inspecting concrete and steel bridge members. The Manual was conceived and developed to fill in a critical knowledge gap between the practitioners dealing with bridge performance challenges on a day-to-day basis and the researchers developing and refining NDE technologies serving them. Over the last decade, there has been a huge increase in the number of new assessment tools, but their documentation is fragmented (across refereed

and non-refereed literature) and not supported by actual performance data for particular technologies and products. The NDE Web Manual's aim is to provide concise and unbiased guidance to help practitioners navigate their way through a complex and changing landscape to identify the technologies that can serve their specific need. The following web link will allow you to access the manual:

<https://fhwaapps.fhwa.dot.gov/ndep/>.

#### **FHWA Bridge Safety Engineer – North:**

Dennis O'Shea has been named the FHWA Senior Bridge Safety Engineer – North. Dennis has been the Division Bridge Engineer for the Delaware Division office since 2014 and served as the Division Bridge Engineer for the DelMar (Delaware and Maryland) Division office from 2010-2014. Prior to joining FHWA, Dennis held key positions with the Delaware DOT over a 27 year career, including State Bridge Engineer and Assistant Director of Design.

#### **Agenda Item 14: Five Year Projection for BrDR**

Judy Skeen handed out the current BrDR Task Force Budget Projection spreadsheet (10/30/15) during the Joint meeting Executive Session.

#### **Agenda Item 15: Licensing Issues**

##### **15a. License History**

Judy Skeen handed out a BrDR license cost history spreadsheet from 1999 through 2016 to provide the Task Force with a reference point to be considered when the Task Force begins to approach developing a licensing structure for the modernized BrDR product and/or licensing fees to support options for modules such as the Prestressed Design Tool and the Steel Design Tool.

##### **15b. University Licenses**

The question was asked about why AASHTOWare does not allow universities to use the product educational licenses to conduct research. The



Task Force discussed the fact that research projects are typically ‘paid for’ initiatives funded by the AASHTO member agencies.

Jeff Olsen developed the following draft language for Task Force consideration.

**“Member Agency Research Option**

*An educational **and research** institutions that **are** engaged in performing research on bridges through a member agency holding a valid license to the AASHTOWare Bridge Design or AASHTOWare Bridge Rating Unlimited Option, may submit a request to the member agency and the AASHTOWare Bridge Task Force to get the licensing fee waived for the specified research project. Consideration will be given to the educational / **research** institution if the research project is sponsored by the member agency, and is for the benefit of the member agency. The final research reports must clearly document the use of the AASHTOWare Bridge Design/Rating software. The system requires a database engine and includes support through the member agency only. This option is not available to individuals and it is not to be used for any purpose outside the limits of the specified research project.*

*Note: A licensing agreement executed by the institution assuring compliance within the limitations of the specified research project is necessary to exercise this option. “*

The Task Force discussed developing abbreviated wording to advise that a waiver process is available for research sponsored by a DOT licensee.

15c. International Licenses

No discussion.

15d. Special Consultant Option Licensees

No discussion.

15e. Third-Party Add-Ons

Judy Skeen advised that she has been contacted by the developer of Midas requesting an opportunity to discuss potential opportunities for the Midas engine to be made available to BrDR licensees as a third party engine.

15f. Future of Bundling Modules (Post-Modernization)

Breaking up BrDR licenses by structure type doesn’t appear to be effective for member agency licensees. The Prestressed Design Tool could be licensed separately in the FY2017 catalog but should also be included as a component of member agency BrD licenses.

**Agenda Item 16: Marketing Activities**

16a. Marketing General

The Task Force discussed recent and upcoming marketing presentations during the joint meeting. The Task Force is interested in pursuing marketing opportunities with the AASHTOWare marketing expert.

- Look for opportunities to tie education-related outreach to marketing efforts – webinars, YouTube videos?
- Look for opportunities to market to the front office managers showing them how we can make their design/rating process better, fast, more efficient – in other words, how we can save them time and resources along with making them more efficient.

**Agenda Item 17: NCHRP Study 15-54 Load Rating of Culverts**

The NCHRP study to develop enhanced equations to better predict the response of culverts to applied loads. The study is a three year project with a completion date in 2018. In response to the FHWA load rating initiative, the results of a recent survey have been compiled and a plan of action has been developed. The panel will meet with the project team in December to review the survey results and make decisions on what culvert types will be tested in which states.



- FE analysis and field testing
- Goal is to produce better design equations
- Comes from load rating “push” from FHWA
- Baker/M&M are the Principal Investigators - sent out survey to states and compiled results
- Will be selecting culverts for field-testing in the near future
- Will look at a number of types of culverts, focusing on more common
- Three-year project, completed in 2018

**Agenda Item 18: Discussion with Representatives of Bentley Systems, Inc.**

Lee Tanase and Ron Love of Bentley Systems, Inc. requested an audience with the BrDR Task Force to discuss load rating and associated load routing directions for the BrDR product set. The representatives provided an overview of their thoughts followed by a Task Force discussion.

**Agenda Item 19: Review Action Item list from this meeting**

Judy Skeen read the action items recorded during the meeting for the information of attendees.

**Agenda Item 20: Task Force Executive Session (as needed)**

No Executive Session.

The meeting adjourned Wednesday, November 4 at 3:30pm.

