

**Summary Minutes Of The
AASHTOWare Bridge Design-Rating (BrDR) Task Force Meeting
June 14 - 15, 2016 Madison, WI**

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

Date: Tuesday, June 14, 2016 – Wednesday, June 15, 2016

Participants:

AASHTO	Judy Skeen Arpine Baghdarsarian	AASHTO AASHTO	Project Manager Marketing Manager
T&AA	Wally Ballou	Kansas DOT	T&AA Liaison
BrDR Task Force	Todd Thompson Joshua Dietsche Jeff Olsen Dean Teal Amjad Waheed	South Dakota DOT Wisconsin DOT Montana DOT Kansas DOT Ohio DOT	Chair Bridge Rating (BrR) Bridge Design (BrD) Bridge Design (BrD) Bridge Rating (BrR)
BrDR Contractor	Jim Duray Herman Lee Jeff Campbell	Michael Baker, International Michael Baker, International Michael Baker, International	BrDR Contractor BrDR Contractor
Guests	Phillip Litchfield Scot Becker Alex Pence Bria Lange	Illinois DOT Wisconsin DOT Wisconsin DOT Wisconsin DOT	RADBUG SCOBS T-19 Committee

Notes Taker: Amjad Waheed / Judy Skeen

Agenda Item 0: Review Agenda/Assign Minutes

Recorder

Todd Thompson opened the meeting at 10:30am. Amjad Waheed was assigned as the meeting minute's recorder. The agenda was reviewed and the following agenda items were added.

- Agenda Item 11b. 2016 RADBUG Attendance.

Agenda Item 1: Prior Business

1a. Review April Meeting Minutes

Minutes from the April 12 - 13, 2016 Task Force Meeting in Lake Tahoe, NV were reviewed and approved as written.

1b. Review Action Items

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

Agenda Item 2: Financial Overview and Work Plan Summary

2a. Update on Phase 20 (FY2016)

Baker provided an update on FY2016 MSE contract amendments. Most of the FP Maintenance and T&M Tasks are on or above 80% complete except TM 7 (Publications), TM 10 (Marketing Support) and TM 11 (Contractor



Team Mtgs. & Sub Project Review). The Contractor expects to complete all tasks within the proposed budget. In Direct Costs category, Direct travel costs were projected to exceed the budget slightly but the increase will be balanced out with the savings on Non-travel costs.

2b. Update on 6.8 Release Work Plan

Baker provided an update on the 6.8 release work plan. Most of the tasks have been completed 80% or more, except a few listed below. 80% completion means Alpha testing has been completed. FP3 (Validation Testing and Release Production) is at 40% completion. It will be completed when the BrDR 6.8 will be prepared for final release. FP 10 (Regression Tool) was 40% completed, FP 17 (Rating Tool) was 20% completed and FP20 (Utility for Copying, Replacing and Deleting Bridges) was 0% completed as all three were under development and scheduled to be released later in the Fall.

2c. Update on P/S Design Tool Work Plan

Baker advised that Phase I of Prestressed Concrete Design Tool is 90% complete and has been released to the beta testers. The Prestressed Concrete Design Tool is scheduled to be released with BrDR 6.8. Work on Phase II has been started and will be released at a later date.

2d. Update on FE Engine Modernization Work Plan

Baker provided an update on the Phase 19 FE Engine Modernization. The FE Engine is being converted and enhanced to C#. Most of the development has been completed and it is in the Beta testing phase. Baker explained the difficulty associated with accessing and testing the modernized FE Engine as a standalone product. Given the difficulties associated with using the tool in a standalone environment, the modernized FE Engine is being hooked to the

Prestressed Design Tool to facilitate the testing process.

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 06/06/16.

Item	FY 14	FY 15	FY 16	FY 17	Spons. Agency
Bridge Design - 120-Day Evaluation License	13	2	2	0	
Bridge Design Developer License	0	1	1	0	
Bridge Design Educational License	7	9	14	2	
Bridge Design Single Workstation Option	3	2	1	0	
Bridge Design Special Consultant Option	35	35	36	18	
Bridge Design Unlimited Option	18	17	17	0	
Bridge Design/Rating Service Units	30	31	50	0	
Bridge Rating - 120-Day Evaluation License	13	3	10	0	
Bridge Rating Agency Sponsored Consultant Licenses	2	2	2	0	
Bridge Rating Developer License	4	3	4	2	
Bridge Rating Educational License	7	11	17	1	
Bridge Rating Single Workstation Option	24	20	17	4	
Bridge Rating Special Consultant Option	261	339	369	73	
Bridge Rating Unlimited Option	31	33	34	0	
Sponsored Consultant Licenses (Bridge Rating) - No Fee	125	128	95	55	Michigan DOT
Sponsored Consultant Licenses (Bridge Rating) - No Fee	124	110	92	34	Virginia DOT



Judy provided an overview of the status of making the BrDR Unlimited licenses available to consultants for licensing in FY2017. The availability of the unlimited license to consultants could be reconsidered by the Task Force in the future. To support this initiative, AASHTO amended the unlimited license software agreement language for consultants to ensure BrDR intellectual property remains protected. Three consultant groups have expressed an interest in pursuing the BrR Unlimited license in FY2017.

In addition, Baker provided technical information on BrDR to spell out the differences, from an operationally perspective, between the special consultant license and the unlimited license. The Task Force discussed the need to ensure that, similar to the special consultant license, the unlimited license provided to consultant users should be restricted to display a deactivation warning message (to be displayed at the end of the licensing fiscal year) and a software deactivation date of 07/31.

The Task Force discussed the three states, Oregon, Texas, and Kentucky, who have recently expressed an interest in the BrDR products, and the need to follow-up with these agencies to encourage them to send an attendee to participate in the 2016 RADBUG meeting.

3b. Service Unit Report

Baker presented the service unit summary report. With the recent kick-off of the BrDR Modernization Project, Baker noted the deduction of the following service units to support the service unit contributions to fund the BrDR Modernization Project in the April 2016 Service Unit report.

Judy Skeen advised that, the reports from AASHTOWare Manager indicate New York State DOT purchased 5 SUs in February 2016; however, these service units are not included in the most

recent Service Unit Report developed by Baker. Baker will verify the NYSDOT service units and correct the BrDR Service Unit Report. Judy Skeen also provided a brief overview of the BrDR product financials and background reports from the AASHTO accounting system.

3c. Evaluation Software Report

The current summary of BrDR software evaluations was discussed. The most recent version of this report is posted on SharePoint. Baker advised that more than 50% of agencies who have evaluated the products have made the decision to purchase the software following their evaluation period.

The Rating Tool will be available for evaluation via an evaluation copy of Bridge Rating. The Task Force discussed the possibility of providing future requestors for Bridge Rating or Bridge Design evaluation software with both products rather than just the one product requested. This approach would allow them access to evaluate both products. However, it decided that although this approach would allow them to be exposed to both products, have both products loaded during their evaluation could be confusing to the user as the user would not know which features they accessed are available in which product.

Agenda Item 4: Support and Maintenance Report

4a. Incident and Support Summary

Baker presented the Defect History Report through release 6.7.1. 54 new defects have been added since last the Task Force meeting in April 2016. The total number of defects reported were 2020. Currently, 1915 defects have been resolved; 67 defects are not reproducible; 2 defects need more information; and 36 defects are unresolved. Of the 36 unresolved defects, 33 defects are termed as high priority.



4b. Progress on Bug Resolution

Baker reviewed Maintenance Progress reports for the 6.8.0 release as of 05/31/16. For the 6.8.0 Release, out of 172 total reported incidences, 1 remains unresolved and is assigned for resolution. The remaining bug is waiting for user input and will not impact the 6.8 release. 47 issues were resolved and included in the BrDR 6.8 release.

Baker reviewed Maintenance Progress reports for the 6.8.1 release as of 05/31/16. For the 6.8.1Release, out of 84 total reported incidences, 37 remain and are assigned for resolution.

4c. Enhancement List Update

Baker presented an update on the Enhancement List. Two lists were provided; TAG Enhancements Bucket List and total BrDR Enhancement List. Two new enhancement requests were added in the list since the last Task Force meeting. BrDR-941 is related to Start Distance User entry value of rebar within Multi-Cell box girders and BrDR-972 is related to Superstructure Wizard not setting LRFR analysis module. Since the last TAG review of the list, 10 new enhancements have been added to the list.

4d. Maintenance Issues

No discussion.

4e. Issue Policy

No change in the Issue Policy.

Agenda Item 5: Update on 6.8

5a. Progress and Schedule Review

Baker presented an update on the progress of the BrDR 6.8.0 release. Beta 4 has been released to the Beta testers. Beta 5 (Testers' acceptance release) was originally scheduled to be released on June 23, 2016; however, the this version will now be released after June 25 due to a problem

with the computation of wind loads for diaphragm analysis which was discovered during the Beta testing. Baker developers have been working to resolve the wind loading issues. New "dll" files will be provided to the Beta testers during within the next week. The cut-off date for the TAG Acceptance will be June 30, 2016 and the BrDR 6.8.0 version will officially be released by July 8. Baker also informed the Task Force that the Design Tool will be bundled with the BrDR 6.8.0 release; however, the Rating Tool will not be included in 6.8.0. The Analysis API for Oklahoma and Kansas DOTs will also be released in July 2016.

5b. TAG Update

Discussion deferred to agenda item: 7b.

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

6a. Finite Element Engine Conversion Status

Development of the FE Engine Conversion is complete. The contract end date has been extended to December 31, 2016 with the execution of contract amendment 3, executed 05/06/16.

6b. P/S Design Tool Update and Demo

The Prestressed Concrete Design Tool is currently in the beta testing phase. Jeff Olsen advised that the I-girder design is working well; however, he questioned how the minimum design ratio works for box beams. Jeff also advised that he would like to see improved schematics in the next phase. Baker reminded the Task Force that the contract supporting Phase II of the Prestressed Concrete Design Tool has a 12/31/16 end date. Baker advised that they may consider requesting another contract amendment to extend the contract end date past 12/31/16 to complete the work on Phase II.



6c. Rating Tool Update

Baker gave a brief demo of the Rating Tool being developed for Idaho DOT. The demo showed the Rating Tool pre-computes the analysis data and stores the results in separate bridge folders in the System Defaults as XML files during the development phase. Baker explained that in the final phase, the pre-computed data will be stored in binary form to support fast data retrieval. Baker received comments from the Idaho DOT on the Rating Tool mockups. The Idaho DOT mockup comments will be shared with the Task Force members. The Rating Tool is scheduled to be released by end of July 2016, if all goes as planned during testing phase.

6d. Regression Tool Update

Baker provided an update on the Regression Tool. Development is being completed. It will be provided to the Beta testers when development is complete. The Regression Tool is scheduled to be released in September 2016.

Agenda Item 7: Modernization

7a. Update

Baker provided an update on the Modernization project. The project contract has been executed and Baker is setting up the project and flow process internally. Work has been started on the Bridge Explorer windows. The FE Engine modernization is far ahead as it was worked on during the development of the Prestressed Concrete Design Tool; therefore, the first bridge type expected to be completed will be prestressed concrete type. Baker also advised the Task Force that they have hired two additional developers to work on the Modernization project. Baker may be hiring more during the year when the project is in full swing.

7b. BrDR Modernization TRT/TAG Structure

The Task Force discussed the Modernization Technical Advisory Group (MTAG) structure. Judy Skeen shared the names suggested for the MTAG by the participating states. The Task Force made the decision to form focus groups to support different aspects of the Modernization project. The three basic areas of focus are: 1) User Interface/Screen mock-ups, 2) Reports and 3) Beta testing.

Baker advised that there will be two more releases of the legacy software (6.8.1 & 6.8.2) after the BrDR 6.8.0 release. The current BrDR Testing TAG will be involved in the testing of these upcoming releases of the legacy system.

7c. Modernization Kickoff Meeting

The BrDR Modernization TAG kick-off meeting has been scheduled for August 5, 2016 (9:00am – 12:00pm), Chicago, IL (the day following the RADBUG meeting). Baker will prepare a draft agenda for the kick-off meeting, to include a summary of TAG member responsibilities and anticipated TAG activities.

As a first order of business, the Task Force made the decision to task the BrDR Modernization TAG with reviewing all new enhancements added to JIRA after Beta TAG's August 2014 meeting. The contractor will prepare a handout of all enhancements for the BrDR Modernization TAG's review prior to the BrDR Modernization TAG Kickoff Meeting.

Agenda Item 8: Enhancements

8a. Estimate for enhancement - JIRA-553 (2016-BrDR-022)

Baker presented an estimate for implementing the proposed modeling techniques specified in the BrDR 3D FEM Analysis for Multi-Girder Superstructure with Hinges study. The 3D model for a girder system structure with steel girders is comprised of shell elements for the deck and the girder web, and beam elements for the girder



top and bottom flanges. For reinforced concrete and prestressed concrete girder system structures, the 3D model is comprised of shell elements for the deck and beam elements for the girders. The development estimate to support the implementation of hinges in the modernized 3D FE Engine was provided. Although the legacy FE Engine does not support hinges, the inclusion of hinges was one of the top voted enhancements in the 2015 RADBUG meeting voting. Baker advised that it's their opinion that it will be cheaper and more logical to implement the proposed enhancement (JIRA-553) during the development of the first phase of the Modernization project. The enhancement would not be implemented in the current legacy system. Phil Litchfield (Illinois DOT) expressed an interest in funding this enhancement for inclusion in the modernized FE Engine. Phil advised that he will discuss with his management and advise Judy Skeen on whether or not the Illinois DOT would be willing to fund this enhancement via the contribution of two (2) Service Units.

Jeff Olsen raised the issue of application of the Stress-Strain Compatibility equation for pre-stressing 250k strands. Jeff advised that the Idaho DOT is interested in having an option added to BrDR 6.8.0. Jeff will contact Idaho DOT to get more details.

Dean Teal discussed Vinacs' Email forwarded to the Task Force members. The issue of skew adjustment factor has been incorporated in BrDR 6.8.0. The other issue is when multi-cell boxes (MCB) with variable width are analyzed by the LFD method, the system only allows the use of one live load distribution factor. The Task Force acknowledged that using only one live load distribution factor for varying width MCB is a conservative method of analysis and made the decision to not to make any change.

Agenda Item 9: Miscellaneous Topics

9a. Silent Installation Guide (2015-BrDR-090)

Baker presented the completed AASHTOWare Bridge Design and Rating Silent Installation Guide document. This guide will be included with the BrDR 6.8.0 release.

9b. Web Service for Illinois DOT

The Task Force advised Baker to create a cost estimate to develop a web service for the Illinois DOT to work with the Superload System.

Agenda Item 10: Third Party Issues

10a. Long-term Strategy

No new discussion. Long-term strategy development on hold till Modernization is completed.

Agenda Item 11: User Group

11a. Summary Minutes from April Meeting

The summary minutes for the April BrDR Task Force meeting in Lake Tahoe, NV were reviewed and approved as is. These Summary Minutes will be forwarded to David Schroeder (Secretary RADBUG) for posting on the RADBUG website.

11b. 2016 RADBUG Attendance

Judy extended offers to three DOTs who have expressed an interest in licensing BrDR or are actively evaluating the product for licensing in the future to send a representative to the 2016 RADBUG meeting with AASHTO reimbursement for their travel expenses.

The 2016 RADBUG Meeting Agenda was reviewed and discussed. RADBUG President, Phil Litchfield (Illinois DOT), lead the discussion and informed the Task Force that two consultants had responded to his call for presentations. Two training sessions will be held by the Contractor. One will be the fundamental training, primarily



for new users of the software, and the second will cover the new features of the 6.8.0 release. Jeff Ruby (Kansas DOT) has agreed to make a presentation on the new Prestressed Design Tool included in the BrDR 6.8.0 release. Phil advised that he will check with Shanon Murgoitio (Idaho DOT) to see if she would be willing to make a presentation on the Idaho DOT Rating Tool currently under development. Amjad Waheed (Ohio DOT) will be added to the agenda to present a presentation on the load rating of bridges for Special Hauling Vehicles (SHV) in Ohio. Re-arrangement of presentation topics and training sessions was discussed to alleviate scheduling conflicts. Judy Skeen prepared the tentative agenda based on discussion during the meeting and forwarded it to Phil Litchfield and the Task Force members. Phil will finalize the agenda as it is now in his capable hands.

Agenda Item 12: Work Plans

12a. Planning Estimates

No discussion.

12b. Future Work Plans

No discussion.

Agenda Item 13: FHWA Update

Tom Saad was unable to attend the meeting. Tom forwarded the FHWA report the week following the meeting. His report follows:

SHRP 2 Structures Products:

The final round for the SHRP2 Implementation Assistance Program kicked off April 1st thru the 29th. Webinars were held to showcase the 15+ products to be offered. In addition to this marketing effort, FHWA also outreached to DOTs, MPOs and local agencies that have been identified as having an interest/need for the structures products. The four structures products being offered in Round 7 are:

- R06A – Non-destructive Testing for Bridge Decks
- R06G – Non-destructive Testing for Tunnel Linings
- R19A – Service Life Design for Bridges
- R19B – Service Limit State Design for Bridges

Round 7 is the last opportunity to help fund States for implementation assistance.

There is more information available on these products at <http://www.fhwa.dot.gov/goshrp2/>

FHWA Office of Bridges and Structures new Steel Bridge Design Specialist:

Dr. Dayi Wang recently joined the FHWA Office of Bridges and Structures as the Senior Steel Bridge Design Specialist. Dr. Dayi was previously a Fellow at Jacobs Engineering Company in New Jersey, and brings over 25 years of experience in design and evaluation of complex and long span steel bridge structures as a consulting engineer. Dr. Dayi also executed some ground breaking doctoral research at Lehigh University on the topic of Fatigue and Fracture, working under Dr. John Fisher and Dr. Ben Yen. In particular, Dr. Dayi co-authored the FHWA publication "Fatigue of Bridge Structures - A Commentary and Guide for Design, Evaluation and Investigation of Cracking" in 1989 and the NCHRP Report 302 "Fatigue and Fracture Evaluation for Rating Riveted Bridge" in 1988. Dr. Dayi will lead the federal steel bridge program, as part of the FHWA team.

Agenda Item 14: Five Year Projection for BrDR

Judy Skeen reported that there is no change in the Five Year Projection for BrDR since April 2016 Task Force Meeting. The plan will be updated as additional agencies join the BrDR Modernization Project.

Agenda Item 15: Licensing Issues

15a. Special Consultant Option Licensees



No discussion.

15b. Third-Party Add-Ons

No discussion.

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

Jeff Olsen has reviewed pricing schedules of similar design tools on the market. Jeff will continue to research the pricing schedule. Since the Prestressed Concrete Design Tool will not be offered as a separate product until Phase II of the BrDR Modernization Project is completed, this topic will be included on the agenda for future Task Force meetings.

The Rating Tool will be included with BrR. There is no need to include it with BrD, and it would not function as a stand-alone tool as it needs the data from BrR to function.

Agenda Item 16: Marketing Activities

Arpine Baghdasarian, AASHTOWare Products Marketing Manager, joined the BrDR Task Force Meeting on Tuesday, June 14, 2016 in the afternoon. Todd Thompson welcomed her to the meeting. Arpine joined the discussion on the marketing strategy and efforts. She will be developing contacts, marketing tools and creating a marketing plan for BrDR software. Task Force members discussed various top-down and bottom-up approaches to introduce and market BrD and BrR products. As a marketing strategy, the Task Force is including the Prestressed Concrete Design Tool free of charge with the BrDR 6.8.0 Unlimited Option. Five (5) design examples of the Prestressed Concrete Design Tool program will also be included with the application. Task Force members discussed ideas such as having a presence at conferences and various bridge meetings; conducting webinars; sending regular Email updates; etc. Arpine will update the Task Force on

AASHTOWare marketing plans and efforts during quarterly meetings.

Agenda Item 17: Review Action Item list from this meeting

Amjad Waheed read the action items recorded during the meeting.

Agenda Item 18: Task Force Executive Session (as needed)

No Executive Session was held. The meeting adjourned Wednesday, June 15, 2016 at 1:15pm.

