

**Summary Minutes Of The  
AASHTOWare Bridge Design-Rating (BrDR) Task Force Meeting  
February 7 – 8, 2017  
Miami, FL**

**Table of Contents**

General Information – Meeting of the Bridge Design & Rating Task Force .....	3
Agenda Item 0: Review Agenda/Assign Minutes Recorder .....	3
Agenda Item 1: Prior Business .....	3
1a. Review October Meeting Minutes .....	3
1b. Review Action Items .....	3
Agenda Item 2: Financial Overview and Work Plan Summary .....	3
2a. Update on Phase 21 (FY2017) .....	3
2b. Update on 6.8.2 Release Work Plan .....	3
2c. Update on 7.0 Release Work Plan (June 2019) .....	3
Agenda Item 3: Update on BrD/BrR Licensees (FY 2017) .....	4
3a. Product Report .....	4
3b. Service Unit Report .....	4
3c. Evaluation Software Report .....	5
Agenda Item 4: Support and Maintenance Report .....	5
4a. Incident and Support Summary .....	5
4b. Progress on Bug Resolution .....	5
4c. Enhancement List Update .....	5
4d. Maintenance Issues .....	5
Agenda Item 5: Update on 6.8.2 (June 2017 release) .....	5
5a. Progress and Schedule Review .....	5
5b. TAG Update .....	5
Agenda Item 6: Modernization .....	5
6a. Update .....	5
Agenda Item 7: FY2018 – Preliminary Discussion .....	6
Agenda Item 8: Enhancements .....	6
8a. P/S Design Tool Phase 2 Enhancements .....	6
8b. TAG Enhancement Rankings .....	7
8c. BrDRSUP-581 Hinges in Floor Systems .....	7
8d. Handling of Emergency Vehicles .....	7
8e. Multi-layer wearing surface (2016-BrDR-057) .....	7
Agenda Item 9: Miscellaneous Topics .....	7
9a. Support for Windows 10 .....	7
9b. Support VDI Environment for Consultant License .....	7
9c. Guided Navigation (2016-BrDR-056) .....	7
9d. Rating Tool Update .....	7
9e. Caltrans Enhancement Request Update .....	8



Agenda Item 10: Third Party Issues.....	8
10a. Long-term Strategy.....	8
Agenda Item 11:User Group .....	8
11a. Summary Minutes from October Meeting .....	8
11b. 2017 RADBUG Venue.....	9
Agenda Item 12: Work Plans .....	9
12a. FY2018 MSE Work Plan Review .....	9
12b. Planning Estimates.....	9
12c. Future Work Plans.....	9
Agenda Item 13: FHWA Update.....	9
Agenda Item 14: Five Year Projection for BrDR.....	10
Agenda Item 15: Licensing Issues .....	10
15a. Third-Party Add-Ons .....	10
15b. Future of Bundling Modules (Post-Modernization).....	10
15c. Licensing Scenarios (2016-BrDR-060) .....	10
Agenda Item 16: Marketing Activities .....	10
Agenda Item 17: Review Action Item list from this meeting.....	10
Agenda Item 18: Task Force Executive Session (as needed) .....	10



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

Date: Tuesday, February 7 - Wednesday, February 8, 2017

Participants:

AASHTO	Judy Tarwater	AASHTO	Project Manager
SCOJD	Bruce Johnson	Oregon DOT	SCOJD Liaison
T&AA	Wally Ballou	Kansas DOT	T&AA Liaison
BrDR Task Force	Todd Thompson	South Dakota DOT	Chair
	Joshua Dietsche	Wisconsin DOT	Bridge Rating (BrR)
	Jeff Olsen	Montana DOT	Bridge Design (BrD)
	Dean Teal	Kansas DOT	Bridge Design (BrD)
	Amjad Waheed	Ohio DOT	Bridge Rating (BrR)
	Tom Saad	FHWA	FHWA Liaison
BrM Task Force	Beckie Curtis	Michigan DOT	Bridge Management
	Thomas Martin	Minnesota DOT	Bridge Management
	Mark Faulhaber	Kentucky TC	Bridge Management
BrDR Contractor	Jim Duray	Michael Baker, International	BrDR Contractor
	Herman Lee	Michael Baker, International	BrDR Contractor
Guests	Tim Armbrecht	Illinois DOT	SCOBS, T-18/T-19

Notes Taker: Tom Saad / Judy Tarwater

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

Todd Thompson opened the meeting at 8:05 am. Tom Saad was assigned as the meeting minute's recorder. The following agenda items were added:

- Agenda Item 2d. – 6.8 Project December Invoice
- Agenda Item 9d. – Rating Tool Update
- Agenda Item 9e. – Caltrans Enhancement Request Update

### **Agenda Item 1: Prior Business**

#### **1a. Review October Meeting Minutes**

Minutes from the October 26-27, 2016 Task Force Meeting in Asheville, NC were reviewed. All occurrences of 'Judy Skeen' will be changed to 'Judy Tarwater'. The heading for Agenda Item 3 will be changed to 2017 (Agenda Item 3: Update

on BrD/BrR Licensees (FY 2017)). With these changes, the meeting minutes were approved.

#### **1b. Review Action Items**

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

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

#### **2a. Update on Phase 21 (FY2017)**

Baker provided an update on the FY2017 MSE work plan.

#### **2b. Update on 6.8.2 Release Work Plan**

Baker provided an update on the 6.8 release work plan as of 12/31/16.

#### **2c. Update on 7.0 Release Work Plan (June 2019)**

Baker provided an update on the Modernization Project work plan as of 12/31/16.



**Agenda Item 3: Update on BrD/BrR Licensees (FY 2017)**

output from AASHTOWare Manager. The report included licenses ordered as of 01/24/17.

**3a. Product Report**

Judy Tarwater presented a product license summary report developed from the Excel

Item	FY2015	FY2016	FY2017	Sponsoring Agency
Bridge Design - 120-Day Evaluation License	2	2	8	
Bridge Design Developer License	1	1	2	
Bridge Design Educational License	9	14	8	
Bridge Design Single Workstation Option	2	1	2	
Bridge Design Special Consultant Option	35	36	34	
Bridge Design Unlimited Option	17	17	15	
Bridge Design/Rating Service Units	31	50	94	
Bridge Rating - 120-Day Evaluation License	3	10	16	
Bridge Rating Agency Sponsored Consultant Licenses	2	2	3	Illinois, Michigan, Virginia
Bridge Rating Developer License	3	4	4	
Bridge Rating Educational License	11	17	8	
Bridge Rating Single Workstation Option	20	17	24	
Bridge Rating Special Consultant Option	339	369	341	
Bridge Rating Unlimited Option	33	34	38	**
Sponsored Consultant Licenses (Bridge Rating) - No Fee	N/A	N/A	34	Illinois Department of Transportation
Sponsored Consultant Licenses (Bridge Rating) - No Fee	128	95	86	Michigan Department of Transportation
Sponsored Consultant Licenses (Bridge Rating) - No Fee	110	92	79	Virginia Department of Transportation

**\*\* Non-Member BrR Unlimited Licensees:**

- + HDR
- + HNTB
- + Parsons Brinkerhoff

- + Michael Baker International
- + TransSystems Corporation

**3b. Service Unit Report**

Baker presented the service unit summary report. 94 new service units have been purchased in FY2017.



### 3c. Evaluation Software Report

The current summary of BrDR software evaluations was discussed. We continue to receive requests for evaluation software. Evaluating firms continue to not respond to the post-evaluation survey. The Rating Tool will be available for evaluation via an evaluation copy of Bridge Rating.

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

#### 4a. Incident and Support Summary

Baker presented the Defect History Report through release 6.8. 69 new defects have been added since the last Task Force meeting in October 2016; none of these were identified as urgent, one issue was identified as critical. The total number of defects reported were 2161. Currently, 2012 defects have been resolved; 67 defects are not reproducible; 1 defect needs more information; and 81 defects are unresolved. A majority of the 81 unresolved defects are termed as high priority.

#### 4b. Progress on Bug Resolution

Baker reviewed Maintenance Progress reports for the 6.8.2 release as of 02/01/17. For the 6.8.2 release, out of 228 total reported incidences, 155 have been resolved and 73 are assigned for resolution.

Baker reviewed Maintenance Progress reports for the 6.8.3 release as of 02/01/17. For the 6.8.3 release, out of 16 total reported incidences, 5 have been resolved and 11 are assigned for resolution.

#### 4c. Enhancement List Update

Baker presented an update on the Enhancement List. Several TAG enhancements have been identified as maintenance items and have been moved to the maintenance 'bucket'.

Ten (10) additional enhancements have been added to the BrDR Enhancement List since the last meeting

- BrDR 1169 – Skew Reduction Factor
- BrDR 1176 – Improvement in the LLDF warning message for slab bridges
- BrDR 1193 – 2003 Curved Guide Spec Impact Factors
- BrDR 1194 – 3D Model Mesh
- BrDR 1197 – Lower the minimum NA depth requirement from 0.1 in to 0.01 in
- BrDR 1199 – Rating Tool Frozen
- BrDR 1209 – Metric Error Message
- BrDR 1211 – Rating Tool Report
- BrDR 1247 – Use MBE 2<sup>nd</sup> Edition Table 6B.5.2.4.1-1 and Table 6B.5.2.3.1-1 to determine ASD allowable stress
- BrDR 1259 – Separate input for 'n' value is needed for LFD and LRFD

#### 4d. Maintenance Issues

No discussion.

### **Agenda Item 5: Update on 6.8.2 (June 2017 release)**

#### 5a. Progress and Schedule Review

Baker provided an overview of the 6.8.2 development effort. Spec updates and bug fixes will be delivered with 6.8.2. A beta version is expected to be available in early April with the release planned for June.

#### 5b. TAG Update

Dean Teal advised that he hosted a TAG meeting via webinar to coordinate upcoming beta test requirements.

### **Agenda Item 6: Modernization**

#### 6a. Update

Baker advised that modernization work is currently on schedule and within budget.



### 6b. TAG Update

Dean Teal advised that several TAG members were able to meet and generate and document comments on round 1 through 6. The Task Force members met on Thursday morning to review and discuss the TAG comments/recommendations and document Task Force direction on how to proceed with each enhancement.

### 6c. TAG Mockup Schedule

Baker provided the mockup review schedule and indicated that Baker is awaiting Round 7 mockup review comments.

Separately, the Task Force agreed the legacy version of BrDR will be supported through June 30, 2021.

### 6d. TAG Comments on Rounds 3-7 Mockups

The BRDR Task Force will review all of the comments provided by the TAG on Thursday, and provide direction for each comment. Comments/suggestions that are considered enhancements will be maintained in a Modernization Enhancement bucket. The 6.8.3 release includes the modernized engine and a meeting of the Modernization TAG will need to be scheduled to perform beta testing.

## Agenda Item 7: FY2018 – Preliminary Discussion

### 7a. Catalog

Catalog markups for the BrDR product portion and overview section of the FY2018 catalog were reviewed.

Judy Tarwater presented an overview of the BrDR Slides for the FY2018 presentation to SCOJD.

## Agenda Item 8: Enhancements

### 8a. P/S Design Tool Phase 2 Enhancements

The Task Force reviewed the Prestressed Design Tool Phase II reviewed scope document. Features and capabilities to include:

N	1. Girder System Entry
N	2. Line Girder Entry
N	3. Schematics
W	4. Add a Diaphragm Wizard
N	5. Add the ability to save the beam designs
W	6. Calling the Tool from BrDR
R	7. Iterate on Concrete Strength
R	8. Add the ability to debold a harped pattern
R	9. Add the ability to cut top strands
W	10. Allow users to override distribution factors
W	11. For a continuous design, compute the area steel is required in the slab over the negative moment region
N	12. Add user control for selecting continuous analysis, or continuous and simple span analysis
W	13. Calculate and report the hold down force
N	14. Create a camber table that includes the PCI multipliers
R	15. Create a summary output report
N	16. Compute stability checks for transport
N	17. Address issues BRDRSUP 1112 and 1120
R	18. Add tri-deck beams to the library

N = Needs

R = Really Wants

W = Wants



Task Force prioritized the enhancements in 3 categories; priority needs, 'really wants' and 'wants'. As indicated in the table priority needs include enhancements 1,2,3,5,12,14,16, and 17. Really wants include 7, 8, 9, 15 and 18 and wants include enhancements 4,6,10, 11, and 13.

#### 8b. TAG Enhancement Rankings

Comments / priorities from the BrDR Modernization TAG High Priority Enhancements were reviewed. The Task Force will use the TAG enhancement priorities in their deliberations on overall enhancement priorities.

#### 8c. BrDRSUP-581 Hinges in Floor Systems

Enhancement requested by MIDOT and ILDOT. This enhancement will be added to the post-modernization enhancement list.

#### 8d. Handling of Emergency Vehicles

The BrDR Modernization TAG has requested the load factors be incorporated into the BrDR tables. The Task Force discussed the fact that emergency vehicles specified could be included in the software via inclusion of these vehicles in the BrDR standard truck library.

#### 8e. Multi-layer wearing surface (2016-BrDR-057)

This enhancement is currently not a high priority but may be revisited in the future.

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

#### 9a. Support for Windows 10

Baker developed a Windows 10 build and performed regression testing. No problems were encountered. The only difference observed between Windows 7 and Windows 10 is the handling of the infinity symbol. Windows 10 uses the actual symbol while Windows 7 showed 'Infinity' directly. The testing was performed using IE11.

#### 9b. Support VDI Environment for Consultant License

The Modernized BrDR product will have the ability to detect whether or not the software is installed in a virtual environment. Release 7.0 could support the distribution of consultant licenses with the option for installation in a virtual environment.

#### 9c. Guided Navigation (2016-BrDR-056)

The BrDR Modernization TAG requested the implementation of a guided navigation approach to help the user move through the bridge workspace. The Task Force also discussed the possibility of developing a 'go-by' to describe the steps/windows used for specific bridge types. (Possibly color code required windows vs. optional windows.) The data required is based on the engine to be used to perform the analysis. The 'Cadillac' implementation would be to provide a mechanism for agencies to develop a customized navigation guide for their users to go by.

#### 9d. Rating Tool Update

The Rating Tool was released in 6.8.1 in October 2016. The Regression Tool was released in December 2016. The Idaho Transportation Department forwarded a request for functionality to be added to the Rating Tool to include culvert evaluation capabilities. The capability to evaluate culverts could be used for approximately 90% of the bridges in the Idaho TD inventory.

The Illinois DOT forwarded a request for floor systems to be added to the Rating Tool. Illinois also has requests for the following enhancements:

- JIRA-581: rough estimate is 2 service units
- JIRA-553: rough estimate is 2 service units



**9e. Caltrans Enhancement Request Update**

Caltrans may still be interested funding the following enhancements.

1	Superstructure should be "dynamically" linked to substructure of MCB	BRDRSUP-937
2	Setting password for all users	
3	Limiting "Lever Rule" values of One Lane LLDF to Multi Lane LLDF, since Multi Lane LLDF includes the single Lane LLDF (with MPF of 1.2)	
4	Incorporate Moment-Curvature Approach to establish shear capacity	
5	Difference in skew angle between adjacent support overwrite (affects only the moment LLDF)	BRDRSUP-936
6	Establish the LLDF for exterior using "full box" case - set to interior girder LLDF	
7	When extending the range of applicability, limit the values to Lever Rule (LLDF)	
8	Report Writer for Stringer-Floorbeam-Girder system	
9	Update the truss model to handle both LFR and LRFR	BRDRSUP-745 BRDRSUP-693 BRDRSUP-780
11	Web line analysis for all MCBs (where the web lengths are different)	
12	Incorporate partial tension-field approach for steel bridge shear capacity	
13	Introduce advance option of LLDF for MCB	
14	Multiple post-tension cable path be considered for the MCBs	BRDRSUP-939

15	Not meeting minimum shear reinforcement area by 10%. Avprovided/Avrequired = 0.9	
16	User Defined Load distribution for Dead Load (DC2) to each web of MCBs; This is to handle "Sound Walls" on existing MCBs	BRDRSUP-938
17	Iterative Process when establishing RF for load dependent cases	
18	LLDF for One or Two Cell Box girder bridges	
19	Use of corresponding moment and shear when establishing shear rating factor	
20	Introduce rating factor for Bent Caps (substructure)	

In addition to the items noted above, Caltrans has also been having issues with shear ratings in concrete boxes (see e-mail from Vinacs). There is a T-18 ballot item that could address this issue.

**Agenda Item 10: Third Party Issues**

**10a. Long-term Strategy**

Long-term strategy development is on hold until Modernization is further along. AASHTO continues to work with third-party software developers on the next steps for potentially including their software in the FYI2018 AASTHWare catalog.

**Agenda Item 11: User Group**

**11a. Summary Minutes from October Meeting**

The summary minutes for the August BrDR Task Force meeting in Asheville, NC were provided. Judy Tarwater will post these on the SharePoint site for Task Force review and comment. Once in final form, the summary minutes will be forwarded to David Schroeder (Secretary RADBUG) for posting on the RADBUG website.





### 11b. 2017 RADBUG Venue

The Great Wolf Lodge in Kansas City, KS has been secured for the 2017 RADBUG Meeting (August 15 – 16, 2017). The Task Force will invite Jeff Ruby to attend the June meeting to assist with development of the RADBUG agenda.

### Agenda Item 12: Work Plans

#### 12a. FY2018 MSE Work Plan Review

The current draft of the FY2018 MSE work plan is considered final.

#### 12b. Planning Estimates

No discussion. This agenda item included as a placeholder.

#### 12c. Future Work Plans

FY18 MSE work plan with specification changes was discussed. Baker will make minor changes to the Standards and Guidelines exception language and forward to Judy Tarwater when complete. Development of the PS Design Tool Phase II and other potential enhancement work will be combined into a single project work plan.

### Agenda Item 13: FHWA Update

Tom Saad provided the following report:

#### Elaine Chao named Secretary of Department of Transportation:

On January 31, 2017, the US Senate confirmed Secretary Elaine L. Chao as the new DOT Secretary. The following morning, the Secretary met with all modal Acting Deputy Administrators to make introductions and express her commitment to the Department's mission and outline key priorities for the Department.

#### FHWA Memorandum - Load Rating for the FAST Act Emergency Vehicles:

On December 4, 2015, the President signed into law the Fixing America's Surface Transportation Act (FAST Act). The FAST Act amended 23 U.S.C. 127, Vehicle Weight Limitations—Interstate

System, by revising the weight limits for certain vehicles on the Interstate System. On November 3, 2017, FHWA issued a policy memorandum to provide guidance on maintaining compliance with the load rating and posting requirements of 23 CFR Part 650—specifically for the amended weight limits in 23 U.S.C. 127(r), Emergency Vehicles, for bridges on the Interstate System and within reasonable access to the Interstate System. Emergency vehicles are typically operated by fire departments and are primarily equipped for firefighting, but are also used to respond to and mitigate other hazardous situations. These vehicles may not meet Federal Bridge Formula B. They can create higher load effects compared to the AASHTO legal loads which are currently included in the AASHTO Manual for Bridge Evaluation (MBE). The Federal Highway Administration (FHWA) has determined that, for the purpose of load rating, two emergency vehicle configurations produce load effects in typical bridges that envelop the effects resulting from the family of typical emergency vehicles that is covered by the FAST Act and the memorandum provides direction for load rating Interstate bridges for these vehicles. An approach to post bridges that could be overstressed by the emergency vehicles is also included within the memorandum.

FHWA/NHI Bridge Design and Analysis Training: Texas and Pennsylvania have recently hosted the National Highway Institute course 130092, *LRF for Highway Bridges*, and seats are available in upcoming scheduled courses in Texas and Washington State. Please consider attending the course for state-of-the-practice training in load rating of highway bridges. All information on course deliveries can be found at <https://www.nhi.fhwa.dot.gov/Home.aspx>

FHWA has state-of-the -practice design and analysis courses on steel and concrete bridge



superstructure and substructure design, seismic design, and for design and analysis of horizontally curved girder structures consistent with the latest versions of the AASHTO LRFD Specifications. Outstanding reference manuals are available with these courses or can be purchased through the National Highway Institute website. A new 2.5 and 3.5 day course entitled *Engineering for Stability in Bridge Construction* is now offered and a 650 page Reference Manual on the subject is also available through the National Highway Institute. Two additional courses of interest to bridge design and analysis engines are under development; a course on the latest steel fatigue and fracture analysis procedures in the LRFD Specification and a course on shear design in concrete members with an emphasis on design utilizing the strut-and-tie method will both be available later this year.

#### Event Report:

FHWA issued an event report on November 7, 2016, detailing findings by the Ohio DOT of damaged piers on SR 14 over Lake Rockwell which initiated the immediate closure of the bridge that carries 19,660 ADT. The 12 H-pile that support two bridge piers had all buckled at the water line. The Ohio DOT speculates that an illegal overload caused damage to the piles. The piles did not exhibit section loss but did have surface rust. The report provides bridge inspection steps that Ohio DOT is implementing to ensure complete analysis and documentation of similar bridges in the future.

FHWA is currently drafting an event report to document the full-depth fracture of a tension chord in a deck truss approach span to the Delaware River Bridge that occurred on January 20, 2017 and will disseminate that report to the States through the FHWA Division offices.

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

Interim updates for FY2018 have been applied to the BrDR five year projection. The FY2017 BrDR Modernization project invoice total is unknown as is the final estimate for the FY2018 AASHTO Administrative costs that will be applied to BrDR. Once a better projection is known, the five year projection will be updated.

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

##### 15a. Third-Party Add-Ons

Judy Tarwater and Josh Dietsche will continue to work with third-part software developers on next steps to potentially include their software offerings in the FY2018 AASHTOWare Catalog, as discussed in Agenda Item 10.

##### 15b. Future of Bundling Modules (Post-Modernization)

No discussion.

##### 15c. Licensing Scenarios (2016-BrDR-060)

Josh Dietche developed and will maintain a spreadsheet with several optional scenarios for packaging and pricing BrDR. The Task Force will deliberate on these options as necessary to ensure financial support for the maintenance of the products are balanced with cost to users.

#### **Agenda Item 16: Marketing Activities**

Discussed during the joint Task Force meeting.

#### **Agenda Item 17: Review Action Item list from this meeting**

Tom Saad read the action items recorded during the meeting.

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

An Executive Session was held on Tuesday afternoon. The meeting adjourned Wednesday, February 8 at 3:45pm.

