

Summary Minutes Of The

AASHTO Bridge Rating and Design Products Meeting

January 29-31, 2013

San Diego, CA

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

Date: Tuesday, January 29, 2013

Participants:

AASHTO	Judy Skeen	Project Manager	Bridge Products
BrD/R Task Force	Tim Armbrecht Bryan Silvis Joshua Sletten Dean Teal Amjad Waheed Tom Saad (via Phone) Wally Ballou	Illinois DOT Virginia DOT Utah DOT Kansas DOT Ohio DOT FHWA, Midwest Resource Center Kansas DOT	Chair Bridge Design (BrD) Bridge Rating (BrR) Bridge Design (BrD) Bridge Rating (BrR) FHWA Liaison T&AA Liaison
BrD/R Contractor	Jim Duray Herman Lee	Baker Baker	

Notes Taker: Amjad Waheed

Agenda Item 0: Review Agenda/Assign Minute Recorder/General Discussion

Tim Armbrecht opened the meeting. Tim informed that Amjad Waheed would be taking the minutes of BrDR meeting. Tom Saad would not be able to attend the meeting but would give FHWA update over the phone.

No additional items were added to the agenda at the start of the meeting.

Agenda Item 1: Prior Business

1a. Review November Meeting Minutes
Minutes of TF meeting of November 2012, held in Boston, MA, were reviewed. Corrections were noted and the minutes were approved with changes.

Agenda Item 2: Financial Overview and Work Plan Summary

2a. Update on Phase 15 (FY 2011) (Drilled Shaft)

The Contractor informed the TF that BrDR 6.4.1 was released with drilled shaft module but without cracked moment calculations. The cracked moment code was being tested by the Contractor at that time. The Contractor said that more than 90% of the work had been completed. Judy wanted to know when this phase of project would conclude. The Contractor said that the release would most probably conclude in September 2013.

2b. Update on Phase 16 (FY2012) (R/C Slab System)

The Contractor informed that they had received first round of comments on R/C Slab system mockups. The Contractor was reviewing the comments and would make necessary changes in the scope. The Contractor did not foresee any extension past June 2013.



2c. Update on Phase 17 (FY2013)

The Contractor provided Phase 17 of 2012-13 Work Plan reports as handouts. The Contractor informed TF that JIRA implementation had not been completed. The work on other tasks was on schedule. The Contractor also stated that building of first alpha version of BrDR 6.5 would start the following Monday and alpha testing would start the following week. The Contractor also updated the progress on FP1-User Requested Improvements from 30% to 40-50%.

Agenda Item 3: Update on BrR/BrR Licensees (FY 2013)

3a. Product Report

The Contractor provided the product report as handouts. TF noted that TxDOT and a consultant in Chicago had evaluation copies of the software. It was also noted that an Ohio consultant twice got the evaluation copies of the software during 2012. TF members wanted to track the companies that were requesting evaluation copies of the software multiple times.

3b. Service Unit Report

Service Unit report was provided & reviewed by the TF. TF expressed satisfaction that the Service Unit report now correctly tallied the Service Units purchased by the states. Virginia had transferred 20 SUs to the solicitation to fund Pontis 5.2. Illinois and New York states had donated 0.45 SUs each to develop plastic analysis of cover plates on beams.

3c. Licensing Options

Various Licensing options provided in the AASHTO Catalog were discussed by the TF members. Judy stated that in her report of licenses presented during Boston 2012 meeting there were not many consultants who had multiple licenses. TF agreed that there did not seem to be many consultants who had multiple state licenses. Amjad mentioned that a DOT wanted to have 5 license pack option too. Tim noted that in the current catalog there was an

option of 10 license packs for consultants. There were enough options in the current catalog & TF did not feel like adding any more variations. However, TF members wanted to update the language in the Catalog. It was decided to remove the support rate from the catalog. Judy would update the catalog language and finalize it.

Agenda Item 4: Support and Maintenance Report

4a. Incident and Support Summary

The Contractor reviewed the Incident and Support Summary report. 61 incidents were reported between October 2012 and January 2013. The number of unresolved incidents was reported as 37 in the same period.

4b. Progress on Bug Resolution

The Contractor reviewed Maintenance Progress reports for 6.5 & 6.6 releases. On Amjad's question, the Contractor explained that duplicate bugs meant same as resolved and all outstanding bugs in 6.5 release would be resolved with the release of the software.

4c. Enhancement List Update

Beta TAG Enhancement Buckets and BrDR Enhancement lists were reviewed. The Contractor informed the TF that there are 14 enhancement items for version 6.5. Incidents from 11995 to 12135 are new. Incidents number 12098, 12130 & 12131 were at the request of a DOT based on version 6.2 of the software. TF members agreed that no enhancements in old Virtis/Opis version 6.2 would be considered.

4d. Maintenance Issues

No discussion was held.

Agenda Item 5: Update on BrD/BrR 6.5

5a. Progress and Schedule Review

The Contractor informed the TF that the BrDR 6.5 development work would be finished by the end of March 2013 and the Beta testing would start



in mid of April, assuming total work plan for 6.5 release would be split in two phases 6.5.0 & 6.5.1. TF agreed to split the release of version 6.5. TF was told that in release 6.5.0, major tasks of curved beam analysis, Specifications updates, capacity over-ride, LRFR NSG analysis, user enhancements, plastic analysis for cover plates and General Preference summary would be included.

6.5.0 would be released to the users before the user group meeting. A tentative target date to release version 6.5.0 was set as June 30th. Tentative target date to release 6.5.1 Beta would be by the end of August.

The Contractor wanted to have some flexibility to move tasks between 6.5.0 & 6.5.1, in case the contractor had to rework their schedules to meet the deadlines.

The slab system TAG request for “integral with pier” is important to the multi-cell box enhancement and estimates will be forwarded next week.

Dean mentioned that an option of fully developed rebars in slabs was not a part of the scope, but should be. The Contractor would look into the scope to ensure that fully developed rebars in slab option would be included.

Tim asked Judy if there would be sufficient funds to cover the costs due to 2013 amendments in the scope and Judy responded positively.

On a question from Amjad, the Contractor clarified that all changes in the database would be covered in 6.5.0 release and 6.5.1 release would not require any database updates.

The Contractor wanted to keep top two items of Beta TAG Maintenance bucket (6f) and UI Improvements (7f) in the Work Plan with flexible dates to accomplish the requested additional enhancement work when programmers complete currently scheduled tasks.

5b. Curved Girder Mockups

The Contractor gave a demonstration of new features in the bridge model viewer of BrDR. With improvements in the model viewer, a truck can now be moved manually & the effects can be seen on the finite element surface. The model could support one or multiple trucks in the same line. The model viewer would be available in the curved girder module.

5c. Slab System Mockups

No discussion was held.

5d. SLI Testing for 6.5.0

TF was informed that SLI testing would be done on Pre-beta and Beta 6.5.0 versions of the software. SLI Work Plan was reviewed and the TF suggested adding JIRA along with IssueNet as defect tracking systems. TF also made suggestions on hard coded dates in the Work Plan. Judy was given the responsibility to make necessary changes in the SLI Work Plan and run it through SLI. TF would be contacted later to give approval after SLI agrees to the changes.

5e. Beta TAG Schedule

Schedule of Beta TAG testing was discussed under agenda item 7i.

5f. TAG Features Checklist

The Contractor would provide TAG Features Checklist to Dean before the TAG meeting.

Agenda Item 6: Enhancements

6a. Frame Concepts

The Contractor provided a handout to explain the conceptual approach to modeling frames in BrDR. The approach to model frames would be similar to one used in other FE analysis software such as STAAD, Midas, etc. Frames would be described using nodes and connecting components. Connecting components would be defined by cross-sections. However, the user would not be required to define each and every element. Instead the user would define the



properties of the components along the length of the structural components and then specify FE modeling properties such as number/size of finite elements in the component. The components would then be exported to the AASHTO analysis engine in a FE model. Spec checks would be performed after the analysis is successfully run.

Non-Standard Gage analysis was not supported in the estimate provided to the TF. The estimate template needs updating for General Preferences. The Contractor mentioned that Frame analysis had not been included in any WP yet.

Tim asked the Contractor to provide the mock-ups as TF directed task so it could be considered for future WPs. TF members agreed and indicated they were looking forward to this potential enhancement.

6b. FE Engine Progress Indicator

The Contractor gave a demonstration of the new progress indicator in the FE analysis engine. FE analyses can take a long time to run and occasionally gave a false impression that the program had stopped running where it was working in the background. The proposed progress indicator would provide feedback on the screen at intervals on the progress of FEA. The Indicator would be released with version 6.5.0.

6c. Curved Girder Diaphragm Wizard

The Contractor provided a summary of the Diaphragm wizard and diaphragm screens (round 3) for curved girders. The Contractor explained the changes in the diaphragm input screens were necessary to accommodate curved girders as in curved girders diaphragm spacings along the left and right girders would be different. The Contractor had added a reference line to define diaphragms. The reference line could be either Superstructure definition line, or left most girder line or right most girder line. The Contractor indicated in the handout that the work plan

budget did not contain time to address comments of TAG in first two rounds of review or proposed changes in the diaphragm wizard and screens. The Contractor was advised by the TF to prepare and submit an estimate. The proposed changes will be forwarded to those TAG members originally making the comments to ensure their comments have been addressed.

6d. Curved Girder Import Utility

The Contractor informed the TF that they had reviewed the import of MDX and Descus files of curved beam analysis. According to the Contractor there were over 500 commands in the MDX and it might not be possible to import all MDX commands in the curved girder module. At the time of meeting the Contractor had not prepared any estimate for import utility.

6e. VI 12908 Fcr Computation For Section With Cover Plates

The Contractor explained the differences in methods to calculate Fcr suggested by CalTrans, ILDOT and CODOT. CalTrans wanted to use total flange thickness as the sum of original flange thickness and cover plate thicknesses with the original flange width. ILDOT wanted to use average width of the original flange and flange plates along with the total thicknesses. CODOT also wanted to use total flange & cover plates thicknesses in the calculations. The Contractor will contact both Caltrans and CODOT to determine whether they would accept ILDOT's proposed solution.

6f. Top 2 Items in Beta TAG Maintenance Bucket

The Contractor provided the estimates for Incident 11958, Revised PS Rating Factor Equation; and Incident 10299 Consolidated PS Section Properties Calculations. Bryan indicated he believed Caltrans was seeking to revise the rating factor equation for both PS and RC and he would investigate after the meeting. The TF gave approval to include 11958, which was also the #1



item in the TAG's Maintenance Bucket ranking, in the 6.5.1 release.

TF also approved to include 10299, which was #5 in the TAG's Maintenance Bucket ranking, in the 6.5.1 release.

TF noted that #2, #3 & #4 requests from the Maintenance Bucket ranking were already included in the Work Plan.

Agenda Item 7: Miscellaneous Items

7a. Support Website "Facelift"

TF discussed re-designing of BrDR website. TF thought the redesign of BrDR website should be a part of AASHTO's rebranding efforts and capital funds should be utilized for website development. TF advised the Contractor to revise the estimate to utilize capital funds for redesigning of website. The Contractor was also advised to keep history of all downloads & updates on the new website as far back as version 6.0.

7b. Software Architecture Update

Architecture Design Work Package Proposal by Anthony Lattanze was shared with the TF as a handout. Discussion continued under agenda item 10a.

7c. Report TAG Update

Amjad gave the update on the Report TAG (RTAG). He informed the TF that the RTAG meeting would be held in the Contractor's office, Pittsburgh, PA, during the week of Beta TAG meeting. It would be one day long meeting. The Contractor and Dean agreed to the proposed time and location of the RTAG meeting. Amjad said he would check with the RTAG members and coordinate with the Contractor and Judy to finalize travel and meeting plans. Amjad also mentioned that he and RTAG would be looking into reports generated by BrDR as well as other load rating programs to develop a scope. The Contractor would be involved in discussions and later to prepare estimates for the TF review. Amjad also indicated about making a

presentation during the UG meeting in Virginia in summer. UG meeting agenda would be finalized during June meeting of the TF.

7d. Status of JIRA Implementation

The Contractor gave demonstration of the JIRA site. Tim mentioned that one of the issues being faced with moving to JIRA was the number of users using JIRA, both on the BrDR side and the BrM side. TF wanted to keep the cost down and would like to keep the number of users within the max limit allowed in current license fee. The Contractor was advised to review the user profiles and propose ideas to keep the number of JIRA users within the maximum allowed numbers.

7e. Email Survey of Demo Version (2012-VO-57)

TF had expressed desire to have a follow up with an evaluation licensee at the conclusion of the evaluation period. Draft of the survey was presented to the TF as a handout. TF agreed with the survey draft.

7f. User Interface Improvements (estimate)

Bryan prepared recommendations for three User Interface (UI) improvements based on NMDOT's document for possible inclusion in Version 6.5. The Contractor prepared an estimate and presented it to the TF.

The Contractor wanted an explanation of item 2, Move Member Loads and Support to below Member Alternative in tree. Bryan explained the issue they were having copying member alternates. The Contractor suggested two alternate methods to accomplish the purpose: 1) add a copy command where you could right click on the Member and copy the Member Loads, Supports and Member Alternatives to another member or 2) add a selection to the Member window to copy all data from another member (loads, supports and alternatives) instead of just linking it to another member. It was pointed out



that moving the Member Loads and supports into the Member Alternatives would eliminate the ability to have multiple Member Alternatives using the same Member Loads and Supports (e.g., steel alternative and concrete alternative) and would require significant GUI and database work.

Bryan also explained the purpose of item 1, display the member loads in the form of a grid, as to make it easy for the user to see if all the loads were properly entered in the model.

The Contractor also needed more information about item 3, Create a new Pedestrian Load tab. The Contractor suggested an alternative method of simply moving the pedestrian load entry from the Member window to the Girder Member Loads window retaining its previous appearance. This would eliminate the need for a folder that would contain a single entry, move all loads together, require less GUI work and no database modification.

Final decisions would be pending until NMDOT could review the proposed alternate methods. The Contractor would review and revise the estimates accordingly.

7g. Catalog Changes

Changes in 2014 Catalog were discussed. TF wanted to keep mentioning former Virtis and Opis in the Catalog for another year. Tim asked the TF about taking out the paragraph BRASS from the catalog and TF agreed. Judy would finalize the Catalog changes and run it through the Contractor and TF.

7h. Merging NSG and 3D Codes (2012-VO-79)

The Contractor wanted a clarification on Action Item 2012-VO-79: if the live load distribution factor calculated during NSG analysis needed to be exported to third party engines. Dean wanted it as KSDOT uses BRASS the engine for load rating. The Contractor informed the TF that NSG

analysis in 3D would be merged in .Net environment.

7i. Beta TAG Staffing

Dean Teal informed the TF that Beta TAG would be ready to start beta testing without delay. It was decided to assemble the Beta TAG during the week of May 6. The Contractor agreed to the date. Dean would confirm with the Beta TAG members and announce it accordingly.

Agenda Item 8: Third Party Issues

Josh Sletten, the third party liaison, is leaving the TF. Therefore, it was decided to cancel the meeting with the third party developers in Salt Lake City. Third party issues would be taken up by the new third party liaison possibly designated in the April 2013 meeting.

Agenda Item 9: User Group

9a. Summary Minutes from August 2012

Meeting

TF would review and approve the Summary Minutes within in one week and inform the Contractor.

9b. Summary Minutes from November 2012

Meeting

TF would review and approve the Summary Minutes within in one week and inform the Contractor.

Agenda Item 10: Work Plan

10a. .NET Discussion and Work Plan

Discussion on .NET environment and modernization of the architecture was combined with discussions on agenda item 7b. The Contractor presented the proposal from Anthony Lattanze and recommended the TF to allow to proceed. TF gave approval to architecture modernization proposal of Mr. Lattanze. The Contractor would revise and update the Work Plan accordingly.



10b. FY 2014 Work Plan

Discussion started on 2014 Work Plan (WP). The Contractor mentioned that the Maintenance, Support & Enhancement (MSE) Plan (Draft 2) was identical to last year's plan. The Contractor inquired about supporting Windows 8 as it was not mentioned in the AASHTO Catalog. Since this WP is for release in 2014, supporting Windows 8 should stay. The Contractor stated that the testing of BridgeWare integration on Windows 8 environment would depend on whether BrDR is supported on Windows 8 system.

On 2.1.7 TM 7 Publications, TF decided to discontinue the quarterly newsletter and only publish annual newsletter in electronic and printed form.

TF approved the MSE Plan as amended. The Contractor would make the suggested revisions in the MSE Plan and submit the final draft to the TF.

The Contractor presented the Project Work Plan for 6.6 Release. The Contractor recommended making FP2, Prestressed Concrete Design Tool, an independent module. PS Design tool would be a new executable written in C# in accordance with AASHTO LRFD Specifications. The tool would use existing AASHTO Spec.-Check module and AASHTO FE engine. The Contractor explained that the Spec-Check module is written in C# and the Contractor anticipated minor changes to make it work with the PS Design tool. FE engine was written in C++ and it would require the Contractor to develop a C# wrapper that would enable the FE engine to be called from C# code.

The PS Design tool would support:

1. PS I-beams currently supported in BrD
2. PS box beams currently supported in BrD
3. Debonded or harped strands
4. Simple Span
5. Continuous spans

The tool would be capable of using beam shapes, materials, etc., from the bridge database, if available, by exporting them from the database

using the export functions currently provided in the BrD. It would use its own XML library of beam shapes, materials, etc., if it would not be available in bridge database. The Contractor was advised to rework FP2 estimates. TF was OK with the rest of the WP.

Judy indicated that since this WP would be start of a new project, it would require a SCOJD review and approval.

FP3, Analysis of Curved Multi-girder Superstructure was presented as an enhancement to Curved girder analysis of FY13 WP since in the FY13 WP, curved girder analysis did not include analysis of lateral bracing in FEA or Crossframe Spec Checking (only member forces). Bryan recommended that "Display Support bearings to help users enter skew" should be added to the bearing work in the previous release as it was related work with a relatively small number of budget hours. There were no changes in FP4, FP5, & FP6 from November 2012 draft.

10c. Future Work Plans

Future work plan discussion was deferred to the April meeting.

10d. Strategic Plan Update

Strategic plan update discussion was deferred to the April meeting.

Agenda Item 11: FHWA Update

The Bridge Opportunity List is a proactive FHWA initiative by the Office of Infrastructure to assess bridge operations safety on those bridges that may pose the greatest safety risk. FHWA has forwarded lists of NHS bridges with superstructure or substructure condition ratings of 3 or less, within each State, to the respective Division Offices. The Divisions Offices have been asked to report back, within 2 months, on the operational status of these bridges and to inquire whether the State's inspection and maintenance practices for these bridges with 'less-than -fair'



condition deficiencies are commensurate with safe operating practices. Some States have no NHS bridges with superstructure or substructure condition ratings of 3 or less, so they may be unaware of this initiative. Approximately 45 States have at least one bridge on this list. The National Highway Institute will be delivering the load rating training course, LRFR for Highway Bridges, Course 130092, in the States of Iowa and New Jersey in the month of March. Please see the National Highway Institute website for times and locations, and to sign up for available seats. FHWA's 7th webinar in a series to promote LRFR and quality load rating practice entitled Application of Computer Software in Bridge Load Rating will be hosted on February 28 between 1:00-4:00 pm EST. This webinar will be followed, in a few months, with a similar titled webinar to allow a total of 6 or 7 engineering software developers to demonstrate the application of their computer software to perform bridge load ratings. AASHTOWare will demonstrate the application of their Bridge Rating software in the February webinar, along with two other developers.

Bridge Preservation initiatives: The FHWA Office of Bridge Technology is developing three self-paced web-based training courses for construction and maintenance personnel. Each course will be approximately 90 minutes in length. FHWA is interested in collecting reference material for the following three topics:

Course 1: Safety During Bridge Preservation Activities,

Course 2: Sealing and Waterproofing Bridge Components, and

Course 3: Coating and Painting Bridge Superstructures.

Two FHWA Bridge Preservation sites are available: One hosts the Bridge Preservation Tool Box -

<http://www.fhwa.dot.gov/bridge/preservation/> and the other hosts the FHWA Bridge Preservation Guide, <http://www.fhwa.dot.gov/bridge/preservation/g>

uide/guide.pdf . Also, FHWA would like to see that the NCHRP report 742 "Communicating the Value of Preservation" is widely distributed. The report can be found at http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_742.pdf.

Agenda Item 12: Marketing / Training

12a. IBC Workshop Possibility

Presentation at the International Bridge Conference (IBC) in Pittsburgh, PA was discussed. Dean volunteered to present BrR (Virtis) at the IBC in June.

Agenda Item 13: Review Action Item list from this meeting

Amjad Waheed read the action items recorded during the meeting for the information of attendees.

Agenda Item 14: TF Executive Session (as needed)

No Executive Session was held.

