BRIDGE AUTOMATED DESIGN AND DRAFTING SOFTWARE

SUMMARY OF AUGUST 2010 REVISIONS - VERSION 3.1.5.0

Since the release of BRADD Version 3.1.4.1, several problem reports and user perfective maintenance requests have been received. This release of BRADD Version 3.1.5.0 contains the following revisions:

1. Metric units are no longer a valid option and have been removed from the BRADD software and documentation. BRADD jobs with SI (Metric) units will no longer be displayed; the option to create a new BRADD job with metric units has been disabled; BRADD metric unit jobs cannot be imported. (VI 3675 and VI 3676)

2. Type 5 approach slabs were added according to BD-628M (July, 2007), Sheet 35 of 35 for integral abutments. Sleeper slabs were added according to Details 16 and 18 in BD-628M (July, 2007), Sheet 27 of 35 for integral abutments. (VI 3660 through VI 3668).

3. The PA Bulb-Tee beam shape was added as a prestressed I-Beam option. (VI 2895)

4. Version 2.3.0.0 of PENNDOT PSLRFD was incorporated into BRADD. (VI 3596)

5. Version 1.8.0.0 of PENNDOT ABLRFD was incorporated into BRADD. (VI 3597)

6. BRADD now supports Windows Vista and Windows 7 operating systems, in addition to Windows XP. (vi:3563)

7. The STRUCTURE PLAN AT THE END OF BEAM detail was updated in accordance to changes made in BD-653M (July, 2007). BRADD was modified to use the 4 1/2" clearance from the bottom flange to the abutment R.F. to prevent clipping of the flange for P/S I-Beams with abutments without a backwall. (VI 3647)

8. A superstructure menu item, "Is Vertical Clearance Less Than 16'-0"", was added to the BRADD input system for P/S I-Beams. The intermediate diaphragms and intermediate diaphragm reinforcement are modified if this option is set to "Yes" in accordance to changes made in BD-655M Sheet 1, via PennDOT e-Notification No.27 (December, 2008) (VI 3691)

9. Various end of slab/diaphragm details were updated in accordance to changes made in BD-656M (July, 2007) (VI 3648)

10. The minimum distance from the beam void to the end of beam and various beam end details were updated for P/S Box Beams in accordance to changes made in BD-661M (July, 2007) (VI 3649)

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11. The BEAM DAP detail for both P/S Box Beams and P/S I-Beams was updated in accordance to changes made in BD-661M (July, 2007) (VI 3650)

12. The quantities detail was updated in accordance to changes made in BC-751M (December, 2008) (VI 3692)

13. The weld labels were modified in the SOLE PLATE and FIXED/EXPANSION BEARING section details in accordance to changes made in BC-755M (December, 2008) (VI 3693)

14. Notes and dimensions were added to the TYPICAL SECTION AT ABUTMENT detail in accordance to changes made in BC-767M (July, 2007) (VI 3651)

15. Beam notch dimensions for box beams were updated in accordance to changes made in BC-775M (July, 2007) (VI 3653)

16. The PLAN view was updated to show cheekwall bumpouts for adjacent box beams with U-wing abutments. (VI 2095)

17. A barrier reinforcement label was added on the Slab Section of integral abutment superstructures. (VI 3562)

18. A beam dapping note was removed from BEAM FABRICATION DETAILS 1 for integral abutment superstructures. (VI 3618)

19. A label was added for reinforcement bar from deck into end diaphragm in TRANSVERSE SLAB REINFORCEMENT PARALLEL TO ABUTMENT section for integral abutments superstructures. (VI 3621)

20. The Intermediate diaphragm detail on the FRAMING PLAN 2 sheet for integral abutment steel girder superstructures was moved to prevent overlapping with the end diaphragm detail. (VI 3634)

21. The log file overhang warning message for integral abutment superstructures was clarified and additional relevant information added. (VI 3671)

22. For integral abutments superstructures, the count/spacing of S3 bars was adjusted (see Section 3.5.1.11). A designer note is now placed when insufficient overhang distance causes S3 bars spacing to become impractical. (VI 3674)

23. The following changes were made to SLAB REINFORCING PLAN, SLAB CORNER EXTENSION, SLAB SECTION for structures with integral abutments: (VI 3695)

- Changed the paving notch width on the SLAB REINFORCING PLAN and SLAB CORNER EXTENSION details to match the actual width.
- Corrected the number and spacing called for the longitudinal reinforcement at overhang.
- Moved the longitudinal flange reinforcement away from girder centerline.
- Added the bottom longitudinal bars at the end of the top flanges.
- Corrected improperly drawn S7 reinforcement.

24. Fixed the intermediate diaphragm and end diaphragm plan views to show the connecting plate for plate girder superstructures or no connecting plate for rolled beam superstructures. The intermediate diaphragm plan was aligned so that CL beams for intermediate and end diaphragms are coincident lines. Moved Note A from Framing Plan 1 to Framing Plan 2 sheet. (VI 3550)

25. The procedure for dapping was modified to improve the process of designing a successful dap. The dapping procedure enumerated in Section 3.2.7.6 of the BRADD User Manual has been revised accordingly. (VI 3627, VI 3492)

26. An 'Invalid Dap Design' error (displayed in the superstructure design controller log file) now results in a design failure. Previously, this error would have resulted in a successful design. (VI 3641)

27. Ensured that DAP DEPTH WARNING messages are not potentially displayed in the superstructure controller design output file for prestressed beam superstructures on integral abutments. (VI 3672)

28. Transverse deck reinforcement bars were fanned at the acute corners for bridges with spread superstructures and skews less than 75 degrees. Previously the transverse reinforcement would extend to the deck corners with bars possibly too short to properly support the deck. (VI 2624)

29. Deck corners on the SLAB REINFORCING PLAN, BARRIER PLAN, and BARRIER DETAILs were updated to match the dimensions shown in the ACUTE SLAB CORNER CUTOFF detail. (VI 2625)

30. SLAB PLAN, BARRIER AND SLAB, LEFT and RIGHT BARRIER, and FRAMING PLAN details were modified to match abutment corners. (VI 2711)

31. The BRADD Users Manual was updated to document that the end diaphragm located in the slab overhang region is included in the dead load calculations of end diaphragm weight for prestressed I-beam, spread box beam and steel beam superstructures. The calculations in BRADD were revised to include this change for steel beams on abutments without backwalls. The calculations were already being made for prestressed superstructures, so no program revisions to the prestressed portion of the program were required. (VI 2898)

32. For rolled beam superstructures only, a camber note was added to the Camber table when the total camber is less than the AISC tolerance. (VI 3141)

33. For new BRADD jobs, the footing top and bottom parallel covers were changed from 4.0" and 3.0" to both using the DEFAULT cover. For pile footing design runs, the parallel cover was set equal to the sum of the 'Maximum Diameter of Footing Bars' setting and the perpendicular cover. (VI 3391)

34. Reinforcement labeling was added to SECTION C-C and offset in the detail to more easily distinguish different sets of abutment reinforcement. (VI 3414)

35. A table was added displaying finished deck grade elevations over the centerline of each girder at every tenth point starting from the centerline of bearing at abutment 1 to the centerline of bearing at abutment 2. (VI 3463)

36. BRADD was verified to work correctly with Bentley PowerDraft V8i (SELECTSeries 1) and MicroStation V8i (SELECTSeries 1) (version 08.11.07.xx). A problem with 08.11.05.xx versions of Bentley products prevents BRADD from creating design files correctly when running with those versions. (VI 3494)

37. A Reinforcement label in the rear face of the abutment stem section detail was moved to point to the correct reinforcement bar. (VI 3517)

38. A column, LEVEL OVERHANG EDGE THICKNESS, was added to the 'Edge of Thickness and Elevation' output table to display the edge of deck thickness based on the Section 3.2.8 calculations below. This is in addition to the existing column now called SLOPED OVERHANG EDGE THICKNESS displaying the deck thickness calculations based on Section 3.2.9. (VI 3526)

39. A graphical image representing deck cross section(s) was added to the Cross Section menu. The added image shows current horizontal dimensions and slopes for the normal crown station and full superelevation station, if the bridge is superelevated. (VI 3527)

40. A correction was made to the calculated number of longitudinal bars called out in the overhang of the SLAB SECTION detail. (VI 3542)

41. A correction was made to the calculation of the horizontal blockout dimension at the ends of the deck for steel superstructures and the TYPICAL SECTION AT ABUTMENTS 1 & 2 detail was updated to show the correct blockout dimension. (VI 3545)

42. A correction was made for the horizontal abutment reinforcement. In cases of wide abutments, laps were omitted and reinforcement lengths were exceeding the maximum length of reinforcement according to DM-4 Section 5.4.3.4P. The laps are now displayed as needed and checks for maximum reinforcement lengths have been added. (VI 3624)

43. When clicking the Generate drawings button a new window was added to BRADD to display the list of files that will be deleted if previous drawings exist. (VI 3637)

44. A problem was corrected with reinforcement that was being drawn outside of the concrete outlines on the TYPICAL BARRIER PLAN. (VI 3638)

45. BRADD was displaying an erroneous input warning for wingwall 1 when the wingwall 2 length exceeded 7'-8" for integral abutment superstructures with beams whose depths were less than 5'-6". BRADD was modified to display the warning only when wingwall 1 length exceeds the maximum limit as specified in the 'Wingwall Length' input menus. (VI 3639)

46. BRADD prevented the user from accepting the Abutment Rock Criteria menu for a new job if the Sliding Phi Factor option was disabled (not defined). The menu was fixed so that the menu now can be accepted whether or not the option is disabled. (VI 3643)

47. The warning displayed in the Adjacent Box Beam Superstructure controller log file when the bearing seat width is greater than the beam spacing was enhanced to show both values used in the comparison. The bearing seat width used previously was computed along the skew and rounded up to the nearest inch. The bearing seat width calculation was changed to round to the nearest quarter inch. (VI 3644)

48. A problem preventing a successful design for adjacent box beam superstructures with transverse beam slopes was fixed. The problem would cause the deck thickness to oscillate back and forth indefinitely, eventually causing the superstructure design to fail. (VI 3646)

49. BRADD was corrected to eliminate a crash when trying to import files containing unexpected characters. The BRADD Import function was changed to ignore imported files that are not part of a typical BRADD project. (VI 3669)

50. Removed Type of Footing, Type of Wingwalls, Automatic Wingwall Geometry, and Abutment Staged Construction from Job description display for jobs with integral abutments. (VI 3670)

51. The calculation of the W.P. coordinates at the end of the U-wing for when the 10 degree flare back occurs was fixed, now taking into account the difference between the end of the footing and the end of the wingwall flared back. The 1/2" flush expansion joint dimension was corrected in the WINGWALL PLAN. (VI 3702)

52. Corrected the criteria BRADD used to determine whether to display the OVERHANG WARNING message in the Superstructure Controller Design output file for spread box girders superstructures. The warning message also was revised to provide more explicit information. (VI 3694)

53. The calculation of the W.P. coordinates and the W.P. stations & offsets at the ends of U-wings for curved geometry that is input as a negative radius (curve origin located to the left of the roadway, looking ahead stations) has been corrected. The W.P. offsets for curved geometry that is input as a negative radius have been corrected so that negative offsets are to the left of the C.L. Roadway, looking ahead stations. (VI 3872)