

PENNDOT e-Notification



Bureau of Design Engineering Computing Management Division

BRADD

No. 017

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Release of Version 3.1.3.0

PennDOT's Bridge Automated Design and Drafting Software (BRADD) has been revised as described in the attached Summary of June 2008 Revisions - Version 3.1.3.0.

This version of BRADD will automatically be distributed as a free update to all existing licensees of the BRADD Software.

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SUMMARY OF JUNE 2008 REVISIONS - VERSION 3.1.3.0

Since the release of BRADD Version 3.1.2.0, several problem reports and user perfective maintenance requests have been received. This release of BRADD Version 3.1.3.0 contains the following revisions:

1. BRADD is no longer tested or verified for jobs run in metric units. The user can still run metric unit jobs in BRADD but there is no guarantee that the runs will be successful.
2. Added the ability to design and draft a superstructure only. This functionality is implemented by selecting an "Abutment for superstructure-only run" for the abutment type at each abutment, and completing the necessary input on those abutment menus. Verification Example 2 is now a superstructure only design and drafting example.(VI 1518)
3. Version 1.6.0.0 of the PENNDOT ABLRFD program was implemented. (VI 3039) The following decisions were incorporated: (VI 3036)
 - a. Exposure input value changed from [N]ormal / [S]evere to class 1 or 2
 - b. New input items 'User Requested Minimum Bar Spacing' and 'Bar Spacing Increment' on abutment material menu with defaults set to 6" and 3".
 - c. New input items for user defined bearings: 'Bearing Friction Load Type' and 'Bearing Friction Coefficient'
4. Version 1.5.0.0 of the PENNDOT STLRFD program was implemented. The following decisions were incorporated: (VI 3036)
 - a. BRADD now allows the user to select Live Load Options 'D' and 'E' in addition to the previously available option 'A', which is the default input value.
5. Version 2.1.0.0 of the PENNDOT PSLRFD program was implemented. (VI 2894)
 - a. BRADD now allows the user to select Live Load Options 'D' and 'E' in addition to the previously available option 'A', which is the default input value.
6. Disabled the functionality of channel beams in BRADD as per SOL 431-06-01 and as directed by the Chief Bridge Engineer. (VI 3072)
7. Removed non-composite adjacent beams from BRADD as per SOL 431-06-01 and as directed by the Chief Bridge Engineer. (VI 3073)

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8. Converted the BRADD GUI to be compiled using VB.NET. (VI 3035)
9. Provide an analysis input file and output file for all critically designed beam. (VI 2666)
10. Added the creation of ABLRFD analysis files for running outside of BRADD. (VI 2900)
11. Updated to the July, 2006 version of the BC/BD standards and added them to the BRADD 'Help' menu. (VI 3057)
12. Modified BRADD to implement the deck design procedure in BRADD when there are sound barrier loads input by the user. Implemented procedure according to Note 28 of page 1 of 10 of BD-601M, dated July, 2006. (E-Notification No. 014, VI 2842)
13. Replaced the 'Zero Sheet Notes' sheets with a 'Designer Checklist' spreadsheet generated in Microsoft Excel. Added a designer responsibility message to the file. (VI 3009, VI 3015)
14. Updated the BRADD 'Supplemental Drawing List' in accordance with changes made in the PENNDOT BC/BD standards, July 2006. (VI 3057)
15. Added new input items to provide a dapping option in BRADD for cases when the user chooses a user defined bearing. This option will design the beams with a user specified design dap and compute elevations with user specified dap depths for each beam. (VI 2830)
16. Updated BRADD to show workpoints for abutment corner locations for adjacent beams. (VI 1814, VI 2140)
17. Corrected issue to show two workpoints on the wingwall plans when wingwall plans are shown separately from the abutment plans. (VI 2138)
18. Corrected miscellaneous errors caused by invalid file path entries in the GUI. (VI 2603)
19. Wing designations and panel labels have been placed on abutment plans. (VI 2674)
20. Updated BRADD with block-out detailing as per BD-611M (Sheet 1 of 2) dated July, 2005. (VI 2691)
21. Provided comprehensive Dapping Output in the superstructure controller design output file. (VI 2772)
22. Modified dimensions in Sole Plate table to be rounded to 0.01 inch instead of 1/32nds of an inch. (VI 2845)
23. Modified messages in the status field on the Design/Quantities tab in BRADD to be more descriptive. (VI 2864)
24. Corrected minor issues in the weephole detail to comply with BD-621M (July 2005). (VI 2888)

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25. Added a note to abutment elevation detail containing a list of rebars which need to be bent at top of abutment. (VI 2904)
26. Added an additional check to compute the design overhang value based on the maximum of the average overhang or 2/3 of the difference between minimum and maximum overhangs for spread superstructures with a horizontal curve. (VI 2914)
27. Corrected an error in the slab section detail to proper display the longitudinal deck reinforcement at the outer beams. (VI 2917)
28. For P/S beams, added the word MINIMUM to the 1" (25 mm) distance from the bottom of the overhang to the top outer corner of the fascia girder on the typical section sheet to comply with BD-655M (Sheet 2 of 2) dated July, 2006. (VI 2943)
29. Corrected drafting issues for plank beams in order to comply with BD-661M (July 2006). (VI 2944)
30. Adjusted lap lengths to be scaled consistently on the concrete diaphragm details. (VI 2929)
31. Improved error message in abutment quantity calculation for u-wing abutments with overlapping heel projections of both wingwalls. (VI 2950)
32. For adjacent box beams: Corrected drawing issue related to abutment plan and elevation not lining up. (VI 2969)
33. Modified the comment lines in the output files to provide additional information specific to the program run. For substructure this includes information about abutment, wingwalls and panel numbers, and for superstructures girder number, interior/exterior girder and analysis/design run. (VI 2982)
34. Changed weight of extension and dimension lines in drawings produced by BRADD to a weight of 0 to comply with DM-3, page 13-4. (VI 2983)
35. Added a feature to BRADD when reviewing files to enable copying of output files. (VI 3008)
36. Changed BRADD so that the minimum roadway width (curb-to-curb) allowed is 13 feet (3950 mm) instead of the previous 18 feet (5500 mm). (VI 3025)
37. Corrected an installation problem that excluded a file needed to properly run BRADD (RoboEx32.dll). (VI 3030)
38. Changed BRADD to only place the shear block weephole and notes for abutments with backwall to comply with the changes in BD-655M (Sheet 1 of 2) dated July, 2006. (VI 3045)

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39. Removed cheekwall reinforcement from the abutment elevation view, added section marks (EL, ER) to the corner details, and corrected section C-C's detailing of the inside corner. (VI 3070)
40. Updated the existing "Acute slab corner cut-off detail" to include an "Obtuse slab corner extension detail". (VI 3071)
41. Resolved problem with a "duplicate definition of block ARROW" on the diaphragm detail sheet in a DXF file. (VI 3146)
42. Resolved an error which occurred while trying to store a bearing seat width which was greater than the value allowed in the BRADD database. Also added a check and issued a warning message if the bearing seat width is greater than the beam spacing. (VI 3153)
43. Corrected calculation for the right side edge thickness for adjacent box beams to properly take into account the beam slope which can be positive or negative. (VI 3160)
44. Changed beam cope from right angle to a radius as shown in BD-611M (July 2005). (VI 3069)
45. Resolved issues with incorrect C.L. Beam Offset value on the Bearing Seat detail. Also modified the callout on the abutment plan detail to be the value at the top of bearing seat (VI 3171)
46. Corrected a stack dump error in BRADD which occurred in the bearing seat calculation when the number of beams was equal to 20. (VI 3174)
47. Added new input item to abutment loading to allow the user to input the braking force and added a detailed output of the braking force calculation to the abutment controller log file for when BRADD calculates the force. See Chapter 3 of this manual for detailed description. (VI 3031)
48. Corrected calculation of total opening of deck joint so that the total opening values at 68 degrees F (20 degree C) do not have any adjustments applied. (VI 3032)
49. Verified that BRADD can support MicroStation V8, XM Edition. (VI 3017)
50. Changes were made in BRADD to call out the seismic tie bars on the abutment footing plan. (VI 3041)
51. Added new detail to BRADD showing the typical clipped flange reinforcement as per BD-662M (Sheet 2 of 3) dated July, 2006. (VI 3052)
52. Modified the volume of concrete calculation for the stay-in-place deck forms to use the surface area density as recommended by DM-4. (VI 3053)
53. Added Drafting Note for Superstructure Sheets about Modified Deflection Joints in the barrier. (VI 3066)

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54. Updated the documentation for previous changes to dowel requirements for adjacent beams to comply with BD-651M (Sheet 2 of 2) dated July, 2005. (VI 2695)
55. Corrected a problem with a discrepancy between the distance given for the work points on the Stake Out Plan and on the Wing Plan drawings. (VI 2712, VI 3064)
56. Added new input items for steel superstructures to enter cheekwall width in order to calculate bar lengths and quantities and correctly draw concrete end diaphragm on abutments with backwalls in accordance with BD-611M (July 2005). (VI 2800)
57. Added bearing stiffeners callout to the beam elevation detail on the steel beam sheet. (VI 3003)
58. Added note to steel girder details sheet that bearing stiffeners and cross frames are omitted for clarity. (VI 3005)
59. Adjusted pile spacing in BRADD to better match the spacing computed by the BRADD ABLRFD output. See Chapter 3 of this manual for a detailed description. (VI 3010)
60. Added detailing to the wingwall elevation view to represent when the wingwall flare back occurs. (VI 3067)
61. Corrected note for Plate Girders, Rolled Beams and P/S I-Beams in the Superstructure Controller Design Output File to state that the minimum flange width is used for the deck design. Note previously incorrectly referenced the maximum flange width. (VI 3063)
62. Updated Chapter 9 of this manual with information regarding creating a BRADD Export file. Note, this file should be created and sent electronically with each problem report submitted. (VI 3033)
63. Added information to this manual regarding limitations of the staged construction option of BRADD (VI 3075)
64. Added information to this manual regarding the design height calculation in BRADD for user defined superstructures. (VI 3084)
65. Added information about how BRADD rounds values to Chapter 7 of this manual. (VI 3065)
66. Corrected various problems in the BRADD Users Manual and Help. (VI 2719, VI 2720, VI 2995, VI 2996, VI 3012, VI 3013, VI 3014, VI 3074, VI 3076, VI 3081)
67. Modified the calculation for number of rebars in the abutment elevation view to use a more accurate concrete cover value. (VI 2970)

68. For adjacent superstructures with u-wings, updated barmarks shown in the abutment elevation section C-C view and cheekwall section view ER-ER. A new group of bars is shown for the area under the backwall barrier so that they can be detailed longer and have the appropriate lap length. (VI 2974)
69. Added a check for the strand size for plank beams. See PSLRFD SCA and SCD command in Chapter 6 of this manual for more information. (VI 2976)
70. Modified BRADD to consolidate output messages regarding the overhang check for spread beams. (VI 2998)
71. Corrected the bottom of overhang to be sloped correctly for typical sidewalks on the typical section detail. Changed the overhang from level to sloped for cases without sidewalk if sloping is required. These changes result in the scaled thickness of the overhang matching with the dimension shown on the typical section sheet. (VI 3000)
72. When computing framing plan calculations for spread beams, corrected the calculation for the distance between centerlines of fascia beams during the flared beam design to avoid an overestimate of the overhang. (VI 3001)
73. Corrected an overflow error that caused BRADD to crash during the abutment 2 quantities process. (VI 3020)
74. Corrected error so the structural backfill is calculated even when a fill condition is present in the abutments. (VI 3028)
75. For spread box beams, updated location of rebars on typical beam section detail to match BD-661 (July 2006), Sheet 6 of 7. (VI 3029)
76. Corrected problem with stack dump when trying to do dapping when the dap depth exceeded 1.5 inches. (VI 3038)
77. Added a new note to the 'Designer Checklist' spreadsheet to comply with BD-655M (Sheet 2 of 2) dated July, 2006 regarding reinforcement. (VI 3046, VI 2751)
78. For full depth diaphragm at abutment with backwall (fixed end), added a dimension for reinforcement cover near top of diaphragm and modified calculation of rebar in BRADD to use this new cover as per BD-656M (Sheet 1 of 4) dated July, 2006. (VI 3047)
79. For diaphragms with an abutment without a backwall, updated diaphragm width and position of the dowel to comply with the changes in BD-656M (Sheet 2 of 4) dated July, 2006. (VI 3048)

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80. Updated BRADD for changes in the reinforcement at end of P/S box beam as per BD-661M dated July, 2006. (VI 3049)
81. Added note for fabricator to P/S beam detail sheet as per BD-662M (Sheet 1 of 3) dated July, 2006. (VI 3050)
82. Modified calculations to ensure all bars in the footings of the abutment and wingwalls use 2" (50 mm) for the cover on the vertical face of the toe and heel. (VI 3056)
83. Modified BRADD to redesign beams when the final designed dap thickness does not match the initial dap thickness. Added a check for when dapping is not required and the dap thickness is reset to zero. (VI 3060, VI 3061)
84. Corrected a fatal error in BRADD when running the abutment quantities due to user input values of zero for the distance from the profile grade to the right water table break. (VI 3062)
85. Removed all references to SOL 431-06-01 from the BRADD help and 'Designer Checklist' spreadsheet. (VI 3165)
86. Corrected the dimension of the flare back on the safety wing. (VI 3139)
87. Subtracted the distance due to the beam seat slope from the length of bars in the front face of the abutment stem. (VI 3138)
88. Revised remarks shown in the reinforcement bar chart for varying bar lengths in the abutment footing. (VI 3138)
89. Modified the setting of wingwall values so that the user is required to enter new values when switching from using automatic wingwall generation to manual wingwall input. (VI 3116)
90. Corrected the calculation and the callouts on the detail for the bursting zone reinforcement to account for the additional distance needed due to the skew. (VI 3159)
91. Added note stating that the corner reinforcement is not shown on the elevation view for clarity. (VI 3136, VI 3070)
92. Added a note to the 'Designer Checklist' spreadsheet to address the Expansion and Skew Detail given on BC-767M (Sheet 1 of 5) dated July, 2006. (VI 3043)