

# PENNDOT e-Notification

Bureau of Information Systems  
Application Development Division



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## CBA

No. 001  
May 7, 2007

## Release of Version 3.6.0.0

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The Department's Continuous Bridge Analysis Program (CBA) has been revised as described on the attached Summary of February 2007 Revisions – Version 3.6.0.0.

The new program has been placed on PENNDOT servers for use by the Districts. Consultants and others, who have a current license agreement for CBA Version 3.5, can obtain the updated version for a license update fee of \$50 for private organizations, local governmental agencies, and educational institutions. Updates for CBA Version 3.1 to Version 3.4 will require an update fee of \$100 for private organizations, local governmental agencies, and educational institutions. Updates for CBA Version 2.0 to Version 2.5 will require an update fee of \$150 for private organizations and \$100 (not \$150) for local governmental agencies and educational institutions.. No update fee is required for Federal and State Transportation Agencies. The forms for Software Update Request and Request for PennDOT's Engineering Software License can be downloaded from the web site at <http://penndot.engrprograms.com>.

Please direct any questions concerning the above to:

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Attachment

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## **SUMMARY OF FEBRUARY 2007 REVISIONS - VERSION 3.6.0.0**

Since the release of CBA Version 3.5.0.7 several revision requests and user requested enhancements have been received. This release of CBA Version 3.6.0.0 contains the following revisions and enhancements.

### **General Revisions**

1. The first axle of the ML-80 loading was changed from 13.7 to 13.68 (U.S. Units) to be consistent with all of the other PENNDOT programs that use this loading (Request 008).
2. The maximum number of spans has been increased from 20 to 50 (Request 014).
3. The maximum number of axles for a special live load has been increased from 24 to 80 (Request 015).
4. Add the capability to analyze a problem with elastic supports (Request 016).
5. CBA now calculates moment and shear values at intermediate user defined analysis points using influence lines instead of using interpolations based on the results at twentieth points (Request 017).
6. When reaction distribution factors are entered for supports, CBA will use them instead of the shear distribution factors. This will allow a skew correction factor to be applied for shear but not reaction in the same run. Also, a more accurate factor may now be entered for interior supports between spans of unequal length (Request 023).
7. Add the capability to analyze a special live load using the AASHTO Standard Specifications. A new input item STD was added to indicate that the special live load should be analyzed as a vehicle load or a lane load, whichever governs. The standard lane load consists of a uniform load plus one or two concentrated loads (Request 028).

### **Program Malfunctions**

8. A problem was corrected where a 20 span job was causing an error because the program was trying to access a support beyond the maximum number of supports (Request 010).

9. A problem was corrected with the way CBA accessed some values for a Floorbeam. This was causing an error and the program would abnormally end (Request 011).
10. A problem was corrected where the program was sometimes reporting erroneous shear values when a concentrated load was applied exactly on an analysis point just to the left of a user defined analysis point (Request 012).
11. CBA was producing inconsistent results when a concentrated dead load was applied exactly at a twentieth point. This sometimes caused effects of equal magnitude but opposite sign. The program logic was changed to consistently use the second value but with the sign based on the sign of the concentrated load (Request 013).
12. A problem was corrected where the program was sometimes ending prematurely without returning control back to the program that was calling CBA as an engine (Request 021).
13. CBA now uses the same loading conditions for calculating both the rotations and the deflections. Previously, the rotations were calculated using the same loading conditions used for moments (Request 024).
14. Make sure that all default Live Load Distribution Factors are set equal to 1.0. When left blank, the program was sometimes using 0.0 (Request 027).
15. A problem was corrected where the program was not printing the live load deflection code when multiple user defined analysis points exist between a support and the first 20th point (Request 029).

### **Input Revisions**

16. Add new input for support spring constants for use with elastic supports (Request 016).
17. Add the capability to input reaction distribution factors at supports (Request 023).
18. Add a new input option to indicate that a special live load should be analyzed based on the AASHTO Standard Specifications. The input item STD was added to the Project Identification input data (Request 028).

## **Output Revisions**

19. An option was added so that the standard output may be sent to a temporary output file when CBA is called as an engine from another program (Request 018).
20. The program was corrected to make sure that all user defined analysis points are printed when the Analysis Points input item is "09", even when the user defined point falls on a twentieth point (Request 019).

## **Programming Revisions**

21. The program was converted from the Compaq Visual Fortran Compiler 6.6 to the Intel Visual Fortran Compiler 9.1.034 (Request 009).
22. Avoid an error caused when a job contained the maximum number of spans. A combined program check needed to be split into two separate checks because of the difference in the way the new Intel Fortran Compiler processes the code (Request 022).

## **User Manual Revisions**

23. Chapter 3 was enhanced to include a more detailed description of the Modified Flexibility Method and expanded to include figures and information concerning elastic supports (Request 016).
24. A new section was added to Chapter 5 for the description of the new input for Support Spring Constants (Request 016).
25. The new input field STD was added to the Project Identification data with appropriate descriptions and changes to the corresponding input forms (Request 028).