

# PENNDOT e-Notification

Bureau of Design  
Engineering Computing Management Division



## BRADD

No. 006

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**Problem with Shear Block Length and  
Problem with Total Abutment Design Reaction for 4  
Beam Spread Superstructures**

The following problems were discovered and fixed during the testing for the pending release of BRADD Version 3.1.1.0. These problems must be manually corrected by Designers using BRADD Version 3.1.0.2.

### Shear Block Length Calculation Problem

#### Problem Statement:

The shear block length computed by BRADD Version 3.1.0.2 is too large for skewed bridges. The old calculation as shown in Section 3.4.5.2 of the BRADD Users Manual is:

$$L = (\text{Beam Spacing}) - (\text{Bottom Flange Width}) - 2" \quad (US)$$

$$L = (\text{Beam Spacing}) - (\text{Bottom Flange Width}) - 50 \text{ mm} \quad (SI)$$

(Note: 2" (50 mm) for 2 gaps for placement of neoprene, refer to BC-788M)

W = distance from the front face of the abutment to the end of the beam on the acute side (or 12" (300 mm), whichever is greater).

The beam spacing is along the centerline of bearing. However, the bottom flange width and 1" neoprene are perpendicular to the centerline of beam.

#### Problem Resolution:

The new calculation is:

$$L = (\text{Beam Spacing}) - \frac{(\text{Bottom Flange Width} + 2")}{\text{SIN}(\text{Angle})} \quad (US)$$

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$$L = (\text{Beam Spacing}) - \frac{(\text{Bottom Flange Width} + 50 \text{ mm})}{\text{SIN}(\text{Angle})} \quad (\text{SI})$$

where:

Beam Spacing	= Skewed beam spacing along center line of bearing
Bottom Flange Width	= Bottom flange width of beam
2" (50 mm)	= 2 gaps for placement of neoprene, refer to BC-788M
Angle	= Average beam angle - acute angle between center line of bearing and beam

The Designer must modify the shear block details and correct the rebar lengths in the reinforcement schedule.

## **Total Abutment Design Reaction for 4 Beam Spread Superstructures Problem**

### **Problem Statement:**

The total abutment design reaction computed by BRADD Version 3.1.0.2 for Spread Superstructures with 4 beams has a problem. Instead of taking the reaction of all 4 girders, only the reactions from 3 girders is considered.

### **Problem Resolution:**

The Designer must run the standalone ABLRFD program with the correct value for the reactions and then modify the BRADD generated drawings accordingly.

Please direct any questions to:

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