

To Office: Bridges & Structures

Date: January 14, 2003

Attention: All Employees

Ref. No.: 521.1

From: Gary Novey

Office: Bridges and Structures

Subject: MM No. 77 Changes to new BTC and BTB Beams

Based on discussions with the Iowa Association of Prestressed Concrete Manufacturers and the experience of using the new bulb tee sections on two bridges on I-235, the following changes have been made to the new bulb tee standards (BTC, BTCM, BTB, and BTDM) and related two span standards.

1. Top flange width:

To reduce beam weight the width of the top flange was reduced from 48 inches to 34 inches. See attached sheet showing modified sections.

2. Top flange edge bars (5c1 and 5c4):

Because of changes in the AASHTO LRFD specifications and the use of the narrower flange width, the top flange edge bars (5c1 and 5c4) were eliminated.

3. Block out Detail:

The block out detail was eliminated and the flange width will be constant along the entire length of the beam.

4. Epoxy Coating of Composite Stirrups (5b2 and 6b3):

To improve the corrosion resistances of the concrete deck the composite stirrups (5b2 and 6b3) will be epoxy coated.

5. Beam Economy (Span Length and Spacing):

Because of the higher cost of the BTC and BTB, the decision was made to use a minimum beam spacing of 8.25 ft. for the beam standard lengths. This will allow the number of beam lines shown on our typical bridge cross section to be reduced. Using the 8.25 foot beam spacing as a limit, the maximum span length the office will show on the standards will be 115 feet for the BTC section and 130 feet for the BTB section. If the need arises for longer spans, the office will consider developing a 63 inch deep section (BTE).

In addition, because of the narrow beam spacing of the LXD 120 and problems with sweep, we will be dropping it from the LXD standards once the new BTB is released.

6. Use on I-235:

The revisions described above will be used on bridges that are currently under design for I-235. Updated copies of the metric beam sheets have been forwarded to consultants that are preparing plans using the new bulb tee sections.

7. Two Span Standards:

WHKS will be revising the 2 span standards to take into account the changes. To improve the economy they will be increasing the beam spacing and eliminating one beam line per cross section. Only the BTD will be used in the standards and the maximum span used will be 130 feet.

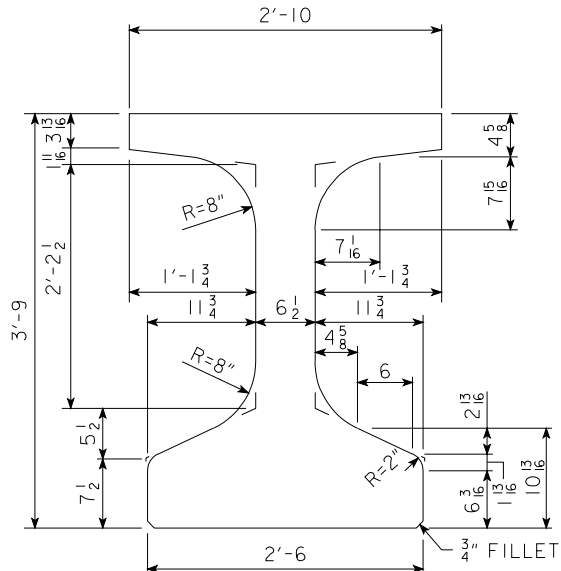
8. Release of Bulb Tee Standards:

The standards for the BTC and BTD are currently being revised to take into account the changes described above, and will be released after they have been reviewed.

GAN/dgb/jw

AREA = 691.8 in<sup>2</sup>  
 $\bar{y}_b = 20.74$  in.  
 I = 178,971 in<sup>4</sup>

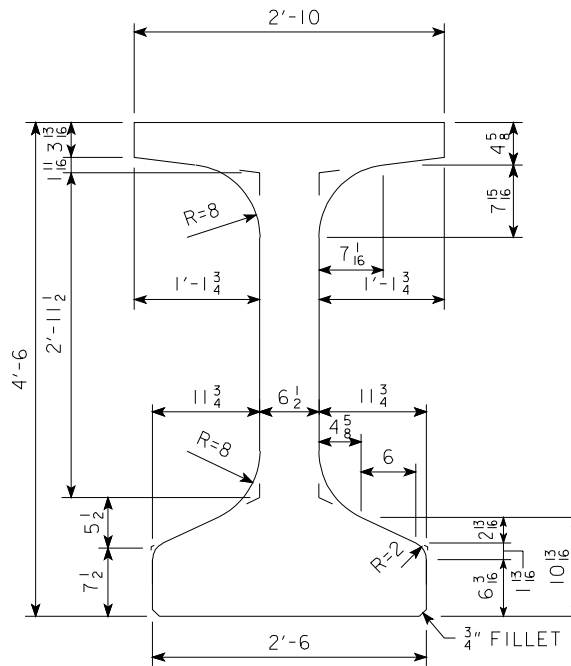
BEAM SECTION  
PROPERTIES



BTC BEAM CROSS  
SECTION

AREA = 748.8 in<sup>2</sup>  
 $\bar{y}_b = 24.64$  in.  
 I = 285,860 in<sup>4</sup>

BEAM SECTION  
PROPERTIES



BTD BEAM CROSS  
SECTION