

IOWA DEPARTMENT OF TRANSPORTATION

To Office: Bridges and Structures

Date: August 28, 2002

Attention: All Employees

Ref. No.: 521.2

From: Gary Novey

Office: Bridges and Structures

Subject: MM No. 62 (Beam Line Haunch Elevations for PPCB and Steel Girder Bridges)

In order to aid field personnel in determining haunch thickness for setting the slab formwork, the Bridge Office will provide "Beam Line Haunch" (BLH) elevations along each beam line. These BLH elevations will be in addition to and will coincide with the top of slab elevations, which we currently place on our plans at intervals of 8' (2.4m) to 10' (3.0m).

BLH elevations are calculated as illustrated below:

255.743	Finished top of slab elevation at CL top flange
<u>- 0.200m</u>	Slab thickness
255.543	Finished bottom of slab elevation at CL top flange
<u>+ 0.024m</u>	Theoretical dead load deflection due to weight of slab and diaphragm (*)
255.567	BLH Elevation at CL top flange (prior to forming slab)

* Office policy is to include deflections due to the diaphragm(s) although this is somewhat arbitrary because they are typically minor, however it is likely that diaphragms will be in place before the beam top elevations are shot.

Field personnel will shoot elevations along the top of the erected beams at the same intervals as provided on the plans. The field shots will be subtracted from the BLH elevations in order to determine the haunch. Calculations are illustrated below:

255.567	BLH elevation at CL top flange (prior to forming slab)
<u>-255.549</u>	Top of beam elevation shot in field (prior to forming slab, diaphragms in place)
0.018m	Field haunch thickness at CL top flange to aid in setting forms

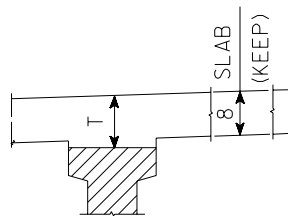
Details for incorporating BLH elevations in the plans are illustrated on the following sheets. Also included is the "Miscellaneous Data Table". The table will include the anticipated slab (and diaphragm) deflections, cross slope adjustments, and the allowable field haunch. The criteria for calculating the allowable field haunch are given below. The criteria below should not be confused with the haunch design criteria requirements as given in the Bridge Design Manual. Designers should still base their beam seat elevations on the haunch design criteria given in the Bridge Design Manual.

- A. Minimum allowable field haunches at the centerline of the top flange shall be based on:
 1. The maximum allowable embedment of the shear connectors into the standard 8" (200mm) thick slab is 5" (125mm) for PPCB and steel girder bridges.

2. A maximum embedment of 1/2" (15mm) at the edge of the top flange for PPCB and steel girder bridges.
- B. Maximum allowable field haunches at the centerline of the top flange shall be based on a 2.5" (60mm) minimum allowable embedment of the shear connectors into the slab.

Even though the theoretical deflection for exterior beams may be different from interior beams, office policy will continue to show only deflection data for interior girder lines.

For PPCB bridges, the "Slab Thickness Detail" and corresponding note [which are usually placed near the "Beam Camber Data" and "Slab Thickness At Beams (T)"] shall be modified as shown below when BLH elevations are included in the plans.

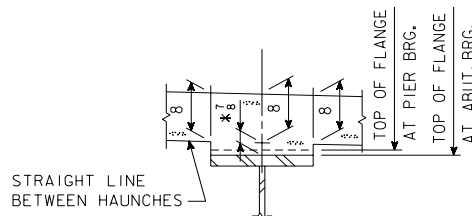


SLAB THICKNESS DETAILS

NOTE: THE SLAB THICKNESS (T) AT BEAMS IS BASED ON THE ANTICIPATED BEAM CAMBER AND DEFLECTIONS. THESE VALUES ARE USED BY THE DESIGNER TO SET BEAM ELEVATIONS AND ESTIMATE CONCRETE QUANTITIES. REFER TO HAUNCH DATA DETAIL SHEET FOR ADDITIONAL INFORMATION TO AID THE CONTRACTOR IN SETTING THE FIELD HAUNCHES REQUIRED FOR CONSTRUCTION.

When BLH elevation are included for steel girder bridges continue to show the "Dead Load Deflection Diagram" and "Haunch Thickening Diagram along Centerline of Girder" as well as the "Girder as Fabricated and Erected" diagram.

Modify the note associated with the typical slab and haunch details as shown below.



TYP. SLAB & HAUNCH DETAIL

* THE HAUNCH DIMENSION SHOWN IS THE NOMINAL HAUNCH DIMENSION NEAR THE ABUTMENT BEARINGS, AND IS USED AS A BASIS ALONG WITH THE DEAD LOAD DEFLECTION AND GIRDER PARAMETERS TO DETERMINE THE THEORETICAL HAUNCH THICKENING DIAGRAM. THIS HAUNCH THICKENING DIAGRAM IS USED BY THE DESIGNER TO SET BRIDGE SEAT ELEVATIONS AND ESTIMATE CONCRETE QUANTITIES. REFER TO THE HAUNCH DATA DETAIL SHEET FOR ADDITIONAL INFORMATION TO AID THE CONTRACTOR IN SETTING THE FIELD HAUNCHES REQUIRED FOR CONSTRUCTION.

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This information shall be provided on all plans beginning with the March 2003 letting.

Attached is an example of a Haunch Data Detail sheet for a PPCB bridge. A similar sheet will be developed when detailing a continuous welded girder bridge. Location spacings shall be modified to account for splice locations and notes shall be modified to account for variable top flange thickness and splice plates.

GAN:dgb:jw

