

IOWA DEPARTMENT OF TRANSPORTATION

To Office Bridges and Structures

Date August 4, 2005

Attention All Employees

Ref No. 521.1

From Gary Novey

Office Bridges and Structures

Subject: Method's Memo No. 115 (Revised Haunch Policies)

With the release of Bridge Design Manual 5.3 Haunches, the following haunch policies have been revised for prestressed concrete beams (PPCB) and continuous welded plate girders (CWPG).

1. Revisions to MM No. 62 (Beam Line Haunch Elevations for PPCB and Steel Girder Bridges)

The new office policy has set the minimum field clear distance from the top of the shear reinforcement to the top of slab at 2½ inches (65 mm). Because of this new policy, the maximum allowable embedment of shear studs or reinforcement into a standard 8-inch (200 mm) deck has been revised from 5 inches (125 mm) to 5½ inches (140 mm).

The minimum embedment for shear reinforcement has been revised from 2 ½ inches (65 mm) to 2 inches (50 mm) for CWPG per AASHTO specifications. Minimum embedment for the PPCB shall continue to be 2 ½ inches (65 mm).

2. Revisions to MM No. 89 (Shear Stud Lengths and Haunch Requirements for Steel Girders)

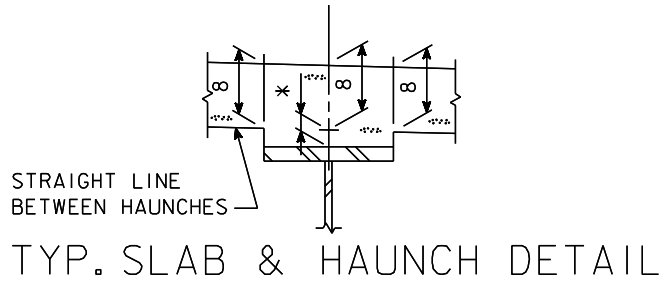
- a. The term "haunch thickening" no longer is used.

- b. The field clearance between top of slab and shear stud has been revised from 3½ inches (90 mm) to 2½ inches (65 mm).

- c. For haunch construction (allowable field haunch), the following changes have been made. Note: This value will not be shown on the plans, but used by the Office of Bridges and Structures as a maximum construction haunch limit that can be used without modifying grade.

The maximum field haunch for CWPG bridges has been revised from 3 inches (75 mm) to 4 inches (100 mm)

3. The current "Typ. Slab & Haunch Detail" and corresponding note shown on standard cross sections [OBS SS 4305-4310 (M4305-M4310)] has been revised. The new note associated with this detail is shown below.



* CONCRETE HAUNCH DIMENSION MEASURED BETWEEN BOTTOM OF SLAB AND TOP OF TOP FLANGE PLATE AS SHOWN ON THE "THEORETICAL CONCRETE HAUNCH DIAGRAM" SHOWN ELSEWHERE ON THESE PLANS.

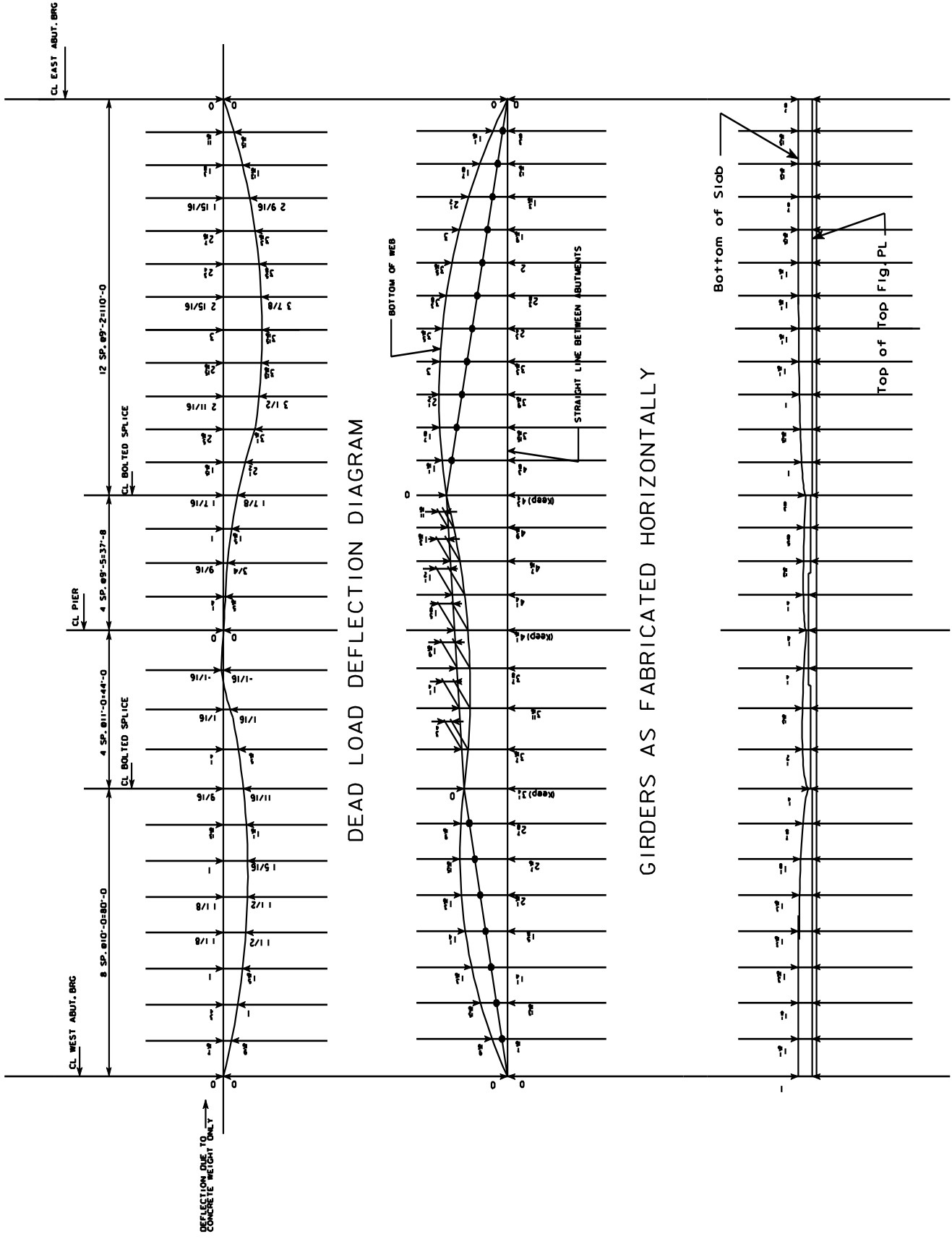
THE MAXIMUM EMBEDMENT OF THE EDGE OF THE TOP FLANGE INTO THE SLAB SHALL BE $\frac{1}{2}$ INCH. SHEAR STUDS ARE TO HAVE A MINIMUM PENETRATION OF 2 INCHES INTO THE SLAB AND BE AT LEAST $2\frac{1}{2}$ INCHES CLEAR OF THE TOP OF THE SLAB. THESE REQUIREMENTS WERE USED IN SETTING THE MAXIMUM AND MINIMUM ALLOWABLE FIELD HAUNCH VALUES SHOWN IN THE "MISCELLANEOUS DATA TABLE" SHOWN ELSEWHERE ON THESE PLANS.

This note no longer refers to any "nominal haunch dimension" or "haunch thickening diagram." The "Nominal Haunch Dimension" will no longer be required when using the new "Theoretical Concrete Haunch diagram". The "Haunch Thickening Diagram" will be replaced by the "Theoretical Concrete Haunch Diagram" on the design plans. The new diagram will indicate the theoretical haunch along the centerline of the girder between the bottom of slab and the top of the top flange plate. The theoretical haunch dimension at the abutment bearings is suggested to be set at one inch (25 mm) instead of $\frac{7}{8}$ inch (22 mm) and used as a basis along with the roadway profile grade, girder camber, top flange thickness, and dead load deflection to determine the "Theoretical Concrete Haunch Diagram". Attached is an example of this diagram for a CWPG bridge.

The three diagrams described below will be developed using spacing intervals consistent with the intervals of the "Top of Slab Elevations" view. In addition to these details, the designer shall include in the design plans a "Haunch Data Detail Sheet" to aid the field personnel in the determination of the actual concrete haunch to be used for the structure. The "Haunch Data Detail Sheet" shall give a "Table of Beam Line Haunch Elevations" and "Miscellaneous Data Table" as defined in MM No 62. The designer shall also review 5.3 (Haunches) of the Bridge Design Manual.

For a summary of the changes, see the table that follows the sample drawing sheet. If you have any questions on these changes please contact Dean Bierwagen, John Neiderhiser, or Ken Dunker.

GAN:jtn:bj



DEAD LOAD DEFLECTION DIAGRAM

GIRDERS AS FABRICATED HORIZONTALLY

THEORETICAL CONCRETE HAUNCH DIAGRAM

DEFLECTION DUE TO
CONCRETE WEIGHT ONLY

CL EAST ABUT. BRG

CL PIER

CL WEST ABUT. BRG

12 SP. 09'-2"110'-0"

CL BOLTED SPLICE

4 SP. 09'-5"37'-8"

CL BOLTED SPLICE

8 SP. 010'-0"80'-0"

BOTTOM OF WEB

STRAIGHT LINE BETWEEN ABUTMENTS

Bottom of Sideb

Top of Top Fig. PL

Haunch Policy Summary ~ 4 August 2005

Policy Item	PPCB	CWPG and RSB
Field haunch adjustment	1.0-1.5 inches for LXA-LXD, 1.5-2.0 inches for BT, BTC, BTD [BDM 5.3.1.1, 5.3.2.1]	0.5-1.0 inches [BDM 5.3.1.1, 5.3.3.1] Same as above for RSB [BDM 5.3.4.1]
Shear connectors	Min. into deck 2.5 inches [BDM 5.3.1.1, 5.3.2.1, MM No. 62] Above top flange 4.5 inches for LXA-LXD, 5 inches for BT, BTC, BTD [BDM 5.3.2.1]	Min. into deck 2 inches [BDM 5.3.3.1, MM No. 62Rev, 115] Same as above for RSB [BDM 5.3.4.1] 3½-, 4-, 5-, and 6-inch shear studs available
Design haunch	Min. at centerline 0.5 inches for LXA-LXD, 1.0 inch for BT, BTC, BTD [BDM 5.3.2.1] Min. at edge of top flange 0 inches [BDM 5.3.2.1] Max. at centerline 2.0 inches for LXA-LXD, 2.5 inches for BT, BTC, BTD [BDM 5.3.2.1]	At abutment 1.0 inch [BDM 5.3.3.1, MM No. 115, SS 4305-4310 modifications in process] At abutment 0.5 inch for RSB [BDM 5.3.4.1, SS 5252-5259] Min. at edge of top flange 0 inch [BDM 5.3.3.1, MM No. 89] Same as above for RSB [BDM 5.3.4.1] Max. at centerline 2.0 inches [BDM 5.3.3.1, MM No. 89] Same as above for RSB [BDM 5.3.4.1]
Field haunch	Max. embedment at edge of top flange 0.5 inch [BDM 5.3.2.1, MM No. 62] Min. clear above top of shear reinforcement 2.5 inches [BDM 5.3.2.1, 5.3.2.1, MM No. 62Rev, 115] Min. penetration of shear stirrups into deck 2½ inches Max. haunch at centerline 4.0 inches [BDM 5.3.2.1, MM No. 26]	Max. embedment at edge of top flange 0.5 inch [BDM 5.3.3.1, MM No. 62, 89, 115] Same as above for RSB [BDM 5.3.4.1] Min. clear above top of stud 2.5 inches [BDM 5.3.3.1, MM No. 62Rev, 89Rev, 115] Same as above for RSB [BDM 5.3.4.1] Min. penetration of shear studs into deck 2.0 inches [BDM 5.3.3.1, MM No. 89, 115] Same as above for RSB [BDM 5.3.4.1] Max. haunch at centerline 4.0 inches [BDM 5.3.3.1, MM No. 89Rev, 115] Same as above for RSB [BDM 5.3.4.1]
Detailing	“Beam Camber Data”, “Slab Thickness at Beams”, “Slab Thickness Details” [BDM 5.3.2.2, MM No. 62] “Haunch Data Detail Sheet” with: “Table of Beam Line Haunch Elevations”, “Miscellaneous Data Table”, “Haunch Locations”, “Haunch Detail” [BDM 5.3.2.2, MM No. 62]	“Dead Load Deflection Diagram”, “Girders as Fabricated Horizontally”, “Theoretical Concrete Haunch Diagram” [BDM 5.3.3.2, MM No. 62Rev, 115] “Dead Load Deflection Diagram” [BDM 5.3.4.2, RS40 series], “Beam Camber”, “Theoretical Haunch Diagram” [BDM 5.3.4.2, SS 5252-5259 modifications in process] for RSB “Haunch Data Detail Sheet” with: “Table of Beam Line Haunch Elevations”, “Miscellaneous Data Table”, “Haunch Locations”, “Haunch Detail” [BDM 5.3.3.2, MM No. 62] “Beam Line Haunch Data” sheet with same information for RSB [BDM 5.3.4.2, SS 5261A, 5263A, etc.]