

RFI Transmittal

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Project: 1160073 US Rt.2 over I-89 & NEC Railroad
Number: S-1160073

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Subject: Request to Drill Field Splices Full (actual) Size

Via: Email

Return By: 5/6/2016

Purpose: To Answer

Question: High Steel Structures LLC would like to request permission to use "Full Size Holes" for the girder field splices on the above referenced project. Attached is the procedure for review. Additionally, we would utilize limited check assemblies (one line) to verify procedure and fit per AASHTO LRFD Bridge Construction Specifications 11.5.3.3 (Check Assembly - Numerically Controlled Drilling). Please forward to the appropriate party for approval.

Suggestion:

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Description of Contents

Quantity	Title	Number	Date	Scale	Size
1	FSH Non-NY (6-13-12).pdf		4/29/2016		

NC and Template Drilling of Field Splice Holes Full Size Hole Procedure

The holes for the field splice connections will be drilled full-size, unassembled using a CNC drilling machine or CNC drilled steel templates. The field splice plates and the drill and build fixtures will be drilled to the final diameter on a CNC machining center. By drilling the splice connections in this manner, there will be no reaming required.

Nomenclature: DT Drill Template; DF Drill Fixture; BF Build fixture

The procedure to be used is as follows:

A. Splice Material

The holes in the field splice material noted as NCD will be drilled full-size on a CNC machining center.

B. Drill Templates

When used, web and flange drilling templates, and the web to flange hole drill and build fixtures will be produced on CNC machining centers ensuring accurate placement of holes.

C. Web Burning

1. The webs will be burned on the CNC burning machine.

WHO DECIDES
THIS AND
WHEN?

D. Web Drilling

1. CNC drilling of web holes
The web splice holes may be drilled to the final diameter on a CNC drilling machine.

2. Drill template used to drill web (see attached FIG 1)
If the holes in the web are to be drilled with a steel template, the procedure is as follows:

This template will pin off the end and the bottom of the web plate, with no manual layout necessary. The location of the first hole in the pattern will be verified.

- Place the template's locating pins against the reference edges (end and bottom of web).
- Clamp the template securely in at least two locations.
- Drill the (4) corner holes using a full size drill.
- Use full size pins in at least (2) opposite corner holes, insuring that the locating pins are still in contact with the reference edges, and bolt or clamp the template to prevent template movement during the drilling operation.
- Drill the remaining holes.

Fig. 1 says 2 to 4 holes

E. Flange Drilling

Is the flange drilled after girder is tacked together or after all 4 web to flange sub-arc welds are complete?

1. CNC drilling of flange holes
The flange splice holes may be drilled to the final diameter on a CNC drilling machine.

2. Drill templates used to drill flange holes

If the holes in the flange are to be drilled with a steel template, they will be drilled after the girder is assembled and welded. The procedure is as follows:

Note: Flange must be within (+ or -) 1/8" of square to web prior to attaching flange drill fixture and drilling any holes.

- a. Align the drill fixture to the web and securely attach the fixture with (2) shoulder bolts or full size pins and clamps (see attached FIG 2)
- b. Drill (1) full size hole in flange using the fixture as a guide.
- c. Remove the drill fixture and locate the flange template using the predrilled holes and centerlines on template and flange. Securely hold the opposite side of the drill template in place with (1) shoulder bolt, or full size pin & C-clamp. (see attached FIG 3)
- d. Drill (2) additional full size holes at corners opposite end of template.
- e. Secure template using shoulder bolts or full size pins and C-clamps, then drill remaining holes.
- f. Repeat procedure for other flange.

Where is the step for welding the fixture as shown on Fig 2?

F. Web to Flange Alignment

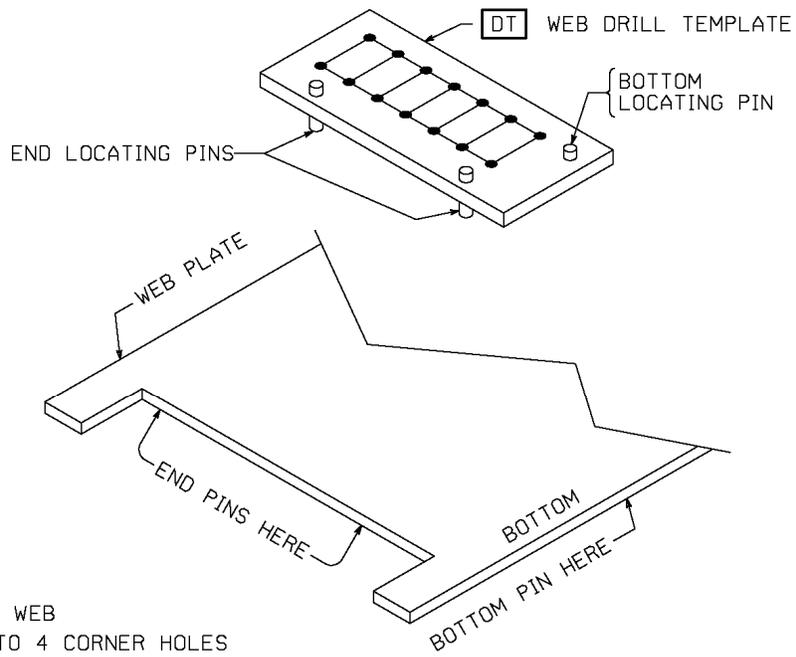
Is this an alternative to "E."? Who decides and when which option will be used?

If the webs and the flanges are drilled on a CNC drilling machine, the web and flange will be aligned using a build fixture as shown in Figure 4. The fixture will be securely fastened to both the web and the flange before the flange is tacked to the web. This fixture will be used at each connection where the web and flange holes are drilled on the CNC drilling center.

G. Yard

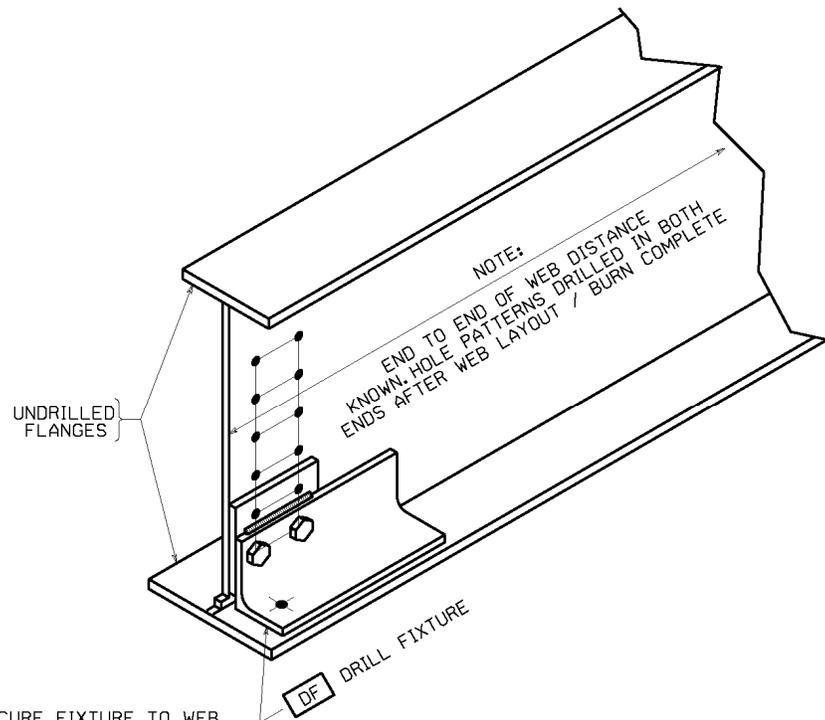
1. The first line of girders shall be set up in the yard to the correct elevation and camber.
2. The girders, with the splice plates attached, will be pinned to align the splice. The splices are to be bolted together, using sufficient bolts to secure the units. A normal diameter bolt must be able to fit through each splice connection.

Updated 9/9/2011



- CLAMP TO WEB
- DRILL 2 TO 4 CORNER HOLES
- SECURE WITH FULL SIZE PINS (TO KEEP TEMPLATE FROM MOVING)
- DRILL BALANCE OF HOLES

FIG. 1
(FSH 9)



- SECURE FIXTURE TO WEB
- WELD FIXTURE
- DRILL HOLE INTO FLANGE
- REMOVE FIXTURE

FIG. 2
(FSH 9)

