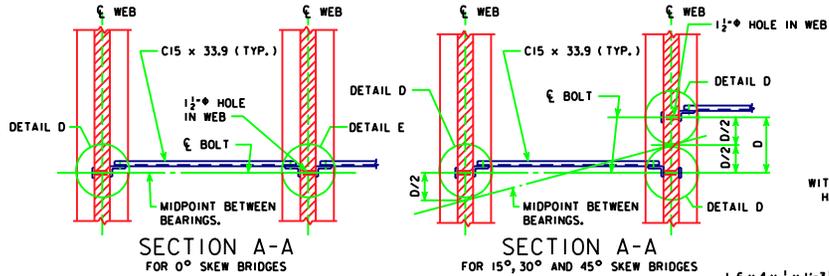


SECTION SHOWING INTERMEDIATE DIAPHRAGM



SECTION A-A FOR 0° SKEW BRIDGES

SECTION A-A FOR 15°, 30° AND 45° SKEW BRIDGES

INTERMEDIATE DIAPHRAGM STRUCTURAL STEEL

ONE CONNECTION DETAIL "E"

WEB THICKNESS (IN.)	LENGTH OF H.T.S. BOLTS (IN.)	WEIGHT PER DETAIL "E" (L.B.)	BRIDGE SKEW	
			0° & 45°	15°, 30° & 45°
6	9	4.30	9	0
9	12	5.34	9	0
2 - L 6 x 4 x 1/2 x 1'-3 1/4 = 41.2 LB			9	0
			9	0

ONE CONNECTION DETAIL "D"

WEB THICKNESS (IN.)	LENGTH OF H.T.S. BOLTS (IN.)	WEIGHT PER DETAIL "D" (L.B.)	BRIDGE SKEW	
			0° & 45°	15°, 30° & 45°
6	9	4.30	6	24
9	12	5.34	6	24
1 - BACKING L 4 x 3/4 x 1'-3 1/4 = 6.5 LB			6	24
1 - L 6 x 4 x 1/2 x 1'-3 1/4 = 20.6 LB			6	24

\* ONE C15 x 33.9 DIAPHRAGM

WEB THICKNESS (IN.)	BEAM SPACING	LENGTH	NO. OF DIAPH.	UNIT WEIGHT (L.B.)	WEIGHT (L.B.)
6	6'-9"	5'-11 1/2"	12	202.3	2427.6
9	6'-9"	5'-8"	12	193.9	2326.8

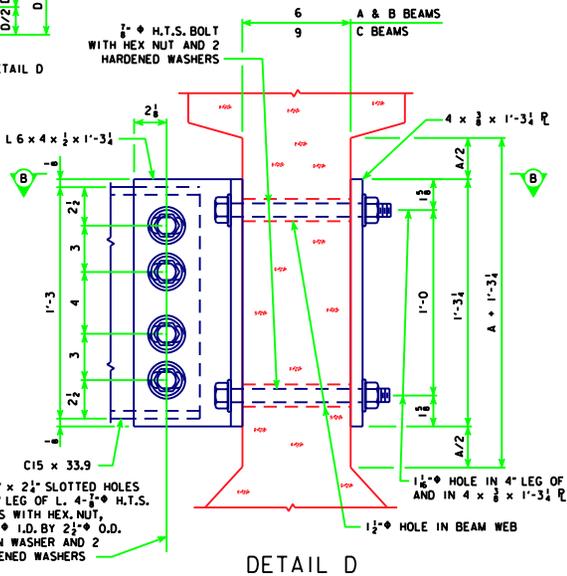
DIAPHRAGM CONNECTION BOLTS

8-1/2" x 0-2 1/2" H.T.S. BOLTS WITH NUTS AND WASHERS, PER UNIT DIAPHRAGM = 10.3 LB	NO. OF DIAPH.	WEIGHT (L.B.)
	12	123.6

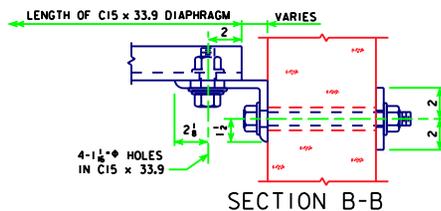
\* THE LENGTH OF THE C15 x 33.9 IS BASED ON A VARIABLE CLEARANCE OF 1/4" TO 2/4" BETWEEN THE FACE OF BEAM WEB AND END OF C15 x 33.9.

TOTAL WEIGHT

	BRIDGE SKEW	
	0° & 45°	15°, 30° & 45°
INTERMEDIATE DIAPHR. STRUCT. STEEL - TOTAL (L.B.) =	6	3149
INTERMEDIATE DIAPHR. STRUCT. STEEL - TOTAL (L.B.) =	9	3064

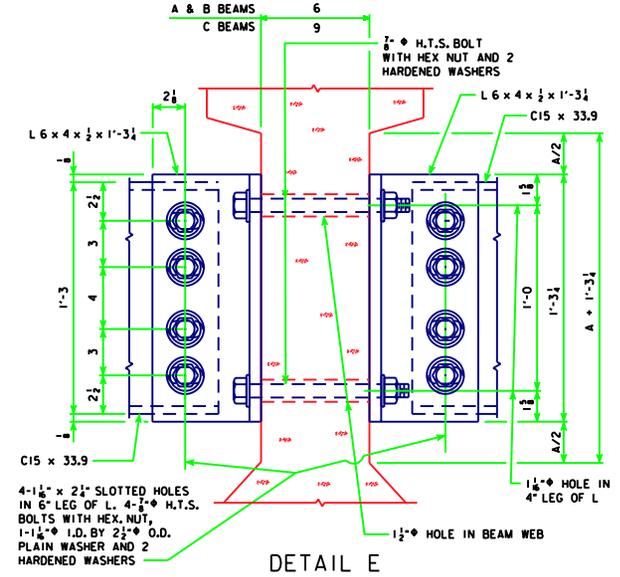


DETAIL D



SECTION B-B

BEAM SERIES	DIMENSIONS	
	A + 1'-3 1/4"	A/2
A	1'-4"	2"
B	1'-8"	2 1/2"
C	2'-1"	4"



DETAIL E

NOTES:

- ALL DIAPHRAGM MATERIALS, INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED.
- SHOP DRAWINGS OF THE STEEL DIAPHRAGMS SHOWING LAYOUT AND DETAILS OF THE DIAPHRAGMS SHALL BE SUBMITTED FOR APPROVAL.
- ALL COSTS FOR FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGMS SHALL BE INCLUDED IN THE PRICE BID FOR STRUCTURAL STEEL.
- THE 1/2" HOLES FOR THE 1/2" H.T.S. BOLTS SHALL BE CAST INTO THE WEB. DRILLING IS NOT ALLOWED.
- THE 1/2" H.T.S. BOLTS THROUGH THE WEB SHALL HAVE A THREAD LENGTH OF 3" MIN. AND 4" MAX. AND SHALL MEET THE REQUIREMENTS OF ASTM A449.
- ALL BOLTS ARE TO BE TIGHTENED PRIOR TO PLACING BRIDGE FLOOR CONCRETE.

CONCRETE DIAPHRAGMS DETAILS SHALL BE PROVIDED IN THE BRIDGE PLANS FOR OVERHEAD BRIDGES. DESIGNER SHALL ADJUST THE CONCRETE, REINFORCING AND STRUCTURAL STEEL QUANTITIES ACCORDINGLY.

LATEST REVISION DATE

*Thomas E. McQuinn*

APPROVED BY BRIDGE ENGINEER

**Iowa Department of Transportation**  
Highway Division

STANDARD DESIGN - 30' ROADWAY, THREE SPAN BRIDGES

**PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES**

HL93 SUPERSTRUCTURE    DECEMBER, 2006    HS25 SUBSTRUCTURE

INTERMEDIATE STEEL DIAPHRAGMS

H30-38-06