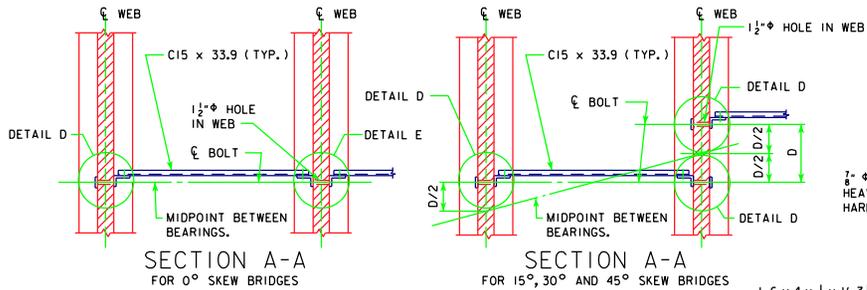


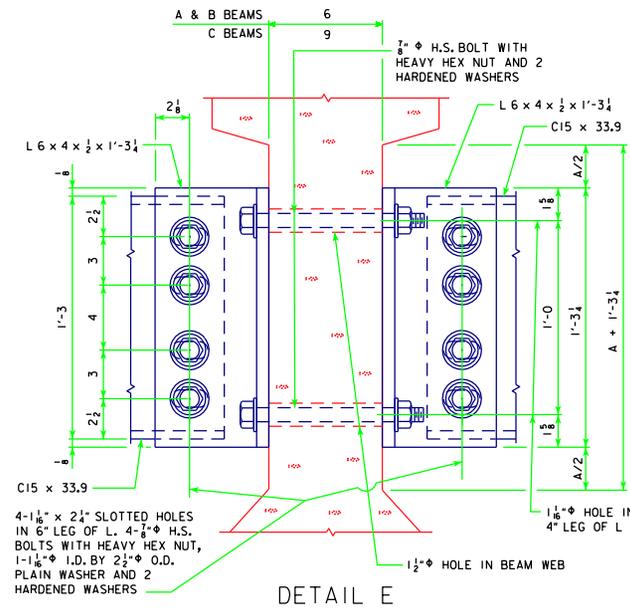
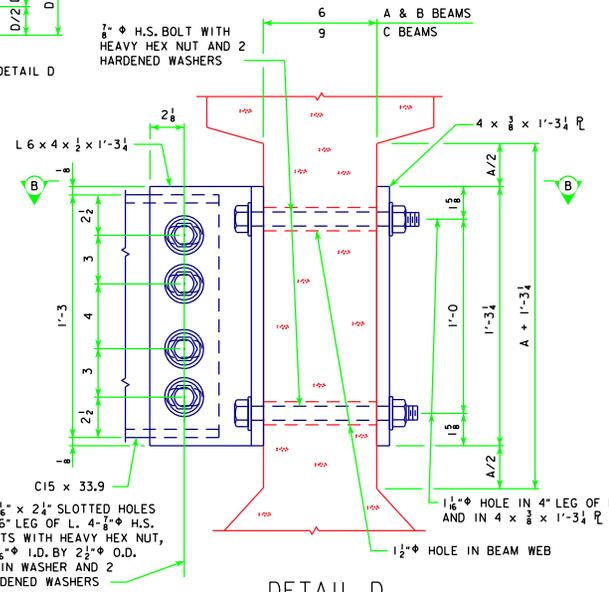
SECTION SHOWING INTERMEDIATE DIAPHRAGM



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 1/2" HOLES FOR THE 7/8" H.S. BOLTS SHALL BE CAST INTO THE WEB. DRILLING IS NOT ALLOWED.
- THE 7/8" H.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.



INTERMEDIATE DIAPHRAGM STRUCTURAL STEEL

ONE CONNECTION DETAIL "E"

2 - 7/8" x LENGTH H.S. BOLTS WITH NUTS AND WASHERS

WEB THICKNESS (IN.)	LENGTH OF H.S. BOLTS (IN.)	WEIGHT PER DETAIL "E" (LB.)	BRIDGE SKEW	
			0°	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" = 41.6 LB			9	0

ONE CONNECTION DETAIL "D"

2 - 7/8" x LENGTH H.S. BOLTS WITH NUTS AND WASHERS

WEB THICKNESS (IN.)	LENGTH OF H.S. BOLTS (IN.)	WEIGHT PER DETAIL "D" (LB.)	BRIDGE SKEW	
			0°	15°, 30° & 45°
6	9	4.30	6	24
9	12	5.34	6	24
1 - BACKING PL 4 x 3/8 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 (LB.)	WEIGHT (LB.)
6	6'-9"	5'-11 3/8"	12	202.3	2427.6
9	6'-9"	5'-8 3/8"	12	193.9	2326.8

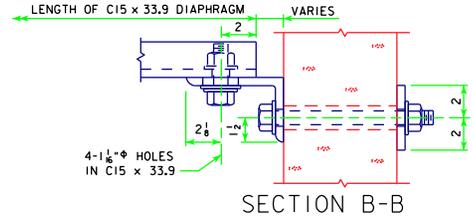
DIAPHRAGM CONNECTION BOLTS

8-7/8" x 0'-2 1/4" H.S. BOLTS WITH NUTS AND WASHERS, PER UNIT DIAPHRAGM = 10.3 LB	NO. OF DIAPH.	WEIGHT (LB.)
	12	123.6

TOTAL WEIGHT

	WEB THICKNESS (IN.)	BRIDGE SKEW
INTERMEDIATE DIAPHR. STRUCT. STEEL - TOTAL (LB.) =	6	3149 3305
INTERMEDIATE DIAPHR. STRUCT. STEEL - TOTAL (LB.) =	9	3064 3229

* THE LENGTH OF THE C15 x 33.9 IS BASED ON A VARIABLE CLEARANCE OF 1 1/8" TO 2 1/8" BETWEEN THE FACE OF BEAM WEB AND END OF C15 x 33.9.



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

REVISED 07-10 - MINOR CHANGES WERE MADE TO AGREE WITH OFFICE STANDARD.

07-10
LATEST REVISION DATE

Norman C. McQuinn
APPROVED BY BRIDGE ENGINEER

Iowa Department of Transportation
Highway Division

STANDARD DESIGN - 30' ROADWAY, THREE SPAN BRIDGES
PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES
DECEMBER, 2006

INTERMEDIATE STEEL DIAPHRAGMS

H30-38-06