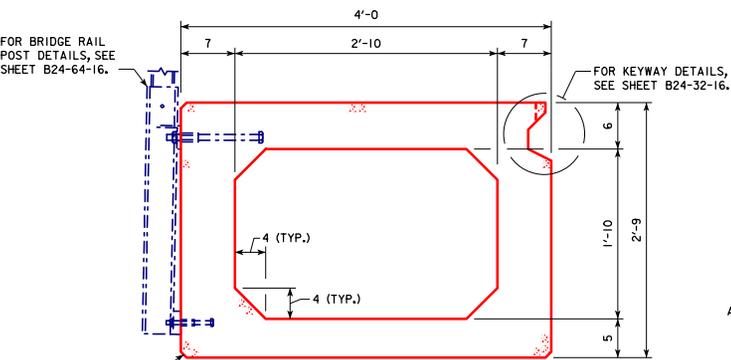
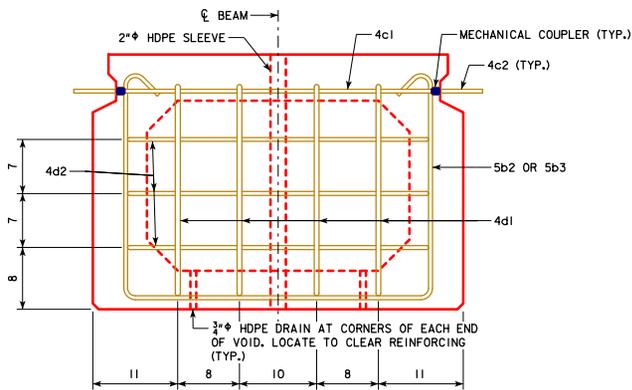


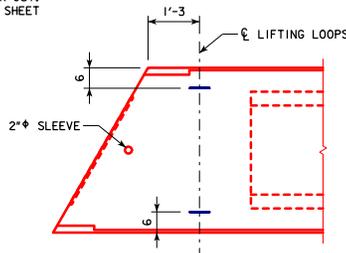
**INTERIOR BEAM CROSS SECTION**



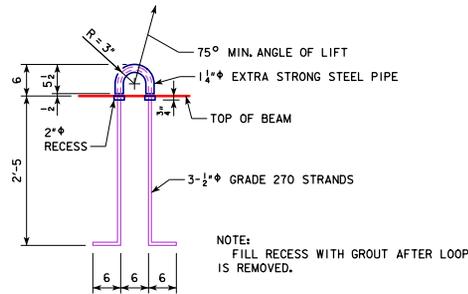
**EXTERIOR BEAM CROSS SECTION**



**VIEW B-B**  
(INTERIOR BEAM SHOWN, EXTERIOR BEAM SIMILAR)

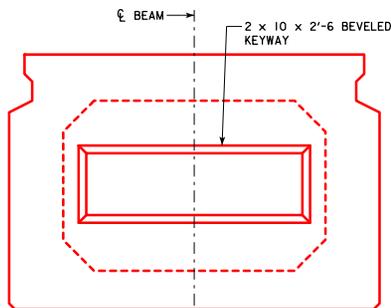


**LIFTING LOOP PLAN**



**LIFTING LOOP DETAIL**

ALTERNATE TYPES OF LIFTING LOOPS MAY BE SUBMITTED FOR APPROVAL.



**VIEW B-B**

(INTERIOR BEAM SHOWN, EXTERIOR BEAM SIMILAR)  
(SHOWING KEYWAY)

**33" x 48" REINFORCED CONCRETE BOX BEAM DATA**

| BEAM                          | SKEW (DEGREES) | SPAN LENGTH<br>℄-℄ BEARING | OVERALL<br>BEAM LENGTH | f'c<br>(ksi) | WEIGHT<br>(TONS) | CONCRETE<br>(C.Y.) | REINFORCING<br>STEEL<br>(LBS.) |
|-------------------------------|----------------|----------------------------|------------------------|--------------|------------------|--------------------|--------------------------------|
| RCBB<br>33" x 48"<br>x 50'-0" | 0              | 50'-0"                     | 51'-2"                 | 5.0          | 24.2             | 12.0               | SEE SHEET<br>B24-62-16         |
|                               | 15             |                            | 51'-2 1/2"             |              | 24.6             | 12.2               |                                |
|                               | 30             |                            | 51'-4 1/4"             |              | 25.1             | 12.4               |                                |

**SPECIFICATIONS:**

DESIGN: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH ED., SERIES OF 2014.

CONSTRUCTION: STANDARD SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION, CURRENT SERIES, WITH CURRENT APPLICABLE SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS.

**LIVE LOAD DISTRIBUTION FACTOR NOTES:**

AASHTO EQUATIONS WERE USED FOR DETERMINING THE LIVE LOAD DISTRIBUTION FACTORS FOR THE DESIGN OF THE BEAMS. SKEW EFFECTS WERE INCLUDED IN THE LIVE LOAD DISTRIBUTION FACTOR FOR SHEAR AND CONSERVATIVELY IGNORED FOR THE LIVE LOAD DISTRIBUTION FACTOR FOR MOMENT. CONTROLLING LIVE LOAD DISTRIBUTION FACTORS ARE:  
50'-0" SPAN  
MOMENT = 0.35 LANES / BEAM  
SHEAR = 0.67 LANES / BEAM

**DESIGN STRESSES:**

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE TO BE IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH ED., SERIES OF 2014:  
-REINFORCING STEEL IN ACCORDANCE WITH SECTION 5, GRADE 60.  
-CONCRETE IN ACCORDANCE WITH SECTION 5.

**NOTES:**

THESE BEAMS ARE DESIGNED FOR HL93 LOADING WITH AN ALLOWANCE OF 50 LB. PER SQUARE FOOT OF ROADWAY FOR GRAVEL OR FUTURE WEARING SURFACE.  
TOPS OF BEAMS ARE TO BE STRUCK OFF LEVEL AND LONGITUDINALLY TINED IN ACCORDANCE WITH ARTICLE 2301.03, H, 3 OF THE STANDARD SPECIFICATIONS.  
BEARINGS SHALL BE AS DETAILED ON OTHER DESIGN SHEETS.  
BEAMS ARE TO BE AT LEAST 28 DAYS OLD BEFORE THE FUTURE WEARING SURFACE, IF USED, IS PLACED UNLESS A SHORTER CURING TIME IS APPROVED BY THE BRIDGE ENGINEER.  
LIFTING OPERATIONS SHALL BE PERFORMED IN SUCH A MANNER THAT LIFTING LOOPS CARRY LOADS EQUALLY.

NOTES:  
FOR VIEW B-B LOCATION, SEE SHEETS B24-60-16 & B24-61-16.  
FOR BEAM CHAMFER DETAILS, SEE SHEET B24-33-16.

|                      |                                 |   |
|----------------------|---------------------------------|---|
| LATEST REVISION DATE | <br>APPROVED BY BRIDGE ENGINEER | <br>STANDARD DESIGN - 24'-0" ROADWAY, SINGLE SPAN<br><b>CONCRETE BOX BEAM BRIDGES</b> |
|                      |                                 | DECEMBER, 2016  |
|                      |                                 | <b>33" x 48" RCBB DETAILS</b>   |
|                      |                                 | <b>B24-59-16</b>  |