FRAMING PLAN FOR SKEW > 15°

WEB PLATE < 48"
TYP. IN SPAN & AT PIER

WEB PLATE OVER 48"
TYP. IN SPAN & AT PIER

WEB PLATE OVER 48" WITH LONGITUDINAL STIFFENERS
TYP. IN SPAN & AT PIER

MEMBER SIZE & CONN.
SEE TABLE "A" FOR
MEMBER SIZE & CONN.
SEE TABLE "B" FOR

PLATE GIRDER DIAPHRAGMS
AND CROSS FRAMES

NOTE:
All framed connections shall be friction type using 5/8" high strength ASTM A325 bolts with double washers.

Designer Notes:
See Std. 24.03 for connection bar corner cope & weld details.
For spans over 200', the cross frames at the pier shall be designed to resist the lateral loads that are transferred to the pier.

Horizontal crossframes may have horizontal leg top bars shown when no lower laterals are used; when lower laterals are used, the horizontal leg top bars shall be on the bottom and 5/16" diameter, or 5/8" diameter for spans over 200'.

PLATE GIRDER DIAPHRAGMS
AND CROSS FRAMES

BUREAU OF STRUCTURES

APPROVED: 9-8
DATE:

STANDARD 24.03
SECTION A-A
END DIAPHRAGM CONNECTIONS - WEB DEPTHS ≤ 48"

SECTION B-B
END DIAPHRAGM CONNECTIONS - WEB DEPTHS > 48" < 60"

SECTION C-C

END DIAPHRAGM CONNECTIONS - WEB DEPTHS ≥ 60"

TABLE "D"

<table>
<thead>
<tr>
<th>MEMBER &quot;C&quot; SIZE</th>
<th>WEB DEPTH</th>
<th>NO. OF &quot;C&quot; DIA. BOLTS</th>
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<tr>
<td>MAXIMUM LENGTH</td>
<td>MEMBER &quot;C&quot;</td>
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<td>&quot;C&quot; DIA. BOLTS</td>
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<td>&quot;C&quot; DIA. BOLTS</td>
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</table>

NOTES: ALL BOLTED CONNECTIONS SHALL BE FRICTION TYPE USING "C" DIA. HIGH STRENGTH ASTM A325 BOLTS WITH DOUBLE WASHERS.

DESIGNER NOTES: SEE STANDARD 24.03 FOR BEARING STIFFENER COPE & WELD DETAILS.

BUREAU OF STRUCTURES

END DIAPHRAGMS

STANDARD 24.04
**Notes**

Intermediate diaphragms shall be horizontal except when the difference in adjacent girder elevations is of a magnitude that necessitates sloping the diaphragms. When diaphragms are sloped, place center of magnitude at mid-depth of diaphragm. All bolted connections shall be made with 3/4" high strength ASTM A325 bolts.

**Designer Notes**

See standard 24.02 for connection bar corner cope & weld details.

**Intermediate Diaphragm Sizes**

<table>
<thead>
<tr>
<th>Girder Depth</th>
<th>Intermediate Diaphragms</th>
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<tr>
<td>26&quot;</td>
<td>MC18 x 42.7</td>
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<tr>
<td>36&quot;</td>
<td>MC18 x 42.7</td>
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<tr>
<td>33&quot;</td>
<td>MC18 x 42.7</td>
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<tr>
<td>30&quot;</td>
<td>MC18 x 42.7</td>
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<tr>
<td>27&quot;</td>
<td>MC18 x 42.7</td>
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<td>MC18 x 42.7</td>
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<tr>
<td>21&quot;</td>
<td>MC18 x 42.7</td>
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<tr>
<td>18&quot;</td>
<td>MC18 x 42.7</td>
</tr>
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</table>

**Weld Details**

See standard 24.02 for connection bar corner cope & weld details.

**Approved:**

Bill Oliva

**Date:**

7-15

**Bureau of Structures**

**Standard 24.06**
NOTES

1. FOR WELDING DETAILS SEE "CONNECTION STIFFENER DETAILS" ON STANDARD 24.02.

2. EXPANSION HINGE JOINT DETAILS

DEVELOPED FOR SUBMISSION BY BUREAU OF STRUCTURES

BUREAU OF STRUCTURES

STANDARD 24.08

Approved: Bill Oliva

Date:

EXPANSION HINGE JOINT DETAILS

ELEVATION

SECTION A

SECTION C

SECTION B

DESIGNER NOTES

SEE THE BRIDGE MANUAL, SECTION 24.1 FOR CRITERIA FOR LOCATING HINGE JOINTS.
**Designer Notes**

Haunch heights will normally be made 2" at edge of girder at abutments, bridge, and field splices.

Haunch depth variations need not be shown on the plans.

If values vary by 2" or more the order shall be maintained to reduce the variations in haunch thickness.

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**Notes**

1. Haunch height at centerline of girders.
2. To determine ‘t’ after all structural steel has been erected, elevations of the top flanges shall be taken at centerline of bearings and at 0.1 points.
3. Top of deck elevation at final grade.
4. Camber only deflection: upward deflection is added, downward deflection is subtracted.
5. Haunch thickness.
6. Elevation of the top flanges shall be taken at centerline of bearings and at 0.1 points.
7. These elevations are to top of steel, edge and cover plate thickness if applicable are accounted for and they are not the material at erec tion. The elevation of the top steel at the field is 1.5" plus slab top, which uses the center of bearing, after erection and before permanently bolting the superimposing at plan.

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**Elevations at Top of Deck (T.O.D) & Top of Steel (T.O.S)**

<table>
<thead>
<tr>
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</table>

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The following diagram illustrates the treatment of exterior girders at sidewalk overhangs and the blocking diagram for slab thickness.
CURVED GIRDER LAYOUT

KINKED GIRDER LAYOUT

GENERAL NOTES
Sketches and notes apply to any number of spans.
Number and size of girders and location of field splices to be determined by design.

For horizontal curves with a radius of less than 1400 ft., the girders shall be fabricated along the curve, with ties at greater than 100 ft. Consideration shall be given to using splices at field splice locations.

For kinked girder layouts:
- Use "P" of substructure units and "P" of splices parallel to each other when possible.
- Girders are to be held parallel to each other between field splices.

For curved girder layout:
- Place substructure units on radial lines when possible.
- Tolerances may be relaxed for more severe curvatures.

Approved: Scot Becker
Date: 7-10

STANDARD 24.10
NOTES

1. The rate of placing concrete shall not exceed 15 cu. yds. per hour. 

2. The contractor may submit an alternate pouring sequence subject to the approval of the structures design section. 

3. The designer shall detail transverse construction joints as shown on the plans. 

DESIGNER NOTES

1. Transverse construction joints shall be detailed on the plans to limit the depth of pour to a maximum of 2 feet. 

2. Transverse construction joints shall be located in the same general area as any other joint, generally for steel girder superstructures. 

3. The designer shall detail transverse construction joints at the 0.6 point at the end of spans for prestressed concrete superstructures. 

4. The designer shall detail transverse construction joints at the 0.35 point at the end of spans for steel girder superstructures. 

5. Transverse construction joints shall be located at the 0.4 point at the end of spans for prestressed concrete superstructures.

6. The designer shall detail transverse construction joints at the 0.75 point at the end of spans for steel girder superstructures.

7. Transverse construction joints shall be located at the 0.6 point at the end of spans for prestressed concrete superstructures.

8. Transverse construction joints shall be located at the 0.35 point at the end of spans for steel girder superstructures.

9. Transverse construction joints shall be located at the 0.4 point at the end of spans for prestressed concrete superstructures.

10. Transverse construction joints shall be located at the 0.75 point at the end of spans for steel girder superstructures.

SLAB POURING SEQUENCE

1. The contractor shall detail transverse construction joints as shown on the plans.

2. The contractor may submit an alternate pouring sequence subject to the approval of the structures design section.

3. The designer shall detail transverse construction joints as shown on the plans.

4. Transverse construction joints shall be located at the 0.6 point at the end of spans for prestressed concrete superstructures.

5. Transverse construction joints shall be located at the 0.35 point at the end of spans for steel girder superstructures.

6. Transverse construction joints shall be located at the 0.4 point at the end of spans for prestressed concrete superstructures.

7. Transverse construction joints shall be located at the 0.75 point at the end of spans for steel girder superstructures.

8. Transverse construction joints shall be located at the 0.35 point at the end of spans for steel girder superstructures.

9. Transverse construction joints shall be located at the 0.4 point at the end of spans for prestressed concrete superstructures.

10. Transverse construction joints shall be located at the 0.75 point at the end of spans for steel girder superstructures.

11. Transverse construction joints shall be located at the 0.6 point at the end of spans for prestressed concrete superstructures.

12. Transverse construction joints shall be located at the 0.35 point at the end of spans for steel girder superstructures.

13. Transverse construction joints shall be located at the 0.4 point at the end of spans for prestressed concrete superstructures.

14. Transverse construction joints shall be located at the 0.75 point at the end of spans for steel girder superstructures.
SECTION THRU EXPANSION END
SHOWING EXISTING STEEL GIRDER
WITHOUT EXISTING STEEL DIAPHRAGM
(SEE SHEET FOR ADDITIONAL DETAILS)

NOTES

FOR REHABILITATION PROJECTS:

SUPPORT ANGLES SHALL BE ASTM A325 TYPE 1.
ALL SUPPORT ANGLES SHALL BE HOT-DIPPED GALVANIZED.
ALL SUPPORT ANGLES SHALL BE INCORPORATED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A709 GRADE 36.
ALL SUPPORT ANGLES SHALL BE INCORPORATED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A563.
WSI CANPLUG: ALL NUTS AND WASHERS SHALL BE INCORPORATED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A153 CLASS C.
ALL NUTS SHALL BE INCORPORATED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A563.
ALL NUTS AND WASHERS SHALL BE HOT-DIPPED GALVANIZED.
ALL BOLTS, NUTS AND WASHERS SHALL BE HOT-DIPPED GALVANIZED.

DESIGNER NOTE

* MINIMUM DIAMETER INCREASED TO ACCOMMODATE LARGE EXPANSION DEVICES.

LEGEND

* BARS PLACED PARALLEL TO GIRDER; SPACING PERPENDICULAR TO GIRDER.
* DIMENSION IS TAKEN NORMAL TO GIRDER.