Chapter 03 - Superstructure

SECTION 01

BRIDGE DECK
(SUP-BD)
Chapter 03 - Superstructure

Section 01 – Bridge Deck

SUB-SECTION 01
BRIDGE DECK DETAILS
(SUP-BD(DT))
Outside face of superstructure.

Placement

Placement

Transverse Construction Joint

Placement

Placement

Outside face of superstructure.

Note:
For detail of construction joint see Detail No. SUP-BD(DT)-102.

*Transverse construction joints to be placed parallel to center line bearing for piers and abutments. If substructure units are not parallel then transverse construction joints shall be parallel to the closest substructure unit center line of bearing.

Transverse construction joints to be perpendicular to the outside face of superstructure for the portion of the deck outside of the exterior stringer.
Notes:
1. Reinforcing steel to be continuous thru joint.
2. Entire face of construction joint shall be coated with an approved epoxy bonding compound.
3. See Detail No. SUP-BD(DT)-201 for bridge deck slab reinforcing splices.

Stage of construction poured first.

Top longitudinal steel lap = 2'-5" (6 bars)
3'-7" (6 bars)

Bottom longitudinal steel lap = 3'-6"

SECTION
Scale: 1/2" = 1'-0"
**This splice location can only be used if truss bottom leg dimension is greater than or equal to lap length.**

No more than one splice may occur over every 3rd stringer (top splice) or within 3rd bay (bottom splice).

All bars must splice in the same plane (all in top of slab or all in bottom of slab).

Optional splices shown may not be used for decks 45'-0" or less in width.

Notes:
See sheet 2 of 2 for longitudinal steel splice details.
Note: This section shows the typical location of the longitudinal reinforcing bars for reference.

BRIDGE DECK SECTION
Scale: None

PLAN
LONGITUDINAL SPLICES
Scale: None

Additional longitudinal "6 bars (3'-7" splice)

# Bearing

Top normal longitudinal splice splice splice splice
bars (2'-5" splice)

Bottom longitudinal splice splice splice splice
bars (3'-6" splice)
Chapter 03 - Superstructure

Section 01 – Bridge Deck

SUB-SECTION 02
BRIDGE DECK STEEL GIRDERS (SUP-BD(SG))
NOTES


2. $f_c = 4000$ p.s.i.

3. Design includes provision for 2" future wearing surface.

General:  1. Transverse bars shall be placed normal to stringers, except in case of curved stringers. When stringers are curved, transverse bars shall be placed radially.

2. When skew angles are greater than 60° then Contractor may use either Reinforcing Steel Pattern No. 1 or No. 2 throughout bridge.

3. When the stringer spacing is less than 6'-0", all bars shall be straight top and bottom. No truss bars are to be used.

4. Typical sections shall include a minimum of three stringers and have a width of not less than 14.0' between centerlines of exterior stringers.

5. Overhangs shall be at least 21" but shall not exceed the smaller of 0.625 times the stringer spacing and 6.0'.

6. Reinforcing in the slab overhangs shall be designed in accordance with AASHTO.

7. All reinforcing steel in the deck slabs shall be epoxy coated.

8. Bridge deck slab Details should not be used for stringer spacings less than 5'-0".

9. Bridge deck slab Details should not be used for top flange widths less than 12".
GENERAL NOTES AND BAR SPACING

BRIDGE DECK SLAB FOR STEEL GIRDERS

1. The Contractor has the option of using Reinforcing steel Pattern No.1 or No.2 in the unhatched portions of the decks shown below.

2. The Contractor shall use only Reinforcing Steel Pattern No.1 in the hatched portions of the decks shown below.

TRANSVERSE BAR SPACING FOR SPANS WITH SKEW ANGLES LESS THAN 60°

Scale: 1" = 1'-0"

1. The Contractor has the option of using Reinforcing steel Pattern No.1 or No.2 in the unhatched portions of the decks shown below.

2. The Contractor shall use only Reinforcing Steel Pattern No.1 in the hatched portions of the decks shown below.
Notes:
1. All steel sizes and spacing based on ASTM A-615, Grade 60.
2. Transverse bars to be placed normal to center line of stringers. (For curved girder see SUP-BD(SG)-101.)
3. All longitudinal bars are to be #5's placed as shown except as indicated by Note 4.
4. On continuous bridges, over piers, additional longitudinal steel to be added to the top of the slab between normal bars and indicated thus: #6 shall be #6 bars. See Detail No. SUP-BD(SG)-201 for the lengths of these additional bars.
5. An Excess Reinforcement Factor of 0.75 was applied to the transverse reinforcement lap lengths. An Excess Reinforcement Factor of 0.75 was applied to the longitudinal reinforcement lap lengths.
6. Refer to SUP-BD(SG)-101 for overhang design requirements.

Note:
Slanted lettering indicates notes "For Office Use Only".

Note:
For stringer spacing less than 6'-0" see Note 3 on Detail No. SUP-BD(SG)-101.

Sup-BD(SG)-101. See Note 3 on Detail No. 6'-0" see Note 3 on Detail No. SUP-BD(SG)-101.

For exact number of shear developers see superstructure sheet.

Contractor has option of using the following reinforcement steel pattern:
- Alternate straight bars with truss bars.
- Substitute for every sixth bar a #5 truss bar @ 3'-3" c/c.

** See Note 4

** See Note 4

SUPER - BRIDGE DECK
For exact number of shear developers (Main Longitudinal Steel):
*5 Straight @ 12" c/c.
*5 Truss @ 12" c/c.
*5 Straight @ 12" c/c.
Contractor has option of using the following rein. steel pattern:
*5 Straight @ 6" c/c.
*5 Straight @ 6" c/c.
Substitute for every sixth bar a #5 truss bar @ 3'-0" c/c.

Alternate straight bars with truss bars.

For exact haunch details, see pertinent details contained elsewhere in plans.

Contractor has option of using the following rein. steel pattern,
#5 Straight @ 12" c/c.
#5 Straight @ 6" c/c.
Substitute for every sixth bar a #5 truss bar @ 3'-0" c/c.

See Typical Section of bridge.
(For girders, D is measured from top of web).

HL-93 TYPE XXXII SLAB
GREATER THAN 6'-6" TO 7'-0" STRINGER SPACING
Scales 1/8"=1'-0"

TRANSVERSE REINFORCEMENT
(See Note 5)

LONGITUDINAL REINFORCEMENT

Lap Length

#5 Top Reinforcement 1'-10"
#5 Bottom Reinforcement 2'-8"

Lap Length

#5 Top Reinforcement 2'-5"
#6 Top Reinforcement** 3'-7"

** See Note 4

LAP LENGTHS FOR DECK REINFORCING

Note:
1. All steel sizes and spacing based on ASTM A-615, Grade 60.
2. Transverse bars to be placed normal to center line of stringers. For curved girder see SUP-BD(SG)-101.
3. All longitudinal bars are to be #5's placed as shown except as indicated by Note 4.
4. On continuous bridges, over piers, additional longitudinal steel to be added to the top of the slab between normal bars and indicated thus, shall be #6 bars. See Detail No. SUP-BD(SG)-201 for the lengths of these additional bars.
5. An Excess Reinforcement Factor of 0.75 was applied to the transverse reinforcement lap lengths. An Excess Reinforcement Factor of 1.00 was applied to the longitudinal reinforcement lap lengths.
6. Refer to SUP-BD(SG)-101 for overhang design requirements.

Note:
Slanted lettering indicates notes "For Office Use Only".
Grade 60.
All steel sizes and spacing based on ASTM A-615, except as indicated by Note 4.
All longitudinal bars are to be #5's placed as shown (See Note 5).

** See Note 4

Lap Lengths for Deck Reinforcing

<table>
<thead>
<tr>
<th>Lap Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>#5 Top Reinforcement 1'-10&quot;</td>
</tr>
<tr>
<td>#5 Bottom Reinforcement 2'-8&quot;</td>
</tr>
</tbody>
</table>

** See Note 4

Note:
1. All steel sizes and spacing based on ASTM A-615, Grade 60.
2. Transverse bars to be placed normal to center line of stringers. For curved girder see SUP-BD(SG)-101.
3. All longitudinal bars are to be #5's placed as shown except as indicated by Note 4.
4. On continuous bridges, over piers, additional longitudinal steel to be added to the top of the slab between normal bars and indicated thus (See Note 5).
5. An Excess Reinforcement Factor of 0.75 was applied to the transverse reinforcement lap lengths. An Excess Reinforcement Factor of 1.00 was applied to the longitudinal reinforcement lap lengths.
6. Refer to SUP-BD(SG)-101 for overhang design requirements.

For exact number of shear developers see superstructure sheet.

For exact hunch details, see pertinent details contained elsewhere in plans.

The longitudinal reinforcement lap lengths.

An Excess Reinforcement Factor of 0.75 was applied to the transverse reinforcement lap lengths. An Excess Reinforcement Factor of 1.00 was applied to the longitudinal reinforcement lap lengths.

Note:
Slanted lettering indicates notes "For Office Use Only".
**Grade 60. All steel sizes and spacing based on ASTM A-615, except as indicated by Note 4.**

**All longitudinal bars are to be #5's placed as shown.**

**Lap Lengths for Deck Reinforcing**

<table>
<thead>
<tr>
<th>Transverse reinforcement (See Note 5)</th>
<th>Longitudinal reinforcement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lap Length</strong></td>
<td><strong>Lap Length</strong></td>
</tr>
<tr>
<td>#5 Top Reinforcement 1'-10&quot;</td>
<td>#5 Top Reinforcement 2'-5&quot;</td>
</tr>
<tr>
<td>#5 Bottom Reinforcement 2'-8&quot;</td>
<td>#5 Bottom Reinforcement 3'-6&quot;</td>
</tr>
<tr>
<td><strong>Non-Composite</strong></td>
<td><strong>Top Reinforcement</strong></td>
</tr>
<tr>
<td>Composite</td>
<td><strong>Top Reinforcement</strong></td>
</tr>
<tr>
<td>Stringer Spacing</td>
<td><strong>Top Reinforcement</strong></td>
</tr>
<tr>
<td>7 Equal Spaces</td>
<td>2'-5&quot;</td>
</tr>
<tr>
<td>Lap Length</td>
<td>3'-6&quot;</td>
</tr>
<tr>
<td>1'-10&quot;</td>
<td>3'-7&quot;</td>
</tr>
<tr>
<td>2'-5&quot;</td>
<td>2'-8&quot;</td>
</tr>
</tbody>
</table>

**LAP LENGTHS FOR DECK REINFORCING**

**Note:**
1. All steel sizes and spacing based on ASTM A-615.
2. Transverse bars to be placed normal to center line of stringers. For curved girder see SUP-BD(SG)-101.
3. All longitudinal bars to be #5's placed as shown except as indicated by Note 4.
4. On continuous bridges, over piers, additional longitudinal steel to be added to the top of the slab between normal bars and indicated thus shall be #6 bars. See Detail No. SUP-BD(SG)-201 for the lengths of these additional bars.
5. An Excess Reinforcement Factor of 0.75 was applied to the transverse reinforcement lap lengths. An Excess Reinforcement Factor of 1.00 was applied to the longitudinal reinforcement lap lengths.
6. Refer to SUP-BD(SG)-101 for overhang design requirements.
HL-93 TYPE XXXV SLAB
GREATER THAN 8'-0" TO 8'-6" STRINGER SPACING

Scale: 1"=1'-0"

TRANSVERSE REINFORCEMENT
(See Note 5)

LAP LENGTHS FOR DECK REINFORCING

Note:
1. All steel sizes and spacing based on ASTM A-615.
2. Transverse bars to be placed normal to center line of stringers. For curved girder see SUP-BD(SG)-101.
3. All longitudinal bars are to be #5's placed as shown except as indicated by Note 4.
4. On continuous bridges, over piers, additional longitudinal steel to be added to the top of the slab between normal bars and indicated thus shall be #6 bars. See Detail No. SUP-BD(SG)-201 for the lengths of these additional bars.
5. An Excess Reinforcement Factor of 0.75 was applied to the transverse reinforcement lap lengths. An Excess Reinforcement Factor of 1.00 was applied to the longitudinal reinforcement lap lengths.
6. Refer to SUP-BD(SG)-101 for overhang design requirements.

LONGITUDINAL REINFORCEMENT

Note:
Slanted lettering indicates notes "For Office Use Only".

Contractor has option of using the following rein. steel pattern.
- 5 Straight @ 12" c/c.
- 5 Truss @ 12" c/c.
- 5 Straight @ 12" c/c.
- 5 Straight @ 6" c/c.
- 5 Straight @ 6" c/c.
Substitute for every sixth bar a #5 truss bar @ 3'-0" c/c.
HL-93 Type XXXVI Slab

Greater Than 8'-6" to 9'-0" Stringer Spacing

Scale 1/2"=1'-0"

Transverse Reinforcement
(See Note 5)

Longitudinal Reinforcement

Lap Lengths for Deck Reinforcing

Notes:
1. All steel sizes and spacing based on ASTM A-615, Grade 60.
2. Transverse bars to be placed normal to center line of stringers. For curved girder see SUP-BD(SG)-101.
3. All longitudinal bars are to be #5's placed as shown except as indicated by Note 4.
4. On continuous bridges, over piers, additional longitudinal steel to be added to the top of the slab between normal bars and indicated thus @ shall be #6 bars. See Detail No. SUP-BD(SG)-201 for the lengths of these additional bars.
5. An Excess Reinforcement Factor of 0.75 was applied to the transverse reinforcement lap lengths. An Excess Reinforcement Factor of 1.00 was applied to the longitudinal reinforcement lap lengths.
6. Refer to SUP-BD(SG)-101 for overhang design requirements.
9½” slab thickness (including ½” integral wearing surface).  

7 Equal Spacing
(Main Longitudinal Steel)

For exact number of shear developers see superstructure sheet.

D" e Bearing
See Typical Section of bridge. (For girders, D is measured from top of web).

For exact haunch details, see pertinent details contained elsewhere in plans.

HL-93 TYPE XXXVII SLAB
GREATER THAN 9'-0" TO 9'-6" STRINGER SPACING
Scales ¾"=1'-0"

TRANSVERSE REINFORCEMENT
(See Note 5)

LAP LENGTHS FOR DECK REINFORCING

LONGITUDINAL REINFORCEMENT

Note:
1. All steel sizes and spacing based on ASTM A-615, Grade 60.
2. Transverse bars to be placed normal to center line of stringers. For curved girder see SUP-BD(SG)-101.
3. All longitudinal bars are to be #5’s placed as shown except as indicated by Note 4.
4. On continuous bridges, over piers, additional longitudinal steel to be added to the top of the slab between normal bars and indicated thus, shall be #6 bars. See Detail No. SUP-BD(SG)-201 for the lengths of these additional bars.
5. An Excess Reinforcement Factor of 0.75 was applied to the transverse reinforcement lap lengths. An Excess Reinforcement Factor of 1.00 was applied to the longitudinal reinforcement lap lengths.
6. Refer to SUP-BD(SG)-101 for overhang design requirements.

See Typical Section of bridge. (For girders, D is measured from top of web).

** See Note 4
Note:
1. All steel sizes and spacing based on ASTM A-615, Grade 60.
2. Transverse bars to be placed normal to center line of stringers. For curved girder see SUP-BD(SG)-101.
3. All longitudinal bars are to be #5's placed as shown except as indicated by Note 4.
4. On continuous bridges, over piers, additional longitudinal steel to be added to the top of the slab between normal bars and indicated thus c shall be #6 bars. See Detail No. SUP-BD(SG)-101 for the lengths of these additional bars.
5. An Excess Reinforcement Factor of 0.75 was applied to the transverse reinforcement lap lengths. An Excess Reinforcement Factor of 1.00 was applied to the longitudinal reinforcement lap lengths.
6. Refer to SUP-BD(SG)-101 for overhang design requirements.

Note:
- Slanted lettering indicates notes "For Office Use Only".
HL-93 TYPE XXXIX SLAB
GREATER THAN 10'-0" TO 10'-6" STRINGER SPACING
Scales 1/8"=1'-0"

TRANSVERSE REINFORCEMENT
(See Note 5)

<table>
<thead>
<tr>
<th>Lap Length</th>
<th>#5 Top Reinforcement</th>
<th>1'-10&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#5 Bottom Reinforcement</td>
<td>2'-8&quot;</td>
</tr>
</tbody>
</table>

LONGITUDINAL REINFORCEMENT

<table>
<thead>
<tr>
<th>Lap Length</th>
<th>#5 Top Reinforcement</th>
<th>2'-5&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#5 Bottom Reinforcement</td>
<td>3'-6&quot;</td>
</tr>
<tr>
<td></td>
<td>#6 Top Reinforcement**</td>
<td>3'-7&quot;</td>
</tr>
</tbody>
</table>

** See Note 4

LAP LENGTHS FOR DECK REINFORCING

Notes:
1. All steel sizes and spacing based on ASTM A-615, Grade 60.
2. Transverse bars to be placed normal to center line of stringers. For curved girders see SUP-BD(SG)-101.
3. All longitudinal bars are to be #5's placed as shown except as indicated by Note 4.
4. On continuous bridges, over piers, additional longitudinal steel to be added to the top of the slab between normal bars and indicated thus, shall be #6 bars. See Detail No. SUP-BD(SG)-101 for the lengths of these additional bars.
5. An Excess Reinforcement Factor of 0.75 was applied to the transverse reinforcement lap lengths. An Excess Reinforcement Factor of 1.00 was applied to the longitudinal reinforcement lap lengths.
6. Refer to SUP-BD(SG)-101 for overhang design requirements.

Note:
Slanted lettering indicates notes "For Office Use Only".

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
OFFICE OF STRUCTURES

TYPE XXXIX
BRIDGE DECK SLAB FOR STEEL GIRDERS
HL-93 LOADING

DETAIL NO. SUP-BD(SG)-110
Outside face of superstructure.

*5 Longitudinal reinforcing in top mat.

End of additional longitudinal reinforcing steel.

Note:
1. If additional longitudinal reinforcing in pour requires splicing, then the reinforcing shall be spliced as per Splice Location Layout.
2. Additional longitudinal reinforcing bars shall be #6.

Additional rebars over pier. For number and spacing of additional bars, between stringers, refer to bridge deck slab details.
**PLAN**

Scale: $\frac{\text{3/8"}}{1'-0''}$

<table>
<thead>
<tr>
<th>Deck Type</th>
<th>Additional Bar Size</th>
<th>&quot;L1&quot;</th>
<th>&quot;L2&quot;</th>
<th>Maximum Overhang</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXXI</td>
<td>#6</td>
<td>4'-7&quot;</td>
<td>6'-10&quot;</td>
<td>4'-0&quot;</td>
</tr>
<tr>
<td>XXXII</td>
<td>#6</td>
<td>4'-8'/2&quot;</td>
<td>7'-0&quot;</td>
<td>4'-4'/2&quot;</td>
</tr>
<tr>
<td>XXXIII</td>
<td>#6</td>
<td>4'-9&quot;</td>
<td>7'-0&quot;</td>
<td>4'-8'/4&quot;</td>
</tr>
<tr>
<td>XXXIV</td>
<td>#5</td>
<td>4'-7&quot;</td>
<td>4'-7&quot;</td>
<td>5'-0&quot;</td>
</tr>
<tr>
<td>XXXV</td>
<td>#6</td>
<td>5'-1'/4&quot;</td>
<td>7'-4'/4&quot;</td>
<td>5'-3'/4&quot;</td>
</tr>
<tr>
<td>XXXVI</td>
<td>#5</td>
<td>4'-10'/2&quot;</td>
<td>4'-10'/8&quot;</td>
<td>5'-7'/2&quot;</td>
</tr>
<tr>
<td>XXXVII</td>
<td>#5</td>
<td>4'-8'/4&quot;</td>
<td>4'-8'/4&quot;</td>
<td>5'-11'/4&quot;</td>
</tr>
<tr>
<td>XXXVIII</td>
<td>#5</td>
<td>4'-6&quot;</td>
<td>4'-6&quot;</td>
<td>6'-0&quot;</td>
</tr>
<tr>
<td>XXXIX</td>
<td>#5</td>
<td>4'-3'/8&quot;</td>
<td>4'-3'/8&quot;</td>
<td>6'-0&quot;</td>
</tr>
</tbody>
</table>

**Notes:**
1. Additional reinforcing to be placed in top mat of deck.
2. Bundle additional bar with normal deck reinforcing.
3. Deck overhangs greater than shown will need to be designed.
Normal deck slab reinforcing (typ.)

Stringer spacing Overhang

Outside edge of deck

L 1st interior girder

L exterior girder

Additional reinforcing bars (typ.)

PLAN
Scale: $\frac{3}{8}'' = 1'-0''$

<table>
<thead>
<tr>
<th>Deck Type</th>
<th>Additional Bar Size</th>
<th>&quot;L1&quot;</th>
<th>&quot;L2&quot;</th>
<th>Maximum Overhang</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXXI</td>
<td>#6</td>
<td>4'-6(\frac{3}{4})''</td>
<td>6'-9(\frac{3}{4})''</td>
<td>4'-0''</td>
</tr>
<tr>
<td>XXXII</td>
<td>#6</td>
<td>4'-8(\frac{1}{4})''</td>
<td>6'-11(\frac{3}{4})''</td>
<td>4'-4(\frac{1}{2})''</td>
</tr>
<tr>
<td>XXXIII</td>
<td>#6</td>
<td>4'-8(\frac{3}{4})''</td>
<td>6'-11(\frac{3}{4})''</td>
<td>4'-8(\frac{1}{4})''</td>
</tr>
<tr>
<td>XXXIV</td>
<td>#5</td>
<td>4'-6(\frac{3}{8})''</td>
<td>4'-6(\frac{7}{8})''</td>
<td>5'-0''</td>
</tr>
<tr>
<td>XXXV</td>
<td>#6</td>
<td>5'-0(\frac{5}{8})''</td>
<td>7'-3(\frac{3}{8})''</td>
<td>5'-3(\frac{3}{4})''</td>
</tr>
<tr>
<td>XXXVI</td>
<td>#5</td>
<td>4'-9(\frac{1}{2})''</td>
<td>4'-9(\frac{1}{2})''</td>
<td>5'-7(\frac{1}{2})''</td>
</tr>
<tr>
<td>XXXVII</td>
<td>#5</td>
<td>4'-7(\frac{1}{2})''</td>
<td>4'-7(\frac{7}{8})''</td>
<td>5'-11(\frac{3}{4})''</td>
</tr>
<tr>
<td>XXXVIII</td>
<td>#5</td>
<td>4'-5(\frac{1}{4})''</td>
<td>4'-5(\frac{1}{4})''</td>
<td>6'-0''</td>
</tr>
<tr>
<td>XXXIX</td>
<td>#5</td>
<td>4'-1(\frac{5}{8})''</td>
<td>4'-1(\frac{5}{8})''</td>
<td>6'-0''</td>
</tr>
</tbody>
</table>

Notes:
1. Additional reinforcing to be placed in top mat of deck.
2. Bundle additional bar with normal deck reinforcing.
3. Deck overhangs greater than shown will need to be designed.
PLAN
Scale: 3/8" = 1'-0"

<table>
<thead>
<tr>
<th>Deck Type</th>
<th>Additional Bar Size</th>
<th>&quot;L&quot;</th>
<th>Bundle with Main Deck Reinforcing</th>
<th>Maximum Overhang</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXXI</td>
<td>#5</td>
<td>3'-0&quot;</td>
<td>each bar</td>
<td>4'-0&quot;</td>
</tr>
<tr>
<td>XXXII</td>
<td>#5</td>
<td>3'-0&quot;</td>
<td>every other</td>
<td>4'-4½&quot;</td>
</tr>
<tr>
<td>XXXIII</td>
<td>#5</td>
<td>2'-10½&quot;</td>
<td>every other</td>
<td>4'-8½&quot;</td>
</tr>
<tr>
<td>XXXIV</td>
<td>#5</td>
<td>2'-8½&quot;</td>
<td>every other</td>
<td>5'-0&quot;</td>
</tr>
<tr>
<td>XXXV</td>
<td>#5</td>
<td>3'-1½&quot;</td>
<td>every other</td>
<td>5'-3½&quot;</td>
</tr>
<tr>
<td>XXXVI</td>
<td>#5</td>
<td>2'-10&quot;</td>
<td>every third</td>
<td>5'-7½&quot;</td>
</tr>
<tr>
<td>XXXVII</td>
<td>#5</td>
<td>2'-5½&quot;</td>
<td>every fourth</td>
<td>5'-11½&quot;</td>
</tr>
<tr>
<td>XXXVIII</td>
<td>#5</td>
<td>2'-0½&quot;</td>
<td>every fifth</td>
<td>6'-0&quot;</td>
</tr>
<tr>
<td>XXXIX</td>
<td>#5</td>
<td>1'-10½&quot;</td>
<td>every sixth</td>
<td>6'-0&quot;</td>
</tr>
</tbody>
</table>

Notes:
1. Additional reinforcing to be placed in top mat of deck.
2. Bundle additional bar with normal deck reinforcing.
3. Deck overhangs greater than shown will need to be designed.
Notes:
1. For Section A-A, see sheet 3 of 4.
2. For Section B-B, see sheet 4 of 4.
3. *Longest leg of angle shall be increased as necessary so that angle exceeds stiffener width by at least 1/2", in lieu of the seat angle a 3/8" plate may be used. The plate shall be a minimum of 6" wide and shall exceed stiffener width by at least 1/2".
4. F-Shape barrier is for illustrative purposes only. See plans for barrier type.

Note:
Normal deck reinforcing not shown for clarity.
Notes:
1. For Section A-A, see sheet 3 of 4.
2. For Section B-B, see sheet 4 of 4.
3. F-Shape barrier is for illustrative purposes only. See plans for barrier type.

ELEVATION AT BRIDGE SEAT AREA OVER BACKWALL

Scale: \(1'' = 1'-0''\)

*Elastomeric pad shall be attached to abutment in accordance with Section 432.03.04.

For exact configuration of girder spacing and support, see "Typical Cross Section of Bridge".

For Section B-B, see sheet 4 of 4.

For Section A-A, see sheet 3 of 4.

Note:
Normal deck reinforcing not shown for clarity.

**Normal deck reinforcing not shown for clarity.**

**For Section B-B, see sheet 4 of 4.**

**For Section A-A, see sheet 3 of 4.**

**Notes:**
1. For Section A-A, see sheet 3 of 4.
2. For Section B-B, see sheet 4 of 4.
3. F-Shape barrier is for illustrative purposes only. See plans for barrier type.

**Normal deck reinforcing not shown for clarity.**
3-#5 continuous bars, match spacing of bars below

#5 @ 9" max., place perpendicular to L of bearing

2'-0"

Normal deck reinforcing

Top of bridge roadway

1'-0"

Seat angle/plate

"5 @ 9" - place perpendicular to L of bearing

Level

The use of stay-in-place or metal forms is prohibited in this area of the deck

Place concrete directly against back wall roofing paper with no formwork.

6-#5 bars (3 bars between beams and 3 continuous over backwall)

2 ply roofing paper bond breaker

\[ \frac{1}{4} '' \times \frac{3}{4} '' \] drip groove 2" from end of diaphragm, see detail this sheet

\[ \frac{1}{4} '' \times \frac{3}{4} '' \] (typ.)

SECTION A-A

\[ \text{Scale: } \frac{1}{4} '' = 1'-0'' \]

DRIP GROOVE DETAIL

\[ \text{Scale: } 3'' = 1'-0'' \]

Note:
All reinforcing steel shown shall be epoxy coated.

\[ \text{\* Measured } \perp \text{ to } L \text{ of bearing.} \]
\[ \text{\** Measured } \perp \text{ to } L \text{ of bearing from edge of bearing stiffener.} \]
**Note:**
All reinforcing steel shown shall be epoxy coated.

---

**SECTION B-B**
Scale: \(\frac{3}{4}" = 1'-0"

---

**SUPER-BRIDGE DECK**

**STATE OF MARYLAND**
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

CONCRETE DIAPHRAGMS AT ABUTMENTS
CARRYING STEEL GIRDERS WITH STEEL FIXED
BEARINGS OR STEEL EXPANSION BEARINGS WITH
LENGTHS CONTRIBUTING TO EXPANSION < 70 FEET

DETAIL NO. SUP-BD(SG)-301 SHEET 4 OF 4
1. For Section A-A see Sheet 3 of 4.
2. For Section B-B see Sheet 4 of 4.
3. For Expansion Beams with Lengths > 70 Feet

Notes:
- Longest leg of angle shall be increased as necessary so that angle exceeds stiffener width by at least 1/2".
- In lieu of the seat angle, a 3/8" plate may be used. The plate shall be a minimum of 6" wide and shall exceed stiffener width by at least 1/2".

SUP-BD(SG)-401
Sup-Bridge Deck

**Typical Cross Section** of bridge

ELEVATION AT BRIDGE SEAT AREA OVER BEAMS

Scale: 3/8" = 1'-0"
Notes:
1. For Section A-A see Sheet 3 of 4.
2. For Section B-B see Sheet 4 of 4.
3. F-Shape barrier is for illustrative purposes only, see plans for barrier type.

CONCRETE DIAPHRAGMS AT ABUTMENTS CARRYING STEEL GIRDERS WITH STEEL EXPANSION BEARINGS WITH LENGTHS CONTRIBUTING TO EXPANSION > 70 FEET

ELEVATION AT BRIDGE SEAT AREA OVER BACKWALL

Scale: \(\frac{\text{\(\frac{1}{16}\)}}{1\text{-0''}}\)

*Note:
Elastomeric pad shall be attached to abutment backwall in accordance with the Section 432.03.04.
Note:
All reinforcing steel shown shall be epoxy coated.

CONCRETE DIAPHRAGMS AT ABUTMENTS
CARRYING STEEL GIRDERS WITH STEEL EXPANSION BEARINGS WITH LENGTHS CONTRIBUTING TO EXPANSION > 70 FEET

SECTION A-A
Scale: 1/4" = 1'-0"

3-5 continuous bars, match spacing of bars below

Seal retainer angles

*5 @ 9" max. place perpendicular to & bearing

Top of bridge roadway

Level

The use of stay-in-place or metal forms is prohibited in this area of the deck.

Place concrete directly against back wall roofing paper with no formwork.

= Joint opening dimension, see appropriate joint detail.

* Measured ⊥ to l of Bearing.
** Measured ⊥ to l of Bearing from Edge of Bearing Stiffener.
Note:
All reinforcing steel shown shall be epoxy coated.

*Note:
Elastomeric pad shall be attached to abutment backwall in accordance with the Section 432.03.04.

\( X ** X \): Joint opening dimension, see appropriate joint detail.

\( \frac{3}{4}'' \times \frac{3}{4}'' \) drip groove 2'' from end of diaphragm, see detail this sheet.
**Notes:**

1. Permanent steel deck forms and supports shall conform to 909.11. Design Span shall be the clear distance between beam and/or girder flanges less two (2) inches.
2. No welding of these forms to parts carrying tension will be permitted. These forms shall be vertically adjusted to attain line and grade as required.
3. Any permanently exposed form metal where the galvanized coating has been damaged shall be thoroughly cleaned, wire brushed and painted with two coats of zinc-oxide dust primer, Federal Specification TT-P-641d, Type II, no color added, to the satisfaction of the engineer. Minor heat discoloration in areas of welds need not be touched up.
4. Contractor has option of using this detail or that shown on 2 of 2, except for bridge decks with curved stringers or bridge with a flared rebar pattern. For bridge with curved stringers or bridge with a flared rebar pattern only the detail shown on sheet 2 of 2 can be used.
5. Where shear connectors are utilized, normal manufacturers detailing may be utilized at stringer flange.
6. Supports for rebar shall be provided by Contractor.
Notes:
1. For notes see sheet 1 of 2.
2. This detail is acceptable only on structures where the General Notes under "Loading" states "and 15 pounds per square foot for use of steel bridge deck forms which remain in place."
3. Supports for rebar shall be provided by Contractor.
Notes:
1. Permanent steel deck forms and supports shall conform to 903.10. Design Span shall be the clear distance between beam and/or girder flanges less two (2) inches.
2. No welding of these forms to parts carrying tension will be permitted. These forms shall be vertically adjusted to attain line and grade as required.
3. Any permanently exposed form metal where the galvanized coating has been damaged shall be thoroughly cleaned, wire brushed and painted with two coats of zinc-oxide dust primer, Federal Specification TT-P-641d, Type II, no color added, to the satisfaction of the engineer. Minor heat discoloration in areas of welds need not be touched up.
4. Contractor has option of using this detail or that shown on 2 of 2, except for bridge decks with curved stringers or bridge with a flared rebar pattern. For bridge with curved stringers or bridge with a flared rebar pattern only the detail shown on sheet 2 of 2 can be used.
5. Where shear connectors are utilized, normal manufacturers detailing may be utilized at stringer flange.
6. Supports for rebar shall be provided by Contractor.
7. When the General Notes under "Loading" indicates a design load with provisions for 3#/ft² for use of steel deck forms which remain in place, then this is the only detail that is acceptable if stay in place forms are to be used.

WHERE FORM IS BELOW
BOTTOM OF FLANGE
AND THERE ARE NO SHEAR CONNECTORS

WHERE FORM IS ABOVE
BOTTOM OF FLANGE
AND THERE ARE NO SHEAR CONNECTORS
Top of slab
4'-0" Max. Spacing

Slab bolster upper (height <= 3"
Continuous high chair upper (height > 3"

Concrete deck
Slab depth

SECTION
Scale: None

Notes:
1. For notes see sheet 1 of 2.
2. When the General Notes under "Loading" indicates a design load with provisions for 3#/ft² for use of steel deck forms which remain in place, then this is the only detail that is acceptable if stay in place forms are to be used.
3. Supports for rebar shall be provided by Contractor.
Notes:
1. Omit concrete haunch by dropping bottom of concrete slab to bottom of top flange on spans of 30'-0'' or less c/c of bearings.
2. Dimension 'S' at either edge of stringer, for its full length, as shown above, must not be less than dimension 'T'; therefore, check this dimension along both edges of stringers at each elevation point shown on "Bridge Deck Elevation" sheet prior to placing any form work. In determining the depth of haunch for continuous bridges the span length shall be considered to be the distance from the abutment support to the dead load contraflexure for end spans and between the contraflexure points for intermediate spans. Where cover plates and/or varying thicknesses of top flanges are utilized, this increase in depth shall be taken into account in determining the slab plus haunch thickness at t of bearing.
Chapter 03 - Superstructure

Section 01 – Bridge Deck

SUB-SECTION 03

BRIDGE DECK CONCRETE GIRDER
(SUP-BD(CG))
NOTES

Design:
1. Latest AASHTO LRFD Bridge Design Specifications.
2. $f'c = 4000$ p.s.i.
3. Design includes provision for 2" future wearing surface.

Generals:
1. Transverse bars shall be placed normal to centerline girders.
2. When skew angles are greater than 60° then Contractor may use either reinforcing steel pattern no.1 or no.2 throughout bridge.
3. When the girder spacing is less than 7'-0", all bars shall be straight top and bottom. No truss bars are to be used.
4. Typical sections shall include a minimum of three stringers and have a width of not less than 14.0' between centerlines of exterior stringers.
5. Overhangs shall be at least 21" but shall not exceed the smaller of 0.625 times the stringer spacing and 6.0'.
6. Reinforcing in the slab overhangs shall be designed in accordance with AASHTO.
7. Bridge deck slab Details should not be used for girder spacings less than 6'-0". For girder spacings between 6'-0" to 7'-0", clear spacing between additional longitudinal steel over piers should be checked. A minimum of 3" clearance between longitudinal bars shall be maintained.
8. All reinforcing steel in the deck slabs shall be epoxy coated.
9. The bridge deck slab details are for PCEF Bulb Tees with a top flange width of 4'-0" only.
1. The Contractor has the option of using reinforcing steel pattern no.1 or no.2 in the unhatched portions of the decks shown below.
2. The Contractor shall use only reinforcing steel pattern no.1 in the hatched portions of the decks shown below.

**REINFORCING STEEL PATTERN NO.1**

**REINFORCING STEEL PATTERN NO.2**

**TRANVERSE BAR SPACING FOR SPANS WITH SKEW ANGLES LESS THAN 60°**

Scale: 1" = 1'-0"
1. Grade 60.
   Steel sizes and spacing based on ASTM A-615. All longi-
   tudinal bars are to be #5's placed as shown.

2. Transverse bars to be placed normal to center line of
   all continuous bridges over piers. Additional longitudinal
   bars to be added to the face of the slab between normal
   bars and indicated thus . See Detail No. SUP-BD(CG)-201 for
   the size and lengths of these additional bars. An Excess
   Reinforcement Factor of 0.75 was applied to the transverse
   reinforcement lap lengths. An Excess Reinforcement Factor
   of 1.00 was applied to the longitudinal reinforcement lap
   lengths.

3. An Excess Reinforcement Factor of 0.40 was applied to
   the lap lengths of Every sixth bar a #5 truss bar @ 3'-3" c/c
   Substitute for every sixth bar a #5 truss bar @ 3'-3" c/c

4. For normal bars and indicated thus . See Detail
   HL-93 LOADING

5. Scale: 1/12"=1'-0"

6. For girder spacing less than
   7'-0" see Note 3 on Detail No.
   SUP-BD(CO)-101.

HL-93 TYPE XLI SLAB

GREATER THAN 7'-0" TO 8'-0" GIRDER SPACING

For exact hunch details, see pertinent details contained elsewhere in plans.
Note: All girders are to have Grade 60 steel. All steel sizes and spacing are based on ASTM A-615. Transverse bars to be placed normal to the center line of the slab. All longitudinal bars are to be #5's placed as shown.

An Excess Reinforcement Factor of 0.75 was applied to the transverse reinforcement lap lengths. An Excess Reinforcement Factor of 1.00 was applied to the longitudinal reinforcement lap lengths.

For exact haunch details, see pertinent details contained elsewhere in plans.
Grade 60. All steel sizes and spacing based on ASTM A-615, except as indicated by Note 4. All longitudinal bars are to be #5's placed as shown. Transverse bars to be placed normal to center line of girders. On continuous bridges, over piers, additional longitudinal steel to be added to the top of the slab between normal bars and indicated thus . See Detail No. SUP-BD(CG)-201 for the size and lengths of these additional bars.

An Excess Reinforcement Factor of 0.75 was applied to the transverse reinforcement lap lengths. An Excess Reinforcement Factor of 1.00 was applied to the longitudinal reinforcement lap lengths.

PCEF BULB TEE PRESTRESSED CONCRETE GIRDERS

HL-93 TYPE XLIII SLAB

GREATER THAN 8'-6" TO 9'-0" GIRDER SPACING

Scale: 1/2'-1'-0"

LAP LENGTHS FOR DECK REINFORCING

** See Note 4

Alternate straight bars with truss bars.

Contractor has option of using the following reinf. steel pattern.

Substitute for every sixth bar a #5 truss bar @ 3'-0" c/c.

9" slab thickness (including 1/2" integral wearing surface)
Note:
1. All steel sizes and spacing based on ASTM A-615, Grade 60.
2. Transverse bars to be placed normal to center line of girders.
3. All longitudinal bars are to be #5's placed as shown except as indicated by Note 4.
4. On continuous bridges, over piers, additional longitudinal steel to be added to the top of the slab between normal bars and indicated thus: See Detail No. SUP-2BDG-201 for the size and lengths of these additional bars.
5. An Excess Reinforcement Factor of 0.75 was applied to the transverse reinforcement lap lengths. An Excess Reinforcement Factor of 1.00 was applied to the longitudinal reinforcement lap lengths.
**DEPARTMENT OF TRANSPORTATION**

**STATE OF MARYLAND**

**OFFICE OF STRUCTURES**

**DATE:**

**VERSION:**

**STATE HIGHWAY ADMINISTRATION**

**DETAIL NO.**

**SHEET**

**SCALE:** 1'-0" = 1'-0"

---

**TRANVERSE REINFORCEMENT**

*See Note 5*

<table>
<thead>
<tr>
<th>Lap Length</th>
<th>1'-10&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>#5 Top Reinforcement</td>
<td></td>
</tr>
<tr>
<td>#5 Bottom Reinforcement</td>
<td>2'-8&quot;</td>
</tr>
</tbody>
</table>

**LONGITUDINAL REINFORCEMENT**

<table>
<thead>
<tr>
<th>Lap Length</th>
<th>7'-5&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>#5 Top Reinforcement</td>
<td></td>
</tr>
<tr>
<td>#5 Bottom Reinforcement</td>
<td>3'-6&quot;</td>
</tr>
<tr>
<td>#5 Top Reinforcement**</td>
<td>3'-7&quot;</td>
</tr>
</tbody>
</table>

**LAP LENGTHS FOR DECK REINFORCING**

- #5 Straight @ 12" c/c
- #5 Truss @ 12" c/c
- #5 Straight @ 6" c/c
- #5 Straight @ 6" c/c

Alternate straight bars with truss bars.

- Contractor has option of using the following rein. steel pattern.
- #5 Straight @ 6" c/c
- #5 Straight @ 6" c/c
- Substitute for every sixth bar a #5 truss bar @ 3'-0" c/c

---

**For exact stirrup configuration see superstructure sheet**

**Main Longitudinal Steel**

---

**For exact haunch details, see pertinent details contained elsewhere in plans.**

**HL-93 TYPE XLV SLAB**

**GREATER THAN 9'-6" TO 10'-0" GIRDERS SPACING**

**Scales:** 1/2" = 1'-0"
Grade 60. All steel sizes and spacing based on ASTM A-615, except as indicated by Note 4.

All longitudinal bars are to be #5's placed as shown.

Transverse bars to be placed normal to the center line of girders.

On continuous bridges, over piers, additional longitudinal steel to be added to the top of the slab between normal bars and indicated thus . See Detail No. SUP-BD(CG)-201 for the size and lengths of these additional bars.

An Excess Reinforcement Factor of 0.75 was applied to the transverse reinforcement lap lengths. An Excess Reinforcement Factor of 1.00 was applied to the longitudinal reinforcement lap lengths.

1. Longitudinal Lap Lengths
2. Transverse Lap Lengths
3. Alternate straight bars with truss bars
4. Contractor has option of using the following reinforcement pattern, which may be alternated.
5. Substitute for every sixth bar of #5 truss bar a #5 truss bar @ 2'-9"c/c

LAP LENGTHS FOR DECK REINFORCING

** See Note 4

PCEF BULB TEE PRESTRESSED CONCRETE GIRDERS

HL-93 TYPE XLVI SLAB

GREATER THAN 10'-0" TO 10'-6" GIRDERS SPACING

Scale 1/2"=1'-0"

1.0
1. All longitudinal bars are to be #5's placed as shown. Transverse bars to be placed normal to center line of girders, labeled as shown.

2. For exact stirrup configuration, see superstructure sheet.

3. 2'-10" (typ.)

4. Substitute for every sixth bar.

5. Alternate straight bars with truss bars.

6. See Note 4.

7. See Typical Section of Bridge.

8. See Note 5.

9. Grade 60.

10. All steel sizes and spacing based on ASTM A-615.

Note: Excess reinforcement factor of 0.75 was applied to the transverse reinforcement lap lengths. An Excess Reinforcement Factor of 1.00 was applied to the longitudinal reinforcement lap lengths.
Note: All steel sizes and spacing based on ASTM A-615.

An Excess Reinforcement Factor of 0.75 was applied to the transverse reinforcement lap lengths. An Excess Reinforcement Factor of 1.00 was applied to the longitudinal reinforcement lap lengths, except as indicated by Note 4.

1. Grade 60.
2. Longitudinal bars are to be #5's placed as shown.
3. Transverse bars to be placed normal to center line of girders.
4. Transverse bars to be placed normal to center line of girder spacing.
5. Contractor has option of using the following reinforcement pattern.

** See Note 4

LAP LENGTHS FOR DECK REINFORCING

** See Note 4
Note:
1. All steel sizes and spacing based on ASTM A-615, Grade 60.
2. Transverse bars to be placed normal to center line of girders.
3. All longitudinal bars are to be #5's placed as shown except as indicated by Note 4.
4. On continuous bridges, over piers, additional longitudinal steel to be added to the top of the slab between normal bars and indicated thus O. See Detail No. SUP-BD(CG)-208 for the size and lengths of these additional bars.
5. An Excess Reinforcement Factor of 0.75 was applied to the transverse reinforcement lap lengths. An Excess Reinforcement Factor of 1.0 was applied to the longitudinal reinforcement lap lengths.

For exact hunch details, see pertinent details contained elsewhere in plans.
### SLABS OVER PIERS FOR CONCRETE GIRDERS

**SPICE LOCATION LAYOUT**

<table>
<thead>
<tr>
<th>Bridge #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pier</td>
<td></td>
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<tr>
<td>Pier</td>
<td></td>
</tr>
<tr>
<td>Pier</td>
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<tr>
<td>Pier</td>
<td></td>
</tr>
<tr>
<td>Pier</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
If additional longitudinal reinforcing in pour requires splicing, then the reinforcing shall be spliced as per Splice Location Layout.

**Scale:** None

**Additional rebars over pier:** For number and spacing of additional bars, between girders, refer to bridge deck slab details.

**Additional longitudinal reinforcing in top mat**
Stagger every other end of additional longitudinal reinforcing steel.

**Bar Size:**

<table>
<thead>
<tr>
<th>Location</th>
<th>L' (Back Stationing Span)</th>
<th>L (Ahead Stationing Span)</th>
<th>D (Development Length of Bar)</th>
<th>T=Total Length of Bar (T=L'+L+D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pier</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pier</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Pier</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**All bars to be #5 unless otherwise noted in this column.**

---

**STATE OF MARYLAND**
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

**ADDITIONAL LONGITUDINAL REINFORCING IN CONTINUOUS DECK**
SLABS OVER PIERS FOR CONCRETE GIRDERS

**DETAIL NO. SUP-BD(CO)-201**

**SUPER - BRIDGE DECK**

**APPROVAL**
DIRECTOR
OFFICE OF STRUCTURES
DATE: 12/18/2019

**VERSION**
1.0
Notes:
1. For Section A-A see Sheet 3 of 4.
2. For Section B-B see Sheet 4 of 4.
3. F-Shape barrier is for illustrative purposes only. See plans for barrier type.

Details:
- Super Bridge Deck
- Lengths contributing to expansion > 70 feet
- With Elastomeric Bearings with Prestressed Concrete Girders
- Concrete Diaphragms at Abutments carrying SUP-BD(CG)-301

1.01

For exact configuration of overhang and parapet see "Typical Cross Section" of bridge.

SCALE: $\frac{\text{i/8}}{\text{i'-0''}}$
Notes:
1. For Section A-A see Sheet 3 of 4.
2. For Section B-B see Sheet 4 of 4.
3. F-Shape barrier is for illustrative purposes only. See plans for barrier type.

Key:
- #5 @ 9" max. = place perpendicular to bearing
- 2-#5 bars placed around flange (typ.)

Closed cell neoprene sponge elastomer 1/2" thick x 7" wide for full length, conforming to Section 9110, seated in 7/4" x 1/2" deep key. Attach to abutment with copper nails.

Rebars "A" to extend to end of slab regardless of whether F-Shape Barrier, tube railing, or sidewalk is used.

Elevation at Bridge Seat Areas Over Backwall

Scale: 1/8" = 1'-0"

Note:
Elastomeric pad shall be attached to abutment backwall in accordance with the Section 432.03.04.
1.01 LENGTHS CONTRIBUTING TO EXPANSION > 70 FEET

WITH ELASTOMERIC EXPANSION BEARING WITH
PRESTRESSED CONCRETE GIRDERS

CONCRETE DIAPHRAGMS AT ABUTMENTS CARRYING
SUPER BRIDGE DECK

** Do not place top mat transverse deck reinforcing in this area

** Measured \( \perp \) to \( \perp \) of Bearing.

<table>
<thead>
<tr>
<th>Span = S</th>
<th>Rebars &quot;A&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 8'</td>
<td>3-#7's</td>
</tr>
<tr>
<td>over 8' to 14'</td>
<td>3-#8's</td>
</tr>
<tr>
<td>over 14' to 16'</td>
<td>3-#9's</td>
</tr>
</tbody>
</table>

Note:
All reinforcing steel shown shall be epoxy coated.
**Note:**
Elastomeric pad shall be attached to abutment backwall in accordance with the Section 432.03.04.

**X*** - Joint opening dimension, see appropriate joint detail.

**Do not place top mat transverse deck reinforcing in this area**

**SECTION B-B**

Scale: $\frac{3''}{1'-0''}$

<table>
<thead>
<tr>
<th>Span = S</th>
<th>Rebars “A”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 8’</td>
<td>3-*7’s</td>
</tr>
<tr>
<td>over 8’ to 14’</td>
<td>3-*8’s</td>
</tr>
<tr>
<td>over 14’ to 16’</td>
<td>3-*9’s</td>
</tr>
</tbody>
</table>

Note:
All reinforcing steel shown shall be epoxy coated.
For Section A-A see sheet 3 of 4.
For Section B-B see sheet 4 of 4.

Notes:
1. For exact configuration of overhang and parapet see "Typical Cross Section" of bridge.
2. F-Shape barrier is for illustrative purposes only. See plans for barrier type.
3. Scale: \( \frac{\frac{1}{8}''}{1'-0''} \)

- Normal deck reinforcing not shown for clarity.
- Note: Normal deck reinforcing not shown for clarity.
- Note: Normal deck reinforcing not shown for clarity.

**Elevation at Bridge Seat Area Over Beams**
Rebars "A" to extend to end of slab regardless of whether F-Shape Barrier, tube railing, or sidewalk is used.

Closed cell neoprene sponge elastomer 1/2" thick x 7" wide for full length, conforming to Section 31U.04, seated in 7/4" x 1/2" deep key.

For exact configuration of overhang and parapet see "Typical Cross Section" of bridge.

Normal deck reinforcing not shown for clarity.

ELEVATION AT BRIDGE SEAT AREAS OVER BACKWALL

Scale: 1/8" = 1'-0"
** Do not place top mat transverse deck reinforcing in this area.

<table>
<thead>
<tr>
<th>Span</th>
<th>Rebars &quot;A&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 8'</td>
<td>3-#7's</td>
</tr>
<tr>
<td>over 8' to 14'</td>
<td>3-#8's</td>
</tr>
<tr>
<td>over 14' to 16'</td>
<td>3-#9's</td>
</tr>
</tbody>
</table>

Roadway angle
Rebars "A" (match spacing of bars below)
Closed cell neoprene sponge elastomer 1/2" thick x 7" wide for full length, conforming to Section 911.0, seated in 7/4" x 1/2" deep key

Selective deck reinforcing

Normal deck reinforcing

Bottom of slab

*5 @ 9" - place perpendicular to & of bearing

Top of bridge roadway

1'-0"

Scale: 1" = 1'-0"

Note:
All reinforcing steel shown shall be epoxy coated.
Note:
Elastomeric pad shall be attached to abutment backwall in accordance with the Section 432.03.04.

**Do not place top mat transverse deck reinforcing in this area.

<table>
<thead>
<tr>
<th>Span</th>
<th>Rebars “A”</th>
</tr>
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<tbody>
<tr>
<td>Up to 8’</td>
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<td>over 14’ to 16’</td>
<td>3-#9’s</td>
</tr>
</tbody>
</table>

Note:
All reinforcing steel shown shall be epoxy coated.
Notes:
1. Permanent steel deck forms and supports shall conform to 909.21. Design Span shall be the clear distance between girder flanges less two (2) inches.
2. These forms shall be vertically adjusted to attain line and grade as required.
3. Any permanently exposed form metal where the galvanized coating has been damaged shall be thoroughly cleaned, wire brushed and painted with two coats of zinc-oxide dust primer, Federal Specification TT-P-641d, Type II, no color added, to the satisfaction of the Engineer. Minor heat discoloration in areas of welds need not be touched up.
4. Contractor has option of using this detail or that shown on 2 of 2, except for bridge decks with a flared rebar pattern. For bridges with a flared rebar pattern only the detail shown on sheet 2 of 2 can be used.
5. Supports for rebar shall be provided by Contractor.
Notes:
1. For notes see sheet 1 of 2.
2. This detail is acceptable only on structures where the General Notes under "Loading" states "and 15 pounds per square foot for use of steel bridge deck forms which remain in place".
3. Supports for rebar shall be provided by Contractor.
Chapter 03 - Superstructure

Section 01 – Bridge Deck

SUB-SECTION 04

STAGED CONSTRUCTION
(SUP-BD(SC))
Notes:
2. See Det. No. SUP-BDIDT-201 for Longitudinal and Additional Top Bar over Pier lap length details.
4. Construction joints shall not be placed over stringers.
GENERAL NOTES

1. Longitudinal deck reinforcing steel not shown.
2. Existing slab shown dashed.
3. Splicer bars and normal transverse reinforcing steel to be placed in same horizontal plane.
4. These splice bars will not be measured for payment, but all costs thereof shall be included in the Contract lump sum price for the pertinent Epoxy Coated Reinforcing Steel items.
5a. Root diameter of threaded portion of splicer bar must be equal to nominal diameter of designed bar. Increasing bar diameter to next size is permissible to maintain this requirement.
5b. In no case shall the splicer rebar coupler flange encroach into the slab top or bottom concrete cover. Either no flange or clipping the top and bottom edges of the flange prior to application of the epoxy coating in the shop is permissible, (See details below)
6. FOR OFFICE USE ONLY

This detail is intended for use on stage construction where the gap between stages of construction does not accommodate the minimum bar lap lengths.

Certification: The steel manufacturer shall furnish certification with actual test results for each heat of steel, showing that the material conforms to these specifications.

1. Flange
2. Clip flange
3. Flange
4. Clip flange
5. Flange
6. Clip flange

FRONT VIEW ROUND FLANGE
Scale: None

FRONT VIEW SQUARE FLANGE
Scale: None
**SECTION**

**OPTION I**

Scale: $\frac{1}{2}'' = 1'-0''$

Second Stage Slab Construction

Prior Stage Slab Construction

"A" Dim. > 0 measured from bend point (typ.)

2'-11" **

Construction gap *

Top leg dim. as calculated from slab detail ***

2'-4" **

Additional bar, bottom of slab, to lap with truss bar

2'-8"

> 0 measured from bend point (typ.)

Three bar bundling not permitted in bottom leg area of truss bar

2'-11" **

Full length additional bar with external threads may replace bottom bar system shown above.

2'-1"

Full length threaded additional bar with internal threads may replace bottom bar system shown above.

2'-8"

2'-8"

Additional bar, bottom of slab, to lap with truss bar

* Construction Gap dim. < 2'-9"

** Dimension = lap length + 3"

*** Cannot move bend point to accommodate lap splice.
COUPLER BAR SPLICE ALTERNATIVES
TRUSS BARS DURING STAGE CONSTRUCTION
SPLICING OF BRIDGE DECK SLAB

SECTION
OPTION VII
Scale: 1/2" = 1'-0"

* Constr. Gap dim. ≥ 1'-11"
Constr. Gap dim. < 2'-9"
** Dimension = lap length + 3"

Full length threaded additional bar with internal threads may replace bottom bar system shown above.

* A Dim. ≥ 0 measured from bend point (typ.)

Three bar bundling not permitted in bottom leg area of truss bar.
Notes:
1. This detail can be used in lieu of wood forms in spans where a longitudinal deck construction joint is located.
2. Hanger straps shall not deflect reinforcing from its proper position.

Continuous support may be removed after 1st pour has properly cured and traffic is allowed on it.

Note: Reinforcing steel not shown for clarity.
PLAN VIEW FOR SPLIT PLAN LAP
Scale: $\frac{1}{2}'' = 1'-0''$

SECTION A-A AT HANGER STRAPS
Scale: $\frac{3}{4}'' = 1'-0''$

Note: Reinforcing steel not shown for clarity.

Self tapping screws, 2 per strap (typ.)

Steel forms which remain in place

Zinc coated hanger straps $\frac{3}{4}'' \times 20$ gauge min.

Longitudinal reinforcing steel

Reinforcing steel not shown for clarity.