Chapter 03 - Superstructure

SECTION 06

CONCRETE GIRDER (SUP-CG)
Chapter 03 - Superstructure

Section 06 – Concrete Girder

SUB-SECTION 01

GENERAL

(SUP-CG(GEN))
TYPICAL NON-PRESTRESSING REINFORCING DETAIL FOR PCEF BULB TEE PRESTRESSED CONCRETE GIRDERS

**GUIDE SHEET FOR PLAN DEVELOPMENT ONLY - DO NOT INCLUDE THIS SHEET IN CONTRACT PLANS**

**FOR OFFICE USE ONLY**

Notes:
1. Prestressing steel and additional bars at piers not shown.
2. The longitudinal bars in web may be discontinuous to allow for passage of deflected strands in girder web.
3. For embedment depth of stirrup into deck, see Detail No. SUP-CG-401.
4. Unless otherwise shown in the detail (***), all clear cover shall be 2".
5. Horizontal splices are allowed for transverse bars in the top and bottom flanges.
6. Vertical splices are prohibited in the main shear stirrups.
7. A 180 or 90 degree hook that conforms to standard no. REBAR-DL-203 must be used on the bottom of every main shear stirrup. This hook can be placed either transverse or longitudinal to the beam. Main shear stirrup bars without hooks at the bottom are prohibited.
8. The main shear stirrup cannot flare out to the sides of the flanges except for the hook at the bottom of the girder.
9. A hook of 180 degrees is required for any bar that protrudes out of the girder.
**BASIC BEAM PROPERTIES**

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<th>D (in)</th>
<th>Volume (CY/FT)</th>
<th>Area (in. 2)</th>
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Note: Prestressing steel and reinforcing steel not shown.

* GUIDESHEET FOR PLAN DEVELOPMENT ONLY - DO NOT INCLUDE THIS SHEET IN CONTRACT PLANS *
### TYPICAL DIMENSION DETAIL

 Scale: 1" = 1'-0"

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#### BASIC BEAM PROPERTIES

<table>
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<tr>
<th>D (in)</th>
<th>Volume (CY/FT)</th>
<th>Area (in. 2)</th>
<th>Y_b (in.)</th>
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**Note:**

Prestressing steel and reinforcing steel not shown.
Notes:
1. Reinforcing steel bars not shown.
2. Details show maximum number of strand locations. Not all locations will be filled for each girder.
3. The designer shall determine the number of strands based on design loads. Strand shall be placed starting at the bottom row and working upward as needed.
4. Some strands in the girder web locations shall be harped as needed at approximately the 4/10 and 6/10 points along the span length.
5. If more than 12 strands are harped, the harped strands shall be broken into two groups. The harping points shall be separated by approximately 5'-0".

Scale: \( \frac{1}{4}'' = 1'-0'' \)
**Typical Spacing of Strands**

**Scale: \( \frac{3}{8}'' = 1'-0'' \)**

**Notes:**

1. Reinforcing steel bars not shown.
2. Details show maximum number of strand locations. Not all locations will be filled for each girder.
3. The designer shall determine the number of strands based on design loads. Strand shall be placed starting at the bottom row and working upward as needed.
4. Some strands in the girder web locations shall be harped as needed at approximately the 4/10 and 6/10 points along the span length.
5. If more than 12 strands are harped, the harped strands shall be broken into two groups. The harping points shall be separated by approximately 5'-0''.

---

**STATE OF MARYLAND\nDEPARTMENT OF TRANSPORTATION\nSTATE HIGHWAY ADMINISTRATION\nOFFICE OF STRUCTURES\n**

**TYPICAL SPACING OF PRESTRESSING STRANDS FOR PCEF BULB TEE Prestressed Concrete Girders with 9'' Thick Bottom Flanges**

**Detail No.** SUP-CG(GENI)-302 **|** SHEET 1 OF 1
Top surface of all girders shall be rough finished to a full amplitude of \( \frac{1}{4}'' \) and scubbed transversely with a course wire brush to remove all laitance to produce a roughened surface for bonding.

Top of all stirrups to extend into hatched portion of slab as shown.

Bottom of slab for wood formed slabs or top of steel forms which remain in place.

"4 stirrups (epoxy coated) unless otherwise specified on the girder details.

*3\( \frac{3}{2}'' \) for wood formed slabs and 3" for steel forms which remain in place.

Note: For prestressed concrete girder stirrup spacing and details, see pertinent superstructure sheets.
The lifting devices shown are designed with a minimum factor of safety of 2 for an assumed 180 ft. maximum girder length.

At the Contractor's option, alternate lifting details with a minimum factor of safety of 2 will be considered subject to the approval of the Engineer, before use.

All loops shall consist of \( \frac{1}{2}'' \) diameter 7-wire low relaxation strands conforming to the requirements of ASTM A416 grade 270.

The exact location of the lifting device may be altered to avoid all prestressing strands, stirrups, mild reinforcing steel and studs on plates as long as the embedment depth of the lifting device and a clear cover of 2'' on each face of the web is maintained.

Notes:

1. The lifting devices shown are designed with a minimum factor of safety of 2 for an assumed 180 ft. maximum girder length.
2. At the Contractor's option, alternate lifting details with a minimum factor of safety of 2 will be considered subject to the approval of the Engineer, before use.
3. All loops shall consist of \( \frac{1}{2}'' \) diameter 7-wire low relaxation strands conforming to the requirements of ASTM A416 grade 270.
4. The exact location of the lifting device may be altered to avoid all prestressing strands, stirrups, mild reinforcing steel and studs on plates as long as the embedment depth of the lifting device and a clear cover of 2'' on each face of the web is maintained.
PIER CONNECTION DETAILS FOR PCEF BULB TEE PRESTRESSED CONCRETE GIRDERs WITH 7'' BOTTOM FLANGES

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**Scale: 1 1/2'' = 1'-0''**

**Additional reinforcing at piers. For size and length, refer to chart on this sheet.**

**These bars may be placed in casting bed straight and bent in shop after casting of beam to allow for passage of prestressing strands.**

---

**Exterior face of exterior girder**

- **#4 bars to match stirrup spacing**

- **Possible strand locations for actual strand pattern see girder details (typ.)**

- **Bearing plate with studs embedded in end of beam. See Bearing Details**

**Pier Connection Details**

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<th>Bridge #</th>
<th>Description</th>
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*All additional reinforcing bars to be #5 unless otherwise noted in this column.*
PIER CONNECTION DETAILS FOR PCEF BULB TEE PRESTRESSED CONCRETE GIRDERS WITH 7'' BOTTOM FLANGES

Notes:
1. Prestressing strands, typical reinforcing, and studs not shown for clarity.
2. For bar size and development length, see sheet lot 2.
3. For hook dimensions see Standard No. REBAR-DL-103.
PIER CONNECTION DETAILS FOR PCEF BULB TEE PRESTRESSED CONCRETE GIRDERS WITH 9" BOTTOM FLANGES

**These bars may be placed in casting bed straight and bent in shop after casting of beam to allow for passage of prestressing strands.**

Additional reinforcing at piers. For size and length, refer to chart on this sheet.**

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

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**STATE OF MARYLAND**

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STATE HIGHWAY ADMINISTRATION

OFFICE OF STRUCTURES

PIER CONNECTION DETAILS FOR PCEF BULB TEE PRESTRESSED CONCRETE GIRDERS WITH 9" BOTTOM FLANGES

DETAIL NO. SUP-CG(GEN)-602

SHEET ___ OF ___
PIER CONNECTION PLAN VIEW

Scale: 3/8'' = 1'-0''

Development length
see chart on
sheet 1 of 2

1'-4''
gap

2'-9''
Bottom Flange

Notes:
1. Prestressing strands, typical reinforcing,
   and studs not shown for clarity.
2. For bar size and development length
   see sheet lot 2.
3. For hook dimensions see Standard
   No. REBAR-DL-103.

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

PIER CONNECTION DETAILS FOR PCEF BULB TEE
PRESTRESSED CONCRETE GIRDERS
WITH 9'' BOTTOM FLANGES

DATE: 05/04/2017
VERSION 1.0

APPROVAL

SUP-CG(GEN)-602 SHEET 2 OF 2
Chapter 03 - Superstructure

Section 06 – Concrete Girder

SUB-SECTION 02

INTERMEDIATE DIAPHRAGMS

(SUP-CG(DIA))
Notes:
1. For Section A-A see sheet 2 of 3.
2. Normal concrete girder, slab and parapet reinforcing not shown.
3. All reinforcing steel, threaded bars and threaded inserts shall be epoxy coated.

Scale: 3/8" = 1'-0"

INTERMEDIATE DIAPHRAGM - ELEVATION

2-#6 bars between girder webs as shown (typ.)

2-#6 dowels placed through holes in interior girder web (typ.)

2-#6 bars lapped 2'-9" as shown with #6 dowels (typ.)

2-#4 U bars under girder flange spaced as shown (typ.)

Roughened construction joint (match top of girder)

2-#6 bars extended to end of deck slab as shown

2 - 1" dia. threaded inserts cast in exterior girder as shown and parallel to diaphragm

2 - 1 1/2" dia. holes cast in interior girder webs (typ.). Holes shall be grouted before diaphragm is cast. See sheet 3 of 3 for details.

2-#6 bars placed in inserts to lap with #6 bars (typ.)

INTERMEDIATE DIAPHRAGM - ELEVATION

Scale: 3/8" = 1'-0"

STATE OF MARYLAND
OFFICE OF BRIDGE DEVELOPMENT
OFFICE OF HIGHWAY ADMINISTRATION

OFFICE OF BRIDGE DEVELOPMENT
OFFICE OF HIGHWAY ADMINISTRATION

DATE: 08/01/15

SUPERSTRUCTURE CONCRETE GIRDER

STATE HIGHWAY ADMINISTRATION
DEPARTMENT OF TRANSPORTATION
STATE OF MARYLAND

OFFICE OF BRIDGE DEVELOPMENT
OFFICE OF HIGHWAY ADMINISTRATION

DATE: 08/01/15
Notes:
1. All reinforcing steel and threaded bars shall be epoxy coated.
2. All reinforcing steel in girders shall be spaced to miss holes and threaded inserts in web.
3. Intermediate diaphragms shall be in place at least 40 hours prior to placement of deck.
End closure for steel deck forms as required

Roughened construction joint
Bridge deck slab

Intermediate diaphragm

Timber blocking

Timber forming for intermediate diaphragm

Steel deck forms which remain in place

Bridge deck slab

Timber forming for intermediate diaphragm

Intermediate diaphragm

Deck forming detail at intermediate diaphragm

Scale: \( \frac{3}{4''}{=}1'-0'' \)

Note:
Holes shall be cast parallel to diaghragm and follow the slope of the bottom of the diaphragm.

Intermediate diaphragm

Girder web

Skew angle of diaphragm

Near side openings

Far side openings

\( \frac{3}{4''}{=}1'-0'' \)

\( \frac{3}{4''}{=}1'-0'' \)

\( \frac{1}{2''}{=}1'-0'' \)

\( \frac{3}{8''}{=}1'-0'' \)

\( \frac{3}{8''}{=}1'-0'' \)

\( \frac{1}{2''}{=}1'-0'' \)

\( \frac{1}{2''}{=}1'-0'' \)

\( \frac{1}{2''}{=}1'-0'' \)

Intermediate diaphragm

Intermediate diaphragm

Intermediate diaphragm
Notes:
1. For Section A-A see sheet 2 of 3.
2. Normal concrete girder, slab and parapet reinforcing not shown.
3. All reinforcing steel, threaded bars and threaded inserts shall be epoxy coated.

Scale: 3/8" = 1'-0"

INTERMEDIATE DIAPHRAGM - ELEVATION

- 2-#6 bars between girder webs as shown (typ.)
- Roughened construction joint (match top of girder)
- 4-#6 dowels (2 per layer) placed through holes in interior girder web (typ.) 3/4" cl. (typ.)
- Top of bridge deck
- 3-#8 bars extended to end of deck slab as shown
- 4 - 1" dia. threaded inserts (2 per layer) cast in exterior girder as shown and parallel to #6 diaphragm
- 4 - 1/2" dia. holes (2 per layer) cast in interior girder webs (typ.). Holes shall be grouted before diaphragm is cast.
- See sheet 3 of 3 for details.
- Roughened construction joint (match top of girder)
- 2-#4 W bars under girder flange spaced as shown (typ.)
- 2-#6 bars lapped 2'-5" as shown with #6 dowels (typ.)
- 2-#6 bars lapped 2'-5" as shown with #6 dowels (typ.)
- 2-#6 bars under girder flange spaced as shown (typ.)

INTERMEDIATE DIAPHRAGM - ELEVATION

Scale: 3/8" = 1'-0"
Notes:
1. All reinforcing steel and threaded bars shall be epoxy coated.
2. All reinforcing steel in girders shall be spaced to miss holes and threaded inserts in web.
3. Intermediate diaphragms shall be in place at least 40 hours prior to placement of deck.
End closure for steel deck forms as required

Roughened construction joint
Bridge deck slab

Steel deck forms which remain in place

Timber forming for intermediate diaphragm

Timber blocking

Intermediate diaphragm

Roughened construction joint
Bridge deck slab

End closure for steel deck forms as required

Timber forming for intermediate diaphragm

Steel deck forms which remain in place

Timber blocking

Intermediate diaphragm

**DECK FORMING DETAIL AT INTERMEDIATE DIAPHRAGM**

Scale: 3/4" = 1'-0"

- Near side openings
- Far side openings
- Skew angle of diaphragm
- L girder
- L intermediate diaphragm
- L 1 1/2" dia. holes through girder webs

Note:
Holes shall be cast parallel to L diaphragm and follow the slope of the bottom of the diaphragm.

**DIAPHRAGM HOLE DETAIL**

Scale: 1" = 1'-0"

- L intermediate diaphragm
- L 1 1/2" dia. holes through girder webs

**PLAN**

**ELEVATION**

*USEABLE DRAFT*

**STATE OF MARYLAND**

**DEPARTMENT OF TRANSPORTATION**

**OFFICE OF BRIDGE DEVELOPMENT**

**INTERMEDIATE DIAPHRAGM FOR 37" AND 39" PCEF BULB TEE GIRDERS**

**FHWA APPROVAL**

**DATE:** 09/01/15

**REVISIONS**

**RSHA**

**NO. SUP-CG(DIA)-102**

**SHEET 3 OF 3**
1. Notes:
   a. For Section A-A see sheet 2 of 3.
   b. Normal concrete girder, slab, and parapet reinforcing not shown.
   c. All reinforcing steel, threaded bars and threaded inserts shall be epoxy coated.

2. Scale: 3/8" = 1'-0"

3. INTERMEDIATE DIAPHRAGM - ELEVATION

   INTERMEDIATE DIAPHRAGM - ELEVATION
   Scale: 3/8" = 1'-0"

   4-#6 bars (2 per layer) between girder webs as shown (typ.)
   Roughened construction joint (match top of girder)

   4-#6 dowels (2 per layer) placed through holes in interior girder web (typ.)

   2-#6 bars lapped 2'-5" as shown with #6 dowels (typ.)
   2-#4 L bars under girder flange spaced as shown (typ.)

   Top of bridge deck

   3-#8 bars extended to end of deck slab as shown

   4-#8 bars extended to end of deck slab as shown

   4 - 1-1/2" dia. threaded inserts (2 per layer) cast in exterior girder as shown and parallel to L diaphragm

   4 - 1" dia. threaded bars (2 per layer) placed in inserts to lap with #6 bars (typ.)
Notes:
1. All reinforcing steel and threaded bars shall be epoxy coated.
2. All reinforcing steel in girders shall be spaced to miss holes and threaded inserts in web.
3. Intermediate diaphragms shall be in place at least 40 hours prior to placement of deck.
End closure for steel deck forms as required

Steel deck forms which remain in place

Timber blocking

Intermediate diaphragm

Roughened construction joint
Bridge deck slab

Timber forming for intermediate diaphragm

DECK FORMING DETAIL AT INTERMEDIATE DIAPHRAGM
Scale: $\frac{2}{4}'' = 1'-0''$

Note:
Holes shall be cast parallel to intermediate diaphragm and follow the slope of the bottom of the diaphragm.

PLAN

DIAPHRAGM HOLE DETAIL
Scale: $1'' = 1'-0''$

Note:
Holes shall be cast parallel to intermediate diaphragm and follow the slope of the bottom of the diaphragm.

END CLOSURE FOR STEEL DECK FORMS AS REQUIRED

STEEL DECK FORMS WHICH REMAIN IN PLACE

TIMBER BLOCKING

INTERMEDIATE DIAPHRAGM

ROUGHENED CONSTRUCTION JOINT
BRIDGE DECK SLAB

TIMBER FORMING FOR INTERMEDIATE DIAPHRAGM

Scale: $\frac{2}{4}'' = 1'-0''$

Note:
Holes shall be cast parallel to intermediate diaphragm and follow the slope of the bottom of the diaphragm.
Notes:
1. For Section A-A see sheet 2 of 3.
2. Normal concrete girder, slab and parapet reinforcing not shown.
3. All reinforcing steel, threaded bars and threaded inserts shall be epoxy coated.

- 4-#6 bars (2 per layer) between girder webs as shown (typ.)
- Roughened construction joint (match top of girder)
- 4-#6 bars lapped 2'-5" as shown with #6 dowels (typ.)
- 2-#4 bars under girder flange spaced as shown (typ.)
- 2-#6 bars lapped 2'-5" as shown with #6 dowels (typ.)
- 2-#6 bars extended to end of deck slab as shown

- 3-#8 bars extended to end of deck slab as shown
- 6 - 1 1/2" dia. threaded inserts (2 per layer) cast in exterior girder as shown and parallel to E diaphragm
- 6 - 1" dia. threaded bars (2 per layer) placed in inserts to lap with #6 bars (typ.)

**INTERMEDIATE DIAPHRAGM - ELEVATION**

Scale: 3/8" = 1'-0"
Notes:
1. All reinforcing steel and threaded bars shall be epoxy coated.
2. All reinforcing steel in girders shall be spaced to miss holes and threaded inserts in web.
3. Intermediate diaphragms shall be in place at least 40 hours prior to placement of deck.
End closure for steel deck forms as required

Steel deck forms which remain in place

Timber blocking

Roughened construction joint
Bridge deck slab

Timber forming for intermediate diaphragm

Intermediate diaphragm 1'-0"

Timber forming for intermediate diaphragm

DECK FORMING DETAIL AT INTERMEDIATE DIAPHRAGM
Scale: 3/4" = 1'-0"

Note:
Holes shall be cast parallel to L diaphragm and follow the slope of the bottom of the diaphragm.

END Closure for steel deck forms as required

Steel deck forms which remain in place

Timber blocking

Roughened construction joint
Bridge deck slab

Timber forming for intermediate diaphragm

Intermediate diaphragm 1'-0"

Timber forming for intermediate diaphragm

DECK FORMING DETAIL AT INTERMEDIATE DIAPHRAGM
Scale: 3/4" = 1'-0"

Note:
Holes shall be cast parallel to L diaphragm and follow the slope of the bottom of the diaphragm.

END Closure for steel deck forms as required

Steel deck forms which remain in place

Timber blocking

Roughened construction joint
Bridge deck slab

Timber forming for intermediate diaphragm

Intermediate diaphragm 1'-0"

Timber forming for intermediate diaphragm

DECK FORMING DETAIL AT INTERMEDIATE DIAPHRAGM
Scale: 3/4" = 1'-0"

Note:
Holes shall be cast parallel to L diaphragm and follow the slope of the bottom of the diaphragm.
Notes:
1. For Section A-A see sheet 2 of 3.
2. Normal concrete girder, slab and parapet reinforcing not shown. All reinforcing, steel, threaded bars and threaded inserts shall be epoxy coated.
3. All reinforcing steel, threaded bars and threaded inserts shall be epoxy coated.

1. 4-#6 bars (2 per layer) between girder webs as shown (typ.)
2. 6-#6 dowels (2 per layer) placed through holes in interior girder web (typ.)
3. 6-#8 bars extended to end of deck slab as shown
4. 2-#4 bars under girder flange spaced as shown (typ.)
5. 6-#6 bars (2 per layer) between girder webs as shown (typ.)
6. 6-#6 dowels (2 per layer) placed through holes in interior girder web (typ.)

Scale: 3/8" = 1'-0"
Notes:
1. All reinforcing steel and threaded bars shall be epoxy coated.
2. All reinforcing steel in girders shall be spaced to miss holes and threaded inserts in web.
3. Intermediate diaphragms shall be in place at least 40 hours prior to placement of deck.
End closure for steel deck forms as required

Steel deck forms which remain in place

Timber blocking

Roughened construction joint

Bridge deck slab

Intermediate diaphragm

1'-0"

Timber forming for intermediate diaphragm

DECK FORMING DETAIL AT INTERMEDIATE DIAPHRAGM

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

Note:
Holes shall be cast parallel to L diaphragm and follow the slope of the bottom of the diaphragm.

DIAPHRAGM HOLE DETAIL

Scale: 1" = 1'-0"

Note:
Holes shall be cast parallel to & diaphragm and follow the slope of the bottom of the diaphragm.
INTERMEDIATE DIAPHRAGM - ELEVATION

Scale: 3/8" = 1'-0"

Notes:
1. For Section A-A see sheet 2 of 3.
2. Normal concrete girder, slab and parapet reinforcing not shown.
3. All reinforcing steel, threaded bars and threaded inserts shall be epoxy coated.

1. 6-#6 bars (2 per layer) between girder webs as shown (typ.)
2. 8-#6 dowels (2 per layer) placed through holes in interior girder web (typ.)
3. 2-#6 bars lapped 2'-5" as shown with #6 dowels (typ.)
4. 2-#4 bars under girder flange spaced as shown (typ.)
5. 6-#6 bars lapped 2'-5" as shown with #6 dowels (typ.)

Roughened construction joint (match top of girder)

8 - 1'' dia. threaded inserts (2 per layer) cast in exterior girder as shown and parallel to & lap with #6 bars (typ.)

8 - 1'' dia. threaded bars (2 per layer) placed in inserts to lap with #6 bars (typ.)

6-#6 bars extended to end of deck slab as shown.

Top of bridge deck

6 - 1/2'' dia. holes (2 per layer) cast in interior girder webs (typ.). Holes shall be grouted before diaphragm is cast. See sheet 3 of 3 for details.
Notes:
1. All reinforcing steel and threaded bars shall be epoxy coated.
2. All reinforcing steel in girders shall be spaced to miss holes and threaded inserts in web.
3. Intermediate diaphragms shall be in place at least 40 hours prior to placement of deck.
INTERMEDIATE DIAPHRAGM FOR 77” THROUGH 87” PCEF BULB TEE GIRDERS

**DECK FORMING DETAIL AT INTERMEDIATE DIAPHRAGM**

**Scale:** $\frac{3}{4}'' = 1'-0''$

- Timber forming for intermediate diaphragm
- Steel deck forms which remain in place
- Roughened construction joint
- End closure for steel deck slab

**Note:** Holes shall be cast parallel to the diaphragm and follow the slope of the bottom of the diaphragm.

- $\frac{3}{4}''$ dia. holes through girder webs
- $3\frac{1}{8}''$ dia. holes through L girder webs

**Timber blocking**

**Bridge deck slab**

- Steel deck forms

**Skew angle of diaphragm**

**L 1 1/2'' dia. holes through girder webs**

**Girder web**

**Steel deck forms**

**Useable DRAFT**

**STATE OF MARYLAND**
**DEPARTMENT OF TRANSPORTATION**
**OFFICE OF BRIDGE DEVELOPMENT**

**OFFICE OF BRIDGE DEVELOPMENT**
**STATE HIGHWAY ADMINISTRATION**
**DEPARTMENT OF TRANSPORTATION**

**DATE:**
**SUPERSTRUCTURE CONCRETE GIRDER**

**SUP-CG(DIA)-106**

**NO. SUP-CG(DIA)-106**
Notes:
1. For Section A-A see sheet 2 of 3.
2. Normal concrete girder, slab and parapet reinforcing not shown.
3. All reinforcing steel, threaded bars and threaded inserts shall be epoxy coated.
Notes:
1. All reinforcing steel and threaded bars shall be epoxy coated.
2. All reinforcing steel in girders shall be spaced to miss holes and threaded inserts in web.
3. Intermediate diaphragms shall be in place at least 40 hours prior to placement of deck.

Scale: 3/4" = 1'-0"

SECTION A-A

1:1 chamfer from bottom of slab to top of diaphragm (typ.)
Roughened construction joint (match top of girder)
6-#6 bars between girder webs, spaced as shown
#4 "L" bar @ 9'
max. c/c

6-#6 bars lapped with #6 dowels, spaced as shown

2-#6 bars lapped with #6 dowels spaced as shown

6-#6 bars lapped with #6 dowels spaced as shown

Bottom of girder

Top of girder and intermediate diaphragm

Intermediate Diaphragm

Deck Slab

Intermediate Diaphragm

Girder Haunch

Notes:
1. All reinforcing steel and threaded bars shall be epoxy coated.
2. All reinforcing steel in girders shall be spaced to miss holes and threaded inserts in web.
3. Intermediate diaphragms shall be in place at least 40 hours prior to placement of deck.
End closure for steel deck forms as required

Steel deck forms which remain in place

Timber blocking

Intermediate diaphragm

Roughened construction joint
Bridge deck slab

Timber forming for intermediate diaphragm

**DECK FORMING DETAIL AT INTERMEDIATE DIAPHRAGM**

Scale: \( \frac{1}{4}'' = 1'-0'' \)

**Note:** Holes shall be cast parallel to the diaphragm and follow the slope of the bottom of the diaphragm.

**Girder web**

3\(\frac{3}{4}\) 3\(\frac{3}{4}\)

Skew angle of diaphragm

L girder

L intermediate diaphragm

L 1\(\frac{1}{2}\)'' dia. holes through girder webs

**Intermediate diaphragm**

**Near side openings**

**Far side openings**

**DIAPHRAGM HOLE DETAIL**

Scale: 1'' = 1'-0''

**ELEVATION**

**PLAN**

**STATE OF MARYLAND**

DEPARTMENT OF TRANSPORTATION

OFFICE OF BRIDGE DEVELOPMENT

**INTERMEDIATE DIAPHRAGM FOR 93'' AND 95'' PCEF BULB TEE GIRDERS**

*USEABLE DRAFT*