Chapter 03 - Superstructure

SECTION 08

BRIDGE DECK JOINTS (SUP-JT)
Chapter 03 - Superstructure

Section 08 – Bridge Deck Joints

SUB-SECTION 01

JOINT CONSTRUCTION DETAILS
(SUP-JT(JC))
Continuous Angle
Joint seal (To be continuous across splice see pertinent joint details for other restrictions).

Deck Construction Joint

Vertical Leg
See Note.

Horizontal Leg
See Note.

Notes:
The minimum effective throat (E) shall be determined by the angle thickness as follows:
Min. E = 7⁄32" for thicknesses over 1⁄4" to 1⁄2" incl.
Min. E = 1⁄4" for thicknesses over 1⁄2" to 3⁄4" incl.
Continuous Angle

Joint seal (To be continuous across splice see pertinent joint details for other restrictions).

Weld Area

BC - P2,5

BC - P2,5

Plan

Joint at abutments - where one side of joint is armored

Scale: None

Joint at piers and abutments - where both sides of joints are armored

Scale: None

Note:
Whenever possible the need for this splice should be limited. Preferably, the minimum spacing between joints shall be 40'. If there are breaks in the crown or if the joint is skewed, splices may be made at all breaks in slope and may follow the direction of centerline of bridge instead of being perpendicular to center line of bearing.

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ROADWAY JOINT ANGLE SHOP SPLICES FOR NON-SEQUENTIAL CONSTRUCTION

DETAIL NO. SUP-JT(JC)-102

1,0
Chapter 03 - Superstructure

Section 08 – Bridge Deck Joints

SUB-SECTION 02

JOINT SEAL DETAILS
(SUP-JT(JS))
Top of Roadway.

See Specifications for treatment of these surfaces.

Section: 3"=1'-0"

Compression Seal Table

<table>
<thead>
<tr>
<th>Location</th>
<th>Uncompressed Seal Width</th>
<th>Joint Opening @</th>
<th>Movement Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40°F</td>
<td>50°F</td>
<td>60°F</td>
</tr>
<tr>
<td>1¾&quot;</td>
<td>1½&quot;</td>
<td>1&quot;</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>3&quot;</td>
<td>1¾&quot;</td>
<td>1½&quot;</td>
<td>1&quot;</td>
</tr>
<tr>
<td>5&quot;</td>
<td>3&quot;</td>
<td>2¾&quot;</td>
<td>2¼&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>3½&quot;</td>
<td>3¾&quot;</td>
<td>3¼&quot;</td>
</tr>
</tbody>
</table>

Note:
1. The 1¾" and 3" seals to be one piece for full length of seal (no joints).
2. The 5" and 6" seals may have one shop splice per joint, if the length of joint exceeds 50'. Splice shall be at least 15' from gutter line.

Joint Opening - See "Compression Seal Table" below. (Measured normal to joint).

¾" Studs (Typical)

Use 8"x 4"x ½" retainer bars

Scale: 3"=1'-0"
PREFORMED COMPRESSION SEALS

<table>
<thead>
<tr>
<th>Seal Width</th>
<th>Total Allow Movement</th>
<th>Joint Opening @ 60°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/4&quot;</td>
<td>0.66&quot;</td>
<td>1/8&quot;</td>
</tr>
<tr>
<td>3&quot;</td>
<td>1.25&quot;</td>
<td>1 1/6&quot;</td>
</tr>
<tr>
<td>5&quot;</td>
<td>2.50&quot;</td>
<td>3&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>2.85&quot;</td>
<td>3 5/6&quot;</td>
</tr>
</tbody>
</table>

Note:
Seal opening at 60°F based on a temperature variation of 0°F to 120°F.
Joint Opening—See “Silicone Seal Table” below. (Measured normal to joint).

Pourable 100% silicone seal see Special Provisions

Sealant recess see table below

Top of Roadway

Joint Opening @

40 F 50 F 60 F 70 F 80 F 90 F

SECTION

Scale: 6''=1'-0''

SILICONE SEAL TABLE

<table>
<thead>
<tr>
<th>Location</th>
<th>Max. length contributing to expansion*</th>
<th>Sealant Recess</th>
<th>Joint Opening Minimum</th>
<th>Joint Opening Maximum</th>
<th>Joint Opening ø</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Steel beam</td>
<td>Concrete beam</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1/2''</td>
<td>1/2''</td>
<td>2''</td>
</tr>
<tr>
<td>150'</td>
<td>185'</td>
<td></td>
<td>1/2''</td>
<td>1/2''</td>
<td>2''</td>
</tr>
<tr>
<td>225'</td>
<td>275'</td>
<td></td>
<td>1/2''</td>
<td>3/4''</td>
<td>3''</td>
</tr>
<tr>
<td>300'</td>
<td>370'</td>
<td></td>
<td>1/2''</td>
<td>1''</td>
<td>4''</td>
</tr>
<tr>
<td>375'</td>
<td>460'</td>
<td></td>
<td>1/2''</td>
<td>1 1/4''</td>
<td>5''</td>
</tr>
<tr>
<td>450'</td>
<td>555'</td>
<td></td>
<td>5/8''</td>
<td>1/2''</td>
<td>6''</td>
</tr>
</tbody>
</table>

Notes:
1. These lengths do not need to be adjusted for skew angle.
2. Joint area to be thoroughly cleaned in accordance with joint manufacturers recommendations just prior to placing of seal.
Chapter 03 - Superstructure

Section 08 – Bridge Deck Joints

SUB-SECTION 03
FIXED JOINT DETAILS
(SUP-JT(FIX))
15/16 " Vent holes @ 1'-0" c/c (as close to vertical leg as possible). Contractor and Engineer shall verify during deck placement, that all vent holes are filled with concrete that has been forced from under the angles.

1/2" x 8" lg. @ 1'-0" c/c Studs Staggered

3/4" x 8" lg. @ 1'-0" c/c

3/4" x 8" lg. @ 1'-0" c/c

2 ply roofing paper bond breaker

2'-0"

Top of bridge roadway

4" leg

End of web

End of web

2''

3/4'' (typ.)

3/4 '' x 3/4 '' drip groove 2'' from end of diaphragm, see detail this sheet

3/4'' x 3/4'' drip groove 2'' from end of diaphragm, see detail this sheet

4'' x 6'' x 1/2'' roadway angle

6''

1'-0'' min. thick back wall configuration may vary depending on requirements of structure

1'-0'' min. thick back wall configuration may vary depending on requirements of structure

Section
Scale: 1'' = 1'-0"

Drain Gutter Detail
Scale: 3'' = 1'-0"

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ROADWAY JOINT AT ABUTMENTS CARRYING STEEL GIRDERS WITH STEEL FIXED BEARINGS OR STEEL EXPANSION BEARINGS WITH LENGTH CONTRIBUTING TO EXPANSION < 70 FEET

Detail No. SUP-JT(FIX)-101

Sheet 1 of 1
ROADWAY JOINT AT ABUTMENTS CARRYING PRESTRESSED CONCRETE GIRDERS WITH ELASTOMERIC FIXED BEARINGS OR EXPANSION BEARINGS WITH LENGTH CONTRIBUTING TO EXPANSION < 70 FT.

Closed cell neoprene sponge elastomer 1/2" thick x 1" wide for full length, conforming to Section 911.10, seated in 7/8" x 1/2" deep key.

4" leg

4" x 6" x 1/2" roadway angle

2'-0"

4" x 6" x 1/2" roadway angle

4" leg

Approach roadway

Varies

1'-0" min. thick backwall configuration may vary depending on requirements of structure.

End of girder

Top of bridge roadway

SECTION

Scale: 1" = 1'-0"

4 1/16" φ Vent holes @ 1'-0" c/c (as close to vertical leg as possible). Contractor and Engineer shall verify during deck placement, that all vent holes are filled with concrete that has been forced from under the angles.

3/4" x 8" lg. @ 1'-0" c/c

Stud staggered

3/4" x 8" lg. @ 1'-0" c/c

Varies

ROADWAY JOINT AT ABUTMENTS CARRYING PRESTRESSED CONCRETE GIRDERS WITH ELASTOMERIC FIXED BEARINGS OR EXPANSION BEARINGS WITH LENGTH CONTRIBUTING TO EXPANSION < 70 FT.
Note:
Parapet configuration and number of conduit ducts varies - see Typical Section on pertinent bridge plans.

1. All studs shall $\frac{3}{4}" - 8"$ long.
2. Section A-A & B-B shown 90° skew.
3. Roadway angle to be painted ASTM A 709 Grade 36.
4. Joint area to be thoroughly cleaned in accordance with joint manufacturer's recommendations just prior to placing of seal.
5. F-Shape barrier is for illustrative purposes only. See plans for barrier type.

ELEVATION - SECTION A-A
Scale: $\frac{3}{4}" = 1'-0"$

VIEW B-B
Scale: $\frac{3}{4}" = 1'-0"$

VIEW C-C
Scale: $\frac{3}{4}" = 1'-0"$

42' PARAPET
SUPER - ROADWAY JOINTS

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FULL HEIGHT ROADWAY JOINT FOR 42" F-SHAPE AND SINGLE SLOPE PARAPET FOR BRIDGES WITH FIXED BEARINGS OR EXPANSION BEARINGS WITH LENGTH CONTRIBUTING TO EXPANSION ≤ 70 FT.

DETAIL NO. SUP-JT(FIX)-301
SHEET OF_
Notes:
1. All studs shall \( \frac{1}{2}'' \times \Phi - 8'' \) long
2. Section A-A & B-B shown 90° skew.
3. Roadway angle to be painted ASTM A 709 Grade 36.
4. Joint area to be thoroughly cleaned in accordance with joint manufacturer's recommendations just prior to placing of seal.
5. For View B-B see sheet 2 of 2.

ELEVATION - SECTION A-A

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

Notes:
Sidewalk configuration and number of conduit ducts varies - see Typical Section on pertinent bridge plans.
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FULL HEIGHT ROADWAY JOINT
AT SIDEWALKS FOR BRIDGES WITH
FIXED BEARINGS OR EXPANSION BEARINGS WITH
LENGTH CONTRIBUTING TO EXPANSION < 70 FT.

DETAIL NO. SUP-JT(FIX)-401

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

Super Bridge Deck Joints
Chapter 03 - Superstructure

Section 08 – Bridge Deck Joints

SUB-SECTION 04
EXPANSION JOINT DETAILS
(SUP-JT(EXP))
Notes:
1. New bridge details shown.
2. See Det. No. SUP-JT(JS)-101 for additional details.
3. Joint area to be thoroughly cleaned in accordance with joint manufacturer's recommendations just prior to placing of seal.

3'-0'' x 1'-6'' min. (see abutment detail) expansion joint cross beam

4'' x 6'' x 1/2'' roadway angle

3/4'' x 8'' long stud @ 1'-0'' c/c (Stagger with other studs)

Expansion joint cross beam shall not be placed until adjacent deck placement has been completed

1'-6'' min. (see abutment detail) expansion joint cross beam

Joint Opening See "Compression Seal Table" (Measured normal to joint)

4'' leg (typ.)

Top of bridge roadway

1/4'' x 1/4'' drip groove

Use 2 ply roofing paper bond breaker

End of web

Expansion joint cross beam support column

Studs

Staggered

3/4'' x 8'' lg. @ 1'-0'' c/c

Top of bridge roadway

Use 2 ply roofing paper bond breaker

End of web

Expansion joint cross beam support column

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

SECTION

Notes:
1. New bridge details shown.
2. See Det. No. SUP-JT(JS)-101 for additional details.
3. Joint area to be thoroughly cleaned in accordance with joint manufacturer's recommendations just prior to placing of seal.

3'-0'' x 1'-6'' min. (see abutment detail) expansion joint cross beam

4'' x 6'' x 1/2'' roadway angle

3/4'' x 8'' long stud @ 1'-0'' c/c (Stagger with other studs)

Expansion joint cross beam shall not be placed until adjacent deck placement has been completed

1'-6'' min. (see abutment detail) expansion joint cross beam

Joint Opening See "Compression Seal Table" (Measured normal to joint)

4'' leg (typ.)

Top of bridge roadway

1/4'' x 1/4'' drip groove

Use 2 ply roofing paper bond breaker

End of web

Expansion joint cross beam support column

Scale: 1'' = 1'-0''
Expansion joint cross beam placement shall be staggered as follows:

- 3/4" x 8" long stud @ 1'-0" c/c (Stagger with other studs)

Expansion joint cross beam shall be placed when the adjacent deck placement has been completed.

Notes:
1. New bridge details shown.
2. See Det. No. SUP-JT(EXP)-101 for additional details.
3. Joint area to be thoroughly cleaned in accordance with joint manufacturer's recommendations just prior to placing of seal.

Joint Opening See "Compression Seal Table" (Measured normal to joint)

Closed cell neoprene sponge elastomer 1/2" thick x 7" wide for full length, conforming to Section 911.10, seated in 7/4" x 1/2" deep key.

Expansion joint cross beam support column

End of girder

End of girder
**ELEVATION - SECTION A-A**

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

1. Seal to be capped with segment of same seal as joint, placed as shown and securely fastened to main seal.

2. Top to be capped with segment of same seal as joint, placed as shown and securedly fastened to main seal.

3. Provide holes in steel plates and trim seals as necessary to clear conduits.

4. **Chamfer corner** \( \frac{3}{8}' \times \frac{3}{8}' \).

If skew angle is less than 70°, joints shall be formed normal to outside face of superstructure thus, otherwise this.

**VIEW B-B**

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

1. **Skew angle**

2. **Compression seal**

3. **3'' plate or roadway angle is extended**

4. **Joint angle extended**

5. **… plate or roadway angle is extended**

6. **… plate or roadway angle is extended**

**VIEW C-C**

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

1. **Compression seal**

2. **2''**

3. **2''**

4. **2''**

5. **2''**

**Note:**

1. All studs shall \( \frac{3}{4}\)'' - 8' long.
2. Section A-A & B-B shown 90° skew.
3. Roadway angles and plate to be painted ASTM A 709 Grade 36.
4. Joint area to be thoroughly cleaned in accordance with joint manufacturer's recommendations just prior to placing of seal.
5. F-Shape barrier is for illustrative purposes only. See plans for barrier type.
PLAN FOR SIDEWALK WITH SKEW ANGLE

70° OR GREATER

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

PLAN FOR SIDEWALK WITH SKEW ANGLE

LESS THAN 70°

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

* Dimension measured at top of parapet.

CHAMFER CORNER 1/4" X 1/4"
Note:
Sidewalk configuration varies - see Typical Section on pertinent bridge plans.

Roadway joint angle extended with horizontal leg removed

Depth to match that of roadway joint angle

Cut as is necessary to make turn (typ.)

Depth depends on seal size, should be such that when seal is in place it is 1/4” below sidewalk surface.

For sidewalk seal size see table above.

Top of sidewalk

Top of roadway

Compression seal

Roadway joint angle

For this width, Sections B-B and C-C shall be modified to eliminate the 3/8” lip both sides and provide a 1/4” lip one side of the joint.

For expansion size required for expansion

Compress seal size for dimension

See compression seal size for dimension

Top of seal to be capped with segment of same seal as sidewalk joint, placed as shown and securely fastened to main seal in shop.

Note:
All sections shown for 90 skew.
All steel to be A.S.T.M. A 709, Grade 36 for painting specifications see Section 460.
Joint area to be thoroughly cleaned in accordance with joint manufacturer's recommendations just prior to placing of seal.

Roadway Compression Seal Size

1/8” 1/4” 3” 5” 6”

Sidewalk Compression Seal Size

1/4” 1/4” 3” 5” 6”

1/2” x 1” retainer bar (typ.)

1/2” x 1” stud, 8” long maximum spacing 1'-0”

Depth to match that of roadway joint angle

Where conduits are used, trim seal as necessary to clear conduits

Cut as is necessary to make turn (typ.)

Top of roadway

Top of sidewalk

SECTION A-A

SCALE: 1/4” = 1'-0”

SECTION B-B

SCALE: 1/4” = 1'-0”

SECTION C-C

SCALE: 1/4” = 1'-0”

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FULL HEIGHT COMPRESSION SEAL ROADWAY JOINT AT SIDEWALK
FOR BRIDGES WITH EXPANSION BEARINGS WITH LENGTH CONTRIBUTING TO EXPANSION > 70 FT.

DETAIL NO. SUP-JT(EXP)-401

SHEET 2 OF 2
Chapter 03 - Superstructure

Section 08 – Bridge Deck Joints

SUB-SECTION 05
FINGER JOINT DETAILS
(SUP-JT(FJ))
**SUPER-ROADWAY JOINTS**

**FINGER JOINT DETAILS (42" F-SHAPE AND SINGLE SLOPE PARAPET) FOR BRIDGES WITH STEEL STRINGERS WITH SKEW ANGLES BETWEEN 50° AND 90°**

**STATE OF MARYLAND**

**DEPARTMENT OF TRANSPORTATION**

**STATE HIGHWAY ADMINISTRATION**

**OFFICE OF STRUCTURES**

**APPROVAL**

**DIRECTOR**

**OFFICE OF STRUCTURES**

**DATE:**

**VERSION:**

1. For dimensions "J" & "K" and finger plate thickness see Sheet No.21 of 21.
2. For SECTIONS A-A, B-B, C-C, D-D & E-E see Sheet Nos.3,4,5,6,7,8,9 & 10 of 21.

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**FINGER JOINT DETAILS (42" F-SHAPE AND SINGLE SLOPE PARAPET) FOR BRIDGES WITH STEEL STRINGERS WITH SKEW ANGLES BETWEEN 50° AND 90°**

**APPROVAL**

**DIRECTOR**

**OFFICE OF STRUCTURES**

**DATE:**

**VERSION:**

1. For dimensions "J" & "K" and finger plate thickness see Sheet No.21 of 21.
2. For SECTIONS A-A, B-B, C-C, D-D & E-E see Sheet Nos.3,4,5,6,7,8,9 & 10 of 21.

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**FINGER JOINT DETAILS (42" F-SHAPE AND SINGLE SLOPE PARAPET) FOR BRIDGES WITH STEEL STRINGERS WITH SKEW ANGLES BETWEEN 50° AND 90°**

**APPROVAL**

**DIRECTOR**

**OFFICE OF STRUCTURES**

**DATE:**

**VERSION:**

1. For dimensions "J" & "K" and finger plate thickness see Sheet No.21 of 21.
2. For SECTIONS A-A, B-B, C-C, D-D & E-E see Sheet Nos.3,4,5,6,7,8,9 & 10 of 21.
PLAN WITH ROADWAY FINGER PLATES, PARAPET SLIDING PLATE AND FOAM SEAL REMOVED

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

Notes:
1. All details not indicated are the same as Plan at Roadway Level on Sheet No. 1 of 21.
2. For dimensions "J" & "K" see Sheet No. 21 of 21.

Note A:
1/8" holes @ 9" c/c for 1" finger plate bolts (typ.). Weld 2 - 1" dia. ASTM A 325 hex. nuts to the underside of the joint angle (see sheet 3 for details).

Note B:
1/8" Vent holes @ 1'-0" c/c (as close to vertical leg as possible) (typ.). Contractor and Engineer shall verify during deck and backwall placement, that all vent holes are filled with concrete that has been forced from under the angles.

Note:
Anchor studs, anchor straps & conduits not shown for clarity. "F" finger is parallel to the direction of superstructure movement. Dimension "J" is measured along "F" finger.
Notes:
1. Finger joint to be fabricated, assembled and shipped to the job site fully assembled.
2. The fully assembled joint shall be installed, bolted and welded into its final position.
3. During concrete deck placement: "CONCRETE MUST APPEAR AT THE TOP OF THE FINGER PLATE INDICATING THAT CONCRETE HAS FILLED THE VOID AREA".
4. For material specifications and requirements, see Special Provisions.
5. For finger plate thickness and dimension "B", see Sheet no. 21 of 21.
6. For details of drainage trough, see SUP-JT(DT)-102.
Note:
For additional information see Section C-C on Sheet no. 5 & 6 of 21.

This portion of the backwall shall not be placed until the adjacent deck placement is complete.

Note:
For finger plate thickness and dimension "B", see Sht. No. 21 of 21.

2. For details of drainage trough, see SUP-JT(DT)-102
3. For details not shown see Sheet no. 3 of 21.
Note:
For dimensions "B", "K", & "J" see Sheet No. 11 of 21.
SINGLE SLOPE PARAPET APPLICATION

SUPER-ROADWAY JOINTS
SUP-JT(FJ)-101

Note:
For dimensions "B", "K", & "J" see Sheet No. 21 of 21.
SECTION D-D
Scale: \( \frac{3}{4}'' = 1' - 0'' \)

**F-SHAPE PARAPET APPLICATION**

**SUPER-ROADWAY JOINTS**

**SUP-JT(FJ)-101**

**STATE OF MARYLAND**

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FINGER JOINT DETAILS (42'' F-SHAPE AND SINGLE SLOPE PARAPET) FOR BRIDGES WITH STEEL STRINGERS WITH SKEW ANGLES BETWEEN 50° AND 90°

Notes:
1. Diamond back parapet shown, for exact parapet dimensions and configuration see Typical Section.
SINGLE SLOPE PARAPET APPLICATION

**Notes:**
1. Diamond back parapet shown, for exact parapet dimensions and configuration see Typical Section.

**Scale:** 1" = 0'-0"
Abutment backwall

Scale: ¼" = 1'-0"

SECTION E-E

Finger plate

4" thick foam seal (shown hatched)

5/8" seal support finger plate

8" x 8" x l"

Joint angle

Abutment backwall

Heat weld foam

1/2" sliding bent plate

1/2" fixed embedded bent plate

Holes for conduits as required

1/2" plate

5/8" x (B'/2 - K'/2) plate

3/2"

1/2" sliding bent plate

1/2" embedded bent plate

Finger plate

8" x 8" x 1"

Joint angle

Abutment backwall

Notes:
1. Drainage trough not shown for clarity.
2. Diamond back parapet shown, for exact configuration see Typical Section.

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FINGER JOINT DETAILS (42" F-SHAPE AND SINGLE SLOPE PARAPET) FOR BRIDGES WITH STEEL STRINGERS WITH SKEW ANGLES BETWEEN 50° AND 90°

SUPER-ROADWAY JOINTS

APPROVAL
DIRECTOR
OFFICE OF STRUCTURES
DATE: 09/11/2019

VERSION

2.00

DETAIL NO. SUP-JT(FJ)-101

SHEET 9 OF 21
* Space to miss conduits

1. Drainage trough not shown for clarity.
2. Diamond back parapet shown for exact configuration see Typical Section.

**Notes:**

**SECTION E-E**

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

**SINGLE SLOPE PARAPET APPLICATION**

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FINGER JOINT DETAILS (42'' F-SHAPE AND SINGLE SLOPE PARAPET) FOR BRIDGES WITH STEEL STRINGERS WITH SKEW ANGLES BETWEEN 50° AND 90°
Parallel to gutter line grade

Out to out of finger joint measured along gutter line minus ("J" + 2½")

Plumb

½" sliding bent plate

7/8" hole for 3/8" countersunk bolt

Plumb

Parallel to gutter line grade

F-SHAPE PARAPET APPLICATION

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FINGER JOINT DETAILS (42" F-SHAPE AND SINGLE SLOPE PARAPET) FOR BRIDGES WITH STEEL STRINGERS WITH SKEW ANGLES BETWEEN 50° AND 90°

DETAIL NO. SUP-JT(FJ)-101

SUPER-ROADWAY JOINTS
SUP-JT(FJ)-101

FINGER JOINT DETAILS (42" F-SHAPE AND SINGLE SLOPE PARAPET) FOR BRIDGES WITH STEEL STRINGERS WITH SKEW ANGLES BETWEEN 50° AND 90°

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DATE: 09/11/2019
VERSION: 2.00

DETAIL NO. SUP-JT(FJ)-101
SHEET 12 OF 21
END VIEW FROM FINGER JOINT

EMBEDDED PLATE - EXPANSION END

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

F-SHAPE PARAPET APPLICATION

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FINGER JOINT DETAILS (42'' F-SHAPE AND SINGLE SLOPE PARAPET) FOR BRIDGES WITH STEEL STRINGERS WITH SKEW ANGLES BETWEEN 50° AND 90°

DETAIL NO. SUP-JT(FJ)-101 SHEET 12 OF 21
EMBEDDED PLATE - EXPANSION END

Scale: 1" = 1'-0"

END VIEW FROM L FINGER JOINT

FRONT VIEW

SINGLE SLOPE PARAPET APPLICATION

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FINGER JOINT DETAILS (42" F-SHAPE AND SINGLE SLOPE PARAPET) FOR BRIDGES WITH STEEL STRINGERS WITH SKEW ANGLES BETWEEN 50° AND 90°

DETAIL NO. SUP-JT(FJ)-101

SHEET 14 OF 21
**TOP VIEW**

**EMBEDDED PLATE - EXPANSION END**

Scale: 1\" = 1'-0"

**SECTION F-F**

Scale: 1\" = 1'-0"

---

**F-SHAPE PARAPET APPLICATION**

Note:
Sliding plate, finger plate, foam seal and anchors not shown.

For straight bridges the line of movement is parallel to the parapet. For curved bridges the line of movement may not be parallel to the parapet.

---

**SUPER-ROADWAY JOINTS**

FINGER JOINT DETAILS (42" F-SHAPE AND SINGLE SLOPE PARAPET) FOR BRIDGES WITH STEEL STRINGERS WITH SKEW ANGLES BETWEEN 50° AND 90°

---

**STATE OF MARYLAND**

DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY ADMINISTRATION

OFFICE OF STRUCTURES

DATE: 09/11/2019

VERSION

2.00

DETAIL NO. SUP-JT(FJ)-101

SHEET 15 OF 21
For straight bridges the line of movement is parallel to the parapet. For curved bridges the line of movement may not be parallel to the parapet.

Note:
Sliding plate, finger plate foam seal and anchors not shown.

TOP VIEW
EMBEDDED PLATE - EXPANSION END
Scale: 1" = 1'-0"

SECTION F-F
Scale: 1/2" = 1'-0"

SINGLE SLOPE PARAPET APPLICATION
END VIEW FROM L FINGER JOINT  

EMBEDDED PLATE - FIXED END  

Scale: 1" = 1'-0"

FINGER JOINT DETAILS (42" F-SHAPE AND SINGLE SLOPE PARAPET) FOR BRIDGES WITH STEEL STRINGERS WITH SKEW ANGLES BETWEEN 50° AND 90°

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

FINGER JOINT DETAILS (42" F-SHAPE AND SINGLE SLOPE PARAPET) FOR BRIDGES WITH STEEL STRINGERS WITH SKEW ANGLES BETWEEN 50° AND 90°

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

APPROVAL  
DIRECTOR  
OFFICE OF STRUCTURES  

DATE: 09/11/2019

VERSION  

2.00

DETAIL NO. SUP-JT(FJ)-101  
SHEET 11 OF 21
SUPER-ROADWAY JOINTS
WITH SKEW ANGLES BETWEEN 50° AND 90°

FINGER JOINT DETAILS (42'' F-SHAPE AND SINGLE SLOPE PARAPET) FOR BRIDGES WITH STEEL STRINGERS
WITH SKEW ANGLES BETWEEN 50° AND 90°

EMBEDDED PLATE - FIXED END

SINGLE SLOPE PARAPET APPLICATION

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

FINGER JOINT DETAILS (42'' F-SHAPE AND SINGLE SLOPE PARAPET) FOR BRIDGES WITH STEEL STRINGERS WITH SKEW ANGLES BETWEEN 50° AND 90°

DETAIL NO. SUP-JT(FJ)-101

SUPER-ROADWAY JOINTS

APPROVAL
DIRECTOR
OFFICE OF STRUCTURES

DATE: 09/11/2019

VERSION
2.00

STATE HIGHWAY ADMINISTRATION
DEPARTMENT OF TRANSPORTATION
OFFICE OF STRUCTURES

END VIEW FROM L FINGER JOINT

FRONT VIEW

EMBEDDED PLATE - FIXED END

Scale: 1'' = 1'-0''
Note:
Sliding plate, finger plates, foam seal and anchors not shown.

\( \angle \): For straight bridges the line of movement is parallel to the parapet. For curved bridges the line of movement may not be parallel to the parapet.

\( \frac{1}{2}'' \) joint angle
8'' x 8'' x 1''
roadway angle

\( \frac{1}{2}'' \) embedded plate

\( \frac{5}{8}'' \) seal support finger plate

SECTION C-G
Scale: 1/2'' = 1'-0''

F-SHAPE PARAPET APPLICATION

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
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SUPER-ROADWAY JOINTS

DETAIL NO. SUP-JT(FJ)-101
SHEET 15 OF 21
Note:
Sliding plate, finger plates, foam seal and anchors not shown.

$\Delta$ = For straight bridges the line of movement is parallel to the parapet. For curved bridges the line of movement may not be parallel to the parapet.

**SECTION G-G**

**SINGLE SLOPE PARAPET APPLICATION**

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

- $\frac{3}{4}''$ plate extension of the vertical leg of the $8'' \times 8'' \times 1''$ joint angle.

- $\frac{5}{8}''$ foam seal support finger plate

- $8'' \times 8'' \times 1''$ joint angle

- $\frac{3}{4}''$ finger plate

- Gutter line at face of parapet

- $\frac{5}{8}''$ plate

- $\frac{1}{2}''$ embedded plate

- Gutter line

- Finger plate thickness "T"

- $\frac{3}{4}''$ plate extension of the vertical leg of the $8'' \times 8'' \times 1''$ joint angle.
1" Phil. ASTM Type 304 A stainless steel hex. head bolt with stainless steel lock washer @ 9" c/c in 4" x 3" x 1" deep slotted recess with 2" x 1/8" slotted hole (typ.).

Bevel sides of fingers 3/8" /inch

** at bottom of finger plate

4" joint between segments, butt and weld segments at 4" valley between fingers. Locate joints as near as possible to a lane line. Plate segments must be equal to twice the girder spacing at 4" of bearing.

Gutter line

Finger plate to extend 3/4" in normal to parapet beyond face of parapet.

3/8" x 3/8" high anti-skid cylinder studs (typ.). Move as required to miss vent holes.

Face of joint angle

Note: Finger plate thickness "T" = 2" minimum.

End of seal support finger plate

8" x 8" x 1" joint angle

JOINT OPENING AT

Joint opening between joint angles normal to L of joint (See Sheet No. 3 of 21)

Joint opening between joint angles normal to L of joint (See Sheet No. 3 of 21)

Face of joint angle

Finger plate thickness "T" = 2" minimum.

End of seal support finger plate

JOINT OPENING TABLE (INCHES)

<table>
<thead>
<tr>
<th>LOCATION OF JOINT</th>
<th>40°F</th>
<th>50°F</th>
<th>60°F</th>
<th>70°F</th>
<th>80°F</th>
<th>90°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

"J": Finger plate opening along 4" of finger (See Sheet No. 1 of 21)

"K": Finger plate opening normal to 4" of joint (See Sheet No. 1 of 21)

"B": Joint opening between joint angles normal to 4" of joint (See Sheet No. 3 of 21)

"A": Skew Angle of straight bridges, angle along which the bridge expands, and contracts for curved bridges.

"T" =

"L" =

"W" =

"M" =

"W" = L - 1" =

"A" =

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DEPARTMENT OF TRANSPORTATION
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STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

FINGER JOINT DETAILS (42" F-SHAPE AND SINGLE SLOPE PARAPET) FOR BRIDGES WITH STEEL STRINGERS WITH SKEW ANGLES BETWEEN 50° AND 90°

DETAIL NO. SUP-JT(FJ)-101

SHEET 21 OF 21

APPROVAL
DIRECTOR
OFFICE OF STRUCTURES

DATE: 09/11/2019

VERSION

2.00

SUPER-ROADWAY JOINTS
Chapter 03 - Superstructure

Section 08 – Bridge Deck Joints

SUB-SECTION 06
MODIFIED JOINT DETAILS
(SUP-JT(MJ))
COMPRESSION SEAL TABLE

<table>
<thead>
<tr>
<th>Location</th>
<th>Uncompressed Seal Width</th>
<th>Joint Opening @</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>10°F</td>
</tr>
<tr>
<td>1 3/4''</td>
<td></td>
<td>1/16''</td>
</tr>
<tr>
<td>3''</td>
<td></td>
<td>1/8''</td>
</tr>
<tr>
<td>5''</td>
<td></td>
<td>3''</td>
</tr>
<tr>
<td>6''</td>
<td></td>
<td>3 5/8''</td>
</tr>
</tbody>
</table>

Note:
1. Existing Structure shown dashed.
2. Existing anchorage system for joint not shown.
3. Existing slabs to remain.
4. The 1 3/4'' and 3'' seals to be one piece for full length of seal (no joints).
5. The 5 and 6'' seals may have one shop splice per joint, if the length of joint exceeds 50 ft. Splice shall be at least 15 ft. from gutter line.
6. Location of holes for plug welds to be verified in field.

Cut leg of new angle to fit.
Existing bar
Existing 6'' x 6'' x 5/8''
1/8'' x 1'' retainer bar
Joint Opening - See "Compression Seal Table" (Measured Normal Surface)
Flame cut existing Tee using oxygen and mapp and automatic cutting equipment.
Roadway Surface
Wearing Surface

SUPER-ROADWAY JOINTS
MODIFIED EXISTING BRIDGE DECK
EXPANSION JOINT AT ABUTMENTS

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES
MODIFIED EXISTING BRIDGE DECK
EXPANSION JOINT AT ABUTMENTS

APPROVAL
OFFICE OF STRUCTURES
DIRECTOR
DATE: 01/07/2002
VERSION
1.0

DETAIL NO. SUP-JT(IMJ)-101 SHEET 10 OF 1
1. Existing Structure shown dashed.
2. Existing anchorage system for joint not shown.
3. Existing slabs to remain.
4. The 1 3/4" and 3" seals to be one piece for full length of seal (no joints).
5. The 5" and 6" seals may have one shop splice per joint, if the length of joint exceeds 30'. Splice shall be at least 15' from gutter line.

Joint Opening - See "Compression Seal Table" (Measured Normal Surface).

Flame cut existing Tee using oxygen and mapp and automatic cutting equipment.

Roadway Surface

Wearing Surface

Cut leg of new angle to fit.

Seal Retainer Angle
For 1 3/4" and 3" use 6" x 6" x 5/8".
For 5" and 6" use 8" x 6" x 7/8".

Stagger welds in 1'-0" segments so as to reduce heat concentrations.

Seal Retainer Angle
For 1 3/4" and 3" use 6" x 6" x 5/8".
For 5" and 6" use 8" x 6" x 7/8".

SECTION
Scale: 1"=1'-0"

COMPRESSION SEAL TABLE

<table>
<thead>
<tr>
<th>Location</th>
<th>Uncompressed Seal Width</th>
<th>Joint Opening @</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>40°F</td>
</tr>
<tr>
<td>1 3/4&quot;</td>
<td></td>
<td>1 1/8&quot;</td>
</tr>
<tr>
<td>3&quot;</td>
<td></td>
<td>1 5/8&quot;</td>
</tr>
<tr>
<td>5&quot;</td>
<td></td>
<td>3&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td></td>
<td>3 7/8&quot;</td>
</tr>
</tbody>
</table>

Note:

- Flame cut existing Tee using oxygen and mapp and automatic cutting equipment.
- Stagger welds in 1'-0" segments so as to reduce heat concentrations.

Approval

Director

Office of Structures

Date: 01/07/2002

Version

1.0

Detail No. SUP-JT(MJ)-102
If this edge is rough or deteriorated (to be determined by the Engineer), saw cut to provide a smooth surface (Saw cut a maximum of 1/2" width).* If existing surface is to remain, without cutting, it shall be abrasive blasted to provide a good clean surface to apply seal adhesive.

Prior to ordering joint material each joint shall be evaluated to determine width of saw cutting required. If at 60°F or below the joint opening is 2" or less (measured perpendicular to % of joint) the 3" seal may be used. For openings greater than above, contact Office of Bridge Development. If the larger seal is required, the Contractor will be paid the differential in cost of material between the two seals being compared.

**Joint Opening-See Compression Seal Table (measured normal to joint).**

Existing joint

Top of Roadway

Wearing Surface

Saw Cut

New compression seal.

Remove existing concrete and joint material shown hatched.

* Prior to ordering joint material each joint shall be evaluated to determine width of saw cutting required. If at 60°F or below the joint opening is 2" or less (measured perpendicular to % of joint) the 3" seal may be used. For openings greater than above, contact Office of Bridge Development. If the larger seal is required, the Contractor will be paid the differential in cost of material between the two seals being compared.

### COMPRESSION SEAL TABLE

<table>
<thead>
<tr>
<th>Location</th>
<th>Uncompressed Seal Width</th>
<th>Joint Opening @</th>
<th>Movement Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40°F</td>
<td>50°F</td>
<td>60°F</td>
</tr>
<tr>
<td>1 3/4&quot;</td>
<td>0.66&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3&quot;</td>
<td>1.25&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5&quot;</td>
<td>2.50&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6&quot;</td>
<td>2.85&quot;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

1. Existing Structure shown dashed.
2. Existing slab to remain.
3. The 1 3/4" and 3" seals to be one piece for full length of seal (no joints).
4. The 5" and 6" seals may have one shop splice per joint, if the length of joint exceeds 50'. Splice shall be at least 15' from gutter line.
5. Joint area shall be thoroughly cleaned just prior to placing seal.

**State of Maryland**

**Department of Transportation**

**Office of Structures**

**Modified Existing Bridge Deck**

**Non-Armored Expansion Joint at Abutments**

**Detail No. SUP-JT(MJ)-201**

**Version**

1.0
If this edge is rough or deteriorated (to be determined by the Engineer) saw cut to provide a smooth surface (Saw cut a maximum of 1/2" width). If existing surface is to remain, without cutting, it shall be sandblasted to provide a good clean surface to apply seal adhesive.

Joint Opening—See Compression Seal Table
(measured normal to joint).

*Joint Opening—Compression Seal Table
(measured normal to joint).

Compressed height of seal plus 1/4''.
Remove existing concrete and joint material shown hatched.

Wearing Surface
Existing joint
Top of Roadway
New compression seal
Saw Cut
Existing joint

* Prior to ordering joint material each joint shall be evaluated to determine width of saw cutting required. If at 60°F or below the joint opening is 2'' or less (measured perpendicular to % of joint) the 3'' seal may be used. For openings greater than above, contact Office of Bridge Development. If larger seal is required, the Contractor will be paid the differential in cost of material between the two seals being compared.

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

<table>
<thead>
<tr>
<th>Location</th>
<th>Uncompressed Seal Width</th>
<th>Joint Opening @ 40°F</th>
<th>Joint Opening @ 50°F</th>
<th>Joint Opening @ 60°F</th>
<th>Joint Opening @ 70°F</th>
<th>Joint Opening @ 80°F</th>
<th>Joint Opening @ 90°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 3/4''</td>
<td>1 1/8''</td>
<td>0.66''</td>
<td>0.66''</td>
<td>0.66''</td>
<td>0.66''</td>
<td>0.66''</td>
<td>0.66''</td>
</tr>
<tr>
<td>3''</td>
<td>1 15/16''</td>
<td>1.25''</td>
<td>1.25''</td>
<td>1.25''</td>
<td>1.25''</td>
<td>1.25''</td>
<td>1.25''</td>
</tr>
<tr>
<td>5''</td>
<td>3''</td>
<td>2.50''</td>
<td>2.50''</td>
<td>2.50''</td>
<td>2.50''</td>
<td>2.50''</td>
<td>2.50''</td>
</tr>
<tr>
<td>6''</td>
<td>3 5/8''</td>
<td>2.85''</td>
<td>2.85''</td>
<td>2.85''</td>
<td>2.85''</td>
<td>2.85''</td>
<td>2.85''</td>
</tr>
</tbody>
</table>

Note:
1. Existing Structure shown dashed.
2. Existing slab to remain.
3. The 1 3/4'' and 3'' seals to be one piece for full length of seal (no joints).
4. The 5'' and 6'' seals may have one shop splice per joint, if the length of joint exceeds 50'. Splice shall be at least 15' from gutter line.
5. Joint area shall be thoroughly cleaned just prior to placing seal.

MODIFIED EXISTING BRIDGE DECK
NON-ARMORED EXPANSION JOINT AT PIERS

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

APPROVAL
DIRECTOR
OFFICE OF STRUCTURES
DATE: 11/17/1997

VERSION
1.0

DETAIL NO. SUP-JT(MJ)-202
SHEET 1 OF 1
Note:
Existing structure shown dashed.
All gutter line splices of seal, if possible, joint area shall be thoroughly cleaned just prior to placing of seal.

1. Existing anchorage system for joint, not shown.
2. Joint area shall be thoroughly cleaned just prior to placing of seal.
3. Existing slab to remain.
4. All gutter line splices of seal, if possible, to be shop fabricated. All others may be field splices.

1.0

**ALTERNATE TO WALKWAY ANGLE**

Scale: None

Field vulcanize seal at gutter line, and field weld roadway and walkway angles, with 5/8" fillet weld.

**ROADWAY SEAL**

Extend leg of new roadway angle and seal 9" past gutter line.

**SECTION**

Scale: 1" = 1'-0"

Cut leg of new angle to fit. Angle to run across top of walkway and bend down face of curb. Leg to be as long as possible to minimize gap between weld and existing bar.

**Joint opening - See Compression Seal Table (measured normal to joint).**

**Flame cut existing plate using oxygen and mapp and automatic cutting equipment. See Special Provisions.**

**Walkway Surface**

**Walkway Surface**

- 6" x 6" x 5/8" for 1 3/4" and 3" seal
- 6" x 6" x 5/8" for 5" and 6" seal

If angle of sufficient size cannot be furnished, see detail above.

**SECTION A-A**

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

**COMPRESSION SEAL TABLE**

<table>
<thead>
<tr>
<th>Location</th>
<th>Uncompressed Seal Width</th>
<th>Joint Opening @ Movement Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 3/4&quot;</td>
<td>40°F 50°F 60°F 70°F 80°F 90°F</td>
<td>1 13/16&quot; 1 5/8&quot; 1 9/16&quot; 2 3/8&quot; 2 17/32&quot;</td>
</tr>
<tr>
<td>3&quot;</td>
<td>13/8&quot; 1 13/16&quot; 1 5/8&quot; 1 9/16&quot; 2 3/8&quot;</td>
<td></td>
</tr>
<tr>
<td>5&quot;</td>
<td>3&quot; 1 13/16&quot; 1 5/8&quot; 1 9/16&quot;</td>
<td></td>
</tr>
<tr>
<td>6&quot;</td>
<td>3 7/8&quot; 1 13/16&quot; 1 5/8&quot;</td>
<td></td>
</tr>
</tbody>
</table>

Note:
1. Existing structure shown dashed.
2. Existing anchorage system for joint, not shown.
3. Existing slab to remain.
4. All gutter line splices of seal, if possible, to be shop fabricated. All others may be field splices.
5. Joint area shall be thoroughly cleaned just prior to placing of seal.
Note:
1. Existing structure shown dashed.
2. Existing slab to remain.
3. All gutter line splices of seal, if possible, shall be shop fabricated. All others may be field splices.
4. Joint area shall be thoroughly cleaned just prior to placing of seal.

Saw to depth equal to compressed height of seal plus 1/4".

Top to be capped with segment of same seal as in parapet joints placed as in roadway joint, and securely fastened to main seal in shop.

Saw cut shall be made as deep as is necessary to place seal material.

Cut out and seal with adhesive to make bend. Seal to be as necessary to assure that after insertion and compression that a good tight fit is provided.

Saw cut to create 1/2" plus ledge (each side) for seal. (The exact dimension shall be determined after roadway cuts have been made, and shall be such that the sidewalk joint lines up with that created in roadway joint.)

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES
MODIFIED EXISTING BRIDGE
NON-ARMORED JOINT AT WALKWAY

VERSION
L.O

DATE: 09/09/1982
Note:
1. Existing structure shown dashed.
2. Existing slab to remain.
3. All gutter line splices of seal, if possible, shall be shop fabricated. All others may be field splices.
4. Joint area shall be thoroughly cleaned just prior to placing of seal.

**SECTION**
Scale: 1" = 1'-0"

Saw Cut

Top to be capped with segment of same seal as in roadway joint placed as in roadway joint, and securely fastened to main seal in shop.

Saw cut only as deep as is necessary to place seal material.

Joint Opening - See Compression Seal Table (measured normal to joint).

Saw cut to create 1/2" + ledge (each side) for seal. (The exact dimension shall be determined after roadway cuts have been made, and shall be such that the parapet joint lines up with that created in roadway joint.)

Face of parapet

**SECTION A-A**
Scale: 1" = 1'-0"

Saw to depth equal to compressed height of seal plus 1/4".
Notes:
1. New bridge details shown.
2. See Detail No. SUP-SS(DR)-101 showing special attachment of new clip angle.
3. Compression seal to be placed after joint angles are set, and deck is placed.
4. Ship and erect seal retainer angles as a unit.
Chapter 03 - Superstructure

Section 08 – Bridge Deck Joints

SUB-SECTION 07

DRAINAGE TROUGH DETAILS
(SUP-JT(DT))
GENERAL NOTES


Materials: Drainage trough shall conform to 911.11.

Fusion bonded epoxy powder coatings for steel shall conform to 917.02.

Catch basins shall be fiberglass conforming to 921.11.*

Downspouts shall be PVC.

Stainless steel bolts shall conform to ASTM A 193, Identification Symbol B 8, Type 304.

Measurement and Payment: Catch basins, downspouts, troughs, etc. will be measured and paid for as specified in 460.04.

* Contractor may substitute stainless steel (10 gauge min.) or galvanized steel (10 gauge min.) catch basins in lieu of fiberglass, at no additional cost to the Administration.
Note:
Actual layout of trough and catch basin may need to be modified to accommodate bridge skew angle, super elevation, stringer location, etc.

Catch Basin Type A shown. When preparing shop drawings Contractor shall indicate which type catch basin is appropriate for each location. The Contract price shall prevail regardless of catch basin type utilized.

/4" x 3" stainless steel anchor strap. Place as necessary (3'-0"/c/c max.) Secure to abutment with /2" stainless steel bolts and drilled epoxy coated inserts. See detail below.

8" PVC downspout shall be utilized for all catch basin types. Modify length, and provide additional anchorages for downspout if required for stability.

-designed to fit

ANCHOR STRAP DETAIL
Scale: 1/2" = 1'-0"

Note:
F-Shape barrier is for illustrative purposes only, see plans for barrier type.
* At the Contractor's option cast-in-place or drilled inserts may be used.

**DRAINAGE TROUGH CATCH BASIN**

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

**SECTION A-A**

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

**SECTION B-B**

Scale: $\frac{1}{2}'' = 1'-0''$
DRAINAGE TROUGH CATCH BASIN

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

SECTION B-B
Scale: 1/2" = 1'-0"

At the Contractor's option, cast-in-place or drilled inserts may be used.
DRAINAGE TROUGH CATCH BASIN

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

SECTION B-B
Scale: 1/2" = 1'-0"

At the Contractor's option cast-in-place or drilled inserts may be used.

* Epoxy coated insert

**2-1/2" dia. stainless steel bolts with washers (typ.)

**8" dia.

**5/8" dia. holes (typ.)

**1'-0""
**SUPER-ROADWAY JOINTS**

**STATE HIGHWAY ADMINISTRATION**

**DEPARTMENT OF TRANSPORTATION**

**STATE OF MARYLAND**

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**1.** All angles and bar plates shall be unpainted ASTM A 709 Grade 36 galvanized steel. At the Contractor's option, fiberglass conforming to 92UH may be substituted for the steel hanger angle. No additional compensation will be allowed for this option.

**2.** All bolts, studs, and nuts shall be unpainted ASTM A 709 Grade 36 galvanized steel.

**3.** Trough material shall conform to 91UH.

**4.** Holes in trough material shall be drilled in the field.