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))
Notes:
The minimum effective throat (E) shall be determined by the angle thickness as follows:

Min. E = \( \frac{3}{16} \) '' for thicknesses over \( \frac{1}{4} \) '' to \( \frac{1}{2} \) '' incl.

Min. E = \( \frac{1}{4} \) '' for thicknesses over \( \frac{1}{2} \) '' to \( \frac{3}{4} \) '' incl.

Continuous Angle

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

Horizontal Leg
See Note.

Vertical Leg
See Note.

6'' Min.

Deck Construction Joint

Weld Area

First Stage of Construction

PLAN

JOINT AT ABUTMENTS - WHERE ONE SIDE OF JOINT IS ARMORED

Scale: None

Continuous Angle

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

Horizontal Leg
See Note.

Vertical Leg
See Note.

6'' Min.

Deck Construction Joint

First Stage of Construction

PLAN

JOINT AT PIERS AND ABUTMENTS - WHERE BOTH SIDES OF JOINTS ARE ARMORED

Scale: None

Notes:
The minimum effective throat (E) shall be determined by the angle thickness as follows:

Min. E = \( \frac{3}{16} \) '' for thicknesses over \( \frac{1}{4} \) '' to \( \frac{1}{2} \) '' incl.

Min. E = \( \frac{1}{4} \) '' for thicknesses over \( \frac{1}{2} \) '' to \( \frac{3}{4} \) '' incl.

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ROADWAY JOINT ANGLE SPLICES FOR SEQUENTIAL CONSTRUCTION

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
OFFICE OF STRUCTURES

APPROVAL
DIRECTOR OF STRUCTURES
DATE: 01/09/2011

VERSION

1.0

DETAIL NO. SUP-JTCI-101 SHEET_ OF_
Continuous Angle across splice see pertinent joint details for other restrictions.

Weld area may be opposite one another.

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

BC - P2,S

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 centerline of bearing.

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ROADWAY JOINT ANGLE SHOP SPLICES FOR NON-SEQUENTIAL CONSTRUCTION

DATE: 09/16/2011
VERSION 1.0
Chapter 03 - Superstructure

Section 08 – Bridge Deck Joints

SUB-SECTION 02

JOINT SEAL DETAILS
(SUP-JT(JS))
COMPRESSION SEAL TABLE

<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>
<th>Movement Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 3/4''</td>
<td>1 1/8''</td>
<td>1 1/8''</td>
<td>1 1/8''</td>
<td>1 1/8''</td>
<td>1 1/8''</td>
<td>1 1/8''</td>
<td>1 1/8''</td>
<td>0.66''</td>
</tr>
<tr>
<td>5''</td>
<td>1 3/4''</td>
<td>1 3/4''</td>
<td>1 3/4''</td>
<td>1 3/4''</td>
<td>1 3/4''</td>
<td>1 3/4''</td>
<td>1 3/4''</td>
<td>2.50''</td>
</tr>
<tr>
<td>6''</td>
<td>3''</td>
<td>3''</td>
<td>3''</td>
<td>3''</td>
<td>3''</td>
<td>3''</td>
<td>3''</td>
<td>2.85''</td>
</tr>
</tbody>
</table>

Note:
1. The 1 3/4'' 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.

Top of Roadway:
- 1/2'' Max. above compressed seal.
- Joint Opening-See "Compression Seal Table" below (Measured normal to joint).

Seal Retainer Angles:
- Use 6''x 4''x 1/2'' legs for 1 3/4'' and 3'' seals.
- Use 8''x 4''x 1/2'' legs for 5'' and 6'' seals.

15/16'' Vent holes @ 1'-0'' c/c (as close to vertical leg as possible). 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.

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 3/4''</td>
<td>0.66''</td>
<td>1 7/8''</td>
</tr>
<tr>
<td>3''</td>
<td>1.25''</td>
<td>1 3/8''</td>
</tr>
<tr>
<td>5''</td>
<td>2.50''</td>
<td>3''</td>
</tr>
<tr>
<td>6''</td>
<td>2.85''</td>
<td>3 5/8''</td>
</tr>
</tbody>
</table>

Note:
Seal opening at 60°F based on a temperature variation of 0°F to 120°F.
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 @ 40°F</th>
<th>50°F</th>
<th>60°F</th>
<th>70°F</th>
<th>75°F</th>
<th>80°F</th>
<th>90°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel Beam</td>
<td>Concrete Beam</td>
<td>1/2''</td>
<td>1/2''</td>
<td>2''</td>
<td>1''</td>
<td>225'</td>
<td>275'</td>
<td>1/2''</td>
<td>3/4''</td>
<td>3''</td>
<td>1/2''</td>
</tr>
<tr>
<td>300'</td>
<td>370'</td>
<td>1/2''</td>
<td>1''</td>
<td>4''</td>
<td>2''</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>375'</td>
<td>460'</td>
<td>1/2''</td>
<td>1/4''</td>
<td>5''</td>
<td>2 1/2''</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>450'</td>
<td>555'</td>
<td>5/8''</td>
<td>1/2''</td>
<td>6''</td>
<td>3''</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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 manufacturer's recommendations just prior to placing of seal.
Chapter 03 - Superstructure

Section 08 – Bridge Deck Joints

SUB-SECTION 03
FIXED JOINT DETAILS
(SUP-JT(FIX))
4" leg
Approach roadway

4" x 6" x ½"
roadway angle

4" x 6" x ½"
end of web

2'-0"
Studs

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

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

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.

3/4" x 7/4"
drip groove 2" from end of diaphragm, see detail this sheet

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

2" min. gap

3/4" (typ.)

DRIP GROOVE DETAIL
Scale: 3" = 1'-0"

SECTION
Scale: 1" = 1'-0"

SUPER-JOINTS
SUP-JT(FIX)-101

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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

APPROVAL

DIRECTOR
OFFICE OF STRUCTURES

DATE: 03/18/2014

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1.0

DETAIL NO. SUP-JT(FIX)-101

SHEET 1 OF 1
SUPER BRIDGE DECK JOINTS

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

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DETAIL NO. SUP-JT(FX)-201  SHEET 1 OF 1

SECTION
Scale: 1" = 1'-0"

- Approach roadway
- 4" x 6" x 1/2" roadway angle
- 4" leg
- Top of bridge roadway
- 2'-0"
- 6"
- End of girder
- Varies
- Closed cell neoprene sponge elastomer 1/2" thick x 1" wide for full length, conforming to Section 911.10, seated in 1 1/4" x 1/2" deep key

- 1/4" x 8" lg. x 1'-0" c/c Staggered Studs
- 1'-0" min. thick backwall configuration may vary depending on requirements of structure

Contractor and Engineer shall verify during deck placement, that all vent holes are filled with concrete that has been forced from under the angles.

VENT HOLES
4 5/16" Vent holes e 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. x 1'-0" c/c Studs
- 3/4" x 8" lg. x 1'-0" c/c Staggered Studs
- 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.

- 6"
- 2'-0"
- 4" leg
- Approach roadway
- 4" x 6" x 1/2" roadway angle
- Top of bridge roadway
**pay the state highway administration**

**state of maryland**

**department of transportation**

**office of structures**

**fixed bearings or expansion bearings with length contributing to expansion < 70 ft.**

1. All studs shall \( \frac{3}{4} " \times 8" \) 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.

---

**note:**
Parapet configuration and number of conduit ducts varies - see typical section on pertinent bridge plans.

**view c-c**

- **scale:** \( \frac{3}{4} " = 1'-0" \)

**view b-b**

- **scale:** \( \frac{3}{4} " = 1'-0" \)

**42' parapet**

- **view a-a**
  - **scale:** \( \frac{3}{4} " = 1'-0" \)
  - **top of seal and backer rod**
  - **vertical silicone seal**
  - **roadway surface**
  - **roadway angle**
  - **backer rod**
  - **vertical silicone seal**
  - **1" elastomeric pad**
  - **top of backwall**

**note:**
Parapet configuration and number of conduit ducts varies - see typical section on pertinent bridge plans.

- **backer rod**
- **vertical silicone seal**
- **roadway surface**
- **roadway angle**
- **parapet**
- **bridge deck**
- **back wall**
- **horizontal silicone seal**
- **chamber corner** \( \frac{3}{4} " \times \frac{3}{4} " \)

**view c-c**

- **scale:** \( \frac{3}{4} " = 1'-0" \)
- **top of seal and backer rod**
- **vertical silicone seal**
- **roadway angle**
- **backer rod**
- **vertical silicone seal**
- **1" elastomeric pad**
- **top of backwall**
- **horizontal silicone seal**
- **chamber corner** \( \frac{3}{4} " \times \frac{3}{4} " \)

---

**version:**
1.01

**date:** 05/07/2018

**detail no.:** sup-jt(fix)-301
Joint area to be thoroughly cleaned in accordance with joint manufacturer's recommendations just prior to placing of seal.

1. All studs shall 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. For View B-B see sheet 2 of 2.
VIEW B-B
Scale: $\frac{3}{8}'' = 1'$-0"'

Vertical silicone seal

Roadway surface

Parapet

End post

Top of sidewalk

Anchor stud (typ.)

Roadway angle

Back face of backwall
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 Std 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)

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

Joint Opening See "Compression Seal Table" (Measured normal to joint)
Notes:
1. New bridge details shown.
2. See Std.
3. Joint area to be thoroughly cleaned in accordance with joint manufacturer's recommendations just prior to placing of seal.
Parapet configuration and number of conduit ducts varies - see Typical Section on pertinent bridge plans.

**Note:**
1. All studs shall 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.

**FOR 42" F-SHAPE PARAPET FOR BRIDGES WITH EXPANSION BEARINGS WITH LENGTH CONTRIBUTING TO EXPANSION > 70 FT.**
PLAN FOR SIDEWALK WITH SKEW ANGLE

70° OR GREATER
Scale: 3/4'' = 1'-0"

PLAN FOR SIDEWALK WITH SKEW ANGLE
LESS THAN 70°
Scale: 3/4'' = 1'-0"

* Dimension measured at top of parapet.
Note:
Sidewalk configuration varies - see Typical Section on pertinent bridge plans.

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.

Cut as is necessary to make turn (typ.)

Depth to match that of roadway joint angle

Roadway joint angle extended with horizontal leg removed

Where conduit(s) are used, trim seal as necessary to clear conduit(s)

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

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.
Chapter 03 - Superstructure

Section 08 – Bridge Deck Joints

SUB-SECTION 05
FINGER JOINT DETAILS
(SUP-JT(FJ))
1. For dimensions $J$ & $K$ and finger plate thickness see Sheet No. 13 of 13.
2. For SECTIONS A-A, B-B, C-C, D-D & E-E see Sheet Nos. 3, 4, 5, 6 & 7 of 13.

Note:
Anchor studs, anchor straps, anti-skid cylinder studs and conduits not shown for clarity.

Note: L finger is parallel to the direction of superstructure movement.

Plan at Roadway Level
Scale: $1/2'' = 1'-0''$

Skew Angle
Scale: None
**FINGER JOINT DETAILS (42" F-SHAPE PARAPET)
FOR BRIDGES WITH STEEL STRINGERS
WITH SKEW ANGLES BETWEEN 50° AND 90°**

**SCALE:** 1⁄2'' = 1'-0''

**NOTES:**

1. All details not indicated are the same as Plan at Roadway Level on Sheet No. 13.
2. For dimensions 'J' & 'K' see Sheet No. 13 of 13.

---

**PLAN WITH ROADWAY FINGER PLATES, PARAPET SLIDING PLATE, AND FOAM SEAL REMOVED**
FINGER JOINT DETAILS (42'' F-SHAPE PARAPET)
FOR BRIDGES WITH STEEL STRINGERS
WITH SKEW ANGLES BETWEEN 50° AND 90°

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. 13 of 13.
6. For details of drainage trough, see Standard No. BR-SS17.02-79-64.
Notes:
1. For finger plate thickness and dimension "B", see Sht. No. 13 of 13.
2. For details of drainage trough, see Standard No. BR-SS(7.02)-79-64.
3. For details not shown see Sheet No. 3 of 13.
SECTION C-C
Scale: 3/4" = 1'-0"

Note:
For dimensions "B", "K", & "J" see Sheet No.13 of 13.
FINGER JOINT DETAILS (42" F-SHAPE PARAPET) FOR BRIDGES WITH STEEL STRINGERS WITH SKEW ANGLES BETWEEN 50° AND 90°

NOTE:
Drainage trough not shown for clarity.

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

Notes:
1. For parapet dimensions see Contract Plans.
2. Diamond back parapet shown, for exact configuration see Typical Section.
FINGER JOINT DETAILS (42'' F-SHAPE PARAPET)
FOR BRIDGES WITH STEEL STRINGERS
WITH SKEW ANGLES BETWEEN 50° AND 90°

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

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SECTION E-E
Scale: 3/4″ = 1'-0"

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

* Space to miss conduits

Heat weld foam

4'' thick foam seal (shown hatched)

5/8'' seal support finger plate

8'' x 8'' x 1''
Joint angle
Abutment backwall

Cheek wall

Notes:
1. Drainage trough not shown for clarity.
2. Diamond back parapet shown, for exact configuration see Typical Section.
FINGER JOINT DETAILS (42'' F-SHAPE PARAPET) FOR BRIDGES WITH STEEL STRINGERS WITH SKEW ANGLES BETWEEN 50° AND 90°
END VIEW FROM L FINGER JOINT

EMBEDDED PLATE - EXPANSION END

Front View

END VIEW FROM L FINGER JOINT

EMBEDDED PLATE - EXPANSION END

Front View

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

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STATEMENT OF STRUCTURES
SUP-JT(FJ)-101

DETAIL NO. SUP-JT(FJ)-101 SHEET 9 OF 13
TOP VIEW

EMBEDDED PLATE - EXPANSION END
Scale: 1/2" = 1'-0"

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

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.

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

DETAIL NO. SUP-JT(FJ)-101 SHEET 10 OF 13
Note:
Sliding plate, finger plates, foam seal and anchors not shown.

Δ = 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.

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

TOP VIEW
EMBEDDED PLATE - FIXED END

SECTION G-G

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FINGER JOINT DETAILS (42" F-SHAPE PARAPET)
FOR BRIDGES WITH STEEL STRINGERS
WITH SKEW ANGLES BETWEEN 50° AND 90°
**Fingerprint Joint Details (42" F-Shape Parapet) for Bridges with Steel Stringers with Skew Angles between 50° and 90°**

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**DEPARTMENT OF TRANSPORTATION**

**STATE OF MARYLAND**

---

**LOCATION OF JOINT**

<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>

**Joint Opening Table (inches)**

- **J** = Finger plate opening along L of finger (See Sheet No. 1 of 13)
- **K** = Finger plate opening normal to L of joint (See Sheet No. 1 of 13)
- **B** = Joint opening between joint angles normal to L of joint (See Sheet No. 3 of 13)
- **Δ** = Skew Angle of straight bridges, angle along which the bridge expands, and contracts for curved bridges.

**Notes:**
- **T** = Minimum finger plate thickness
- **W** = L = 1.0 = M
- **M** = 1.0 - 1.0 = W
- **Δ** = 

**APPROVAL**

**DIRECTOR**

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**DATE:** 07/19/2006

**VERSION:** 1.0

**DETAIL NO.:** SUP-JT(FJ)-101

**SHEET 13 OF 13**
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 @ 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>1/8”</td>
<td>1/8”</td>
<td>1/8”</td>
<td>1/8”</td>
<td>1/8”</td>
<td>1/8”</td>
<td>1/8”</td>
</tr>
<tr>
<td>3”</td>
<td>1 15/16”</td>
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<td>1 15/16”</td>
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</tr>
<tr>
<td>6”</td>
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<td>3 5/8”</td>
<td>3 5/8”</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 in. 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.
1. Existing Structure shown dashed.
2. Existing anchorage system for joint not shown.
3. Existing slabs to remain.
4. The 1\(\frac{3}{4}\)" 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'. Splice shall be at least 15' from gutter line.

### 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(\frac{3}{4})&quot;</td>
<td>1(\frac{1}{8})&quot;</td>
<td></td>
</tr>
<tr>
<td>3&quot;</td>
<td>1(\frac{5}{8})&quot;</td>
<td></td>
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<tr>
<td>5&quot;</td>
<td>3&quot;</td>
<td></td>
</tr>
<tr>
<td>6&quot;</td>
<td>3(\frac{3}{8})&quot;</td>
<td></td>
</tr>
</tbody>
</table>

Note:
- For 1\(\frac{3}{4}\)" and 3" use 6" x 6" x 5/8".
- For 5" and 6" use 8" x 6" x 5/8".
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.

New compression seal.

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

Existing joint

Top of Roadway

Wearing Surface

Saw Cut

Compressed height of seal plus 1/4''.

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.

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>
<th>Movement Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 3/4''</td>
<td></td>
<td>1 1/8''</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.66''</td>
</tr>
<tr>
<td>3''</td>
<td></td>
<td>1 15/16''</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>1.25''</td>
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<tr>
<td>5''</td>
<td></td>
<td>3''</td>
<td></td>
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<td></td>
<td></td>
<td>2.50''</td>
</tr>
<tr>
<td>6''</td>
<td></td>
<td>3 5/8''</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.85''</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.
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).

Wearing Surface

---

Joint Opening-See Compression Seal Table

---

Top of Roadway

---

Existing joint

---

Existing joint

---

Saw Cut

---

New compression seal.

---

Existing joint

---

Compressed height of seal plus 1/4".

---

Joint Opening-See Compression Seal Table

---

Top of Roadway

---

Existing joint

---

Saw Cut

---

New compression seal.

---

Existing joint

---

Compressed height of seal plus 1/4".

---

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 the 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.

SECTION

Scale: 1" = 1'-0"

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<p>|^|---|---|---|---|---|---|---|</p>
<table>
<thead>
<tr>
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<td>---</td>
</tr>
</tbody>
</table>

COMPRESSION SEAL TABLE

<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>
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<th>Joint Opening @ 90°F</th>
<th>Movement Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 3/4&quot;</td>
<td>1 1/8&quot;</td>
<td>1 15/16&quot;</td>
<td>3&quot;</td>
<td>3 5/8&quot;</td>
<td>0.66&quot;</td>
<td>1.25&quot;</td>
<td>2.50&quot;</td>
<td>2.85&quot;</td>
</tr>
<tr>
<td>3&quot;</td>
<td>1 3/16&quot;</td>
<td>3/4&quot;</td>
<td>3&quot;</td>
<td>3 1/2&quot;</td>
<td>0.75&quot;</td>
<td>1.75&quot;</td>
<td>2.50&quot;</td>
<td>2.85&quot;</td>
</tr>
<tr>
<td>5&quot;</td>
<td>3&quot;</td>
<td>3&quot;</td>
<td>3&quot;</td>
<td>3 1/2&quot;</td>
<td>0.75&quot;</td>
<td>1.75&quot;</td>
<td>2.50&quot;</td>
<td>2.85&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>3 3/16&quot;</td>
<td>3 1/2&quot;</td>
<td>3 1/2&quot;</td>
<td>3 3/4&quot;</td>
<td>0.75&quot;</td>
<td>1.75&quot;</td>
<td>2.50&quot;</td>
<td>2.85&quot;</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.

---

APPROVAL

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

DETAIL NO. SUP-JT(MJ)-202 SHEET 1 OF 1

SUPER-ROADWAY JOINTS

DATE: 1/17/1997

VERSION 1.0
**SUPER-ROADWAY JOINTS**

**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 slab to remain.
2. Existing anchorage system for joint, not shown.
3. Field vulcanize seal at gutter line, and field weld roadway and walkway angles, with 1/6" fillet weld.
4. Extend leg of new roadway angle and seal 9" past gutter line.
5. 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.

**ALTERNATE TO WALKWAY ANGLE**

**Scale: None**

Field vulcanize seal at gutter line, and field weld roadway and walkway angles, with 1/6" fillet weld.

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

**Compression Seal Table**

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

**ALTERNATE TO WALKWAY ANGLE**

**Scale: None**

- Flame cut existing plate using oxygen and mapp and automatic cutting equipment, See Special Provisions.
- Field vulcanize seal at gutter line, and field weld roadway and walkway angles, with 5/16" fillet weld.
- Extend leg of new roadway angle and seal 9" past gutter line.
- 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.

**Modification at Walkway**

- Saw cut top to be capped with segment of same seal as in parapet joint placed as in roadway joint, and securely fastened to main seal in shop.
- Seal with adhesive.
- Cut out and seal with adhesive to make bend.
- Terminate angle at this point.

*If this requires a seal larger than 6", then a flat continuous filler strip of sufficient thickness to keep seal in compression shall be used. Strip to be same material, width and height of seal and shall be firmly attached with adhesive to seal and concrete.*

**COMPRESSION SEAL TABLE**

<table>
<thead>
<tr>
<th>Location</th>
<th>Uncompressed Seal Width</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 1/4&quot;</td>
<td>1 1/6&quot;</td>
<td>1 1/6&quot;</td>
<td>1 1/6&quot;</td>
<td>1 1/6&quot;</td>
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<td>3&quot;</td>
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<td>1 1/6&quot;</td>
<td>1 1/6&quot;</td>
<td>1 1/6&quot;</td>
<td>1 1/6&quot;</td>
<td>1.25&quot;</td>
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<td>2.50&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>3 5/6&quot;</td>
<td>3 5/6&quot;</td>
<td>3 5/6&quot;</td>
<td>3 5/6&quot;</td>
<td>3 5/6&quot;</td>
<td>2.85&quot;</td>
</tr>
</tbody>
</table>
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.

Note:

- Existing slab to remain.
- All gutter line splices of seal, if possible, shall be shop fabricated; all others may be field splices.
- 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.

Roadway Seal

Top to be capped with segment of same seal as in parapet 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.

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.)

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

Face of parapet

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

Saw cut (only as deep as is necessary to place seal material).
Notes:
1. New bridge details shown.
2. See Standard 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 retaining angles as a unit.

All horizontal studs shall be bent as shown, after welding.

L 3/8" Vent holes @ 1'-0" c/c (as close to vertical leg as possible). 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.

Ship and erect seal retaining angles as a unit.

4" x 1/2" strap anchor welded to each stringer.

Clip Angle shall be 7" x 4" x 1/2" unless skew angle etc., require a larger angle modified to provide minimum overlap.

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

Top of Roadway.

Scale: 1" = 1'-0"
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 911.01.
- Fusion bonded epoxy powder coatings for steel shall conform to 917.02.
- Catch basins shall be fiberglass conforming to 921.01.*
- 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.
DRAINAGE TROUGH LAYOUT

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

C Catch basin

Drainage trough (shown shaded)

1/4"/ft. 1/4"/ft.

20'-0" Max. 20'-0" Max.

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.

SECTION C-C

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

Note:
Designer shall detail exact location of troughs and downspouts on Contract Drawings.

ANCHOR STRAP DETAIL

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

1/2" Typ.

5/8" dia. hole

1'-0"

Abutment

Slope protection

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

1/4" x 3" stainless steel anchor strap. Place as necessary (3'-0" c/c max.) Secure to abutment with 1/2" stainless steel bolts and drilled epoxy coated inserts. See detail below.

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

SUPER-ROADWAY JOINTS

CATCH BASIN LOCATION DETAILS

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.

SECTION C-C

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

Note:
Designer shall detail exact location of troughs and downspouts on Contract Drawings.

ANCHOR STRAP DETAIL

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

1/2" Typ.

5/8" dia. hole

1'-0"

Abutment

Slope protection

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

1/4" x 3" stainless steel anchor strap. Place as necessary (3'-0" c/c max.) Secure to abutment with 1/2" stainless steel bolts and drilled epoxy coated inserts. See detail below.

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

SUPER-ROADWAY JOINTS

CATCH BASIN LOCATION DETAILS

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.

SECTION C-C

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

Note:
Designer shall detail exact location of troughs and downspouts on Contract Drawings.

ANCHOR STRAP DETAIL

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

1/2" Typ.

5/8" dia. hole

1'-0"

Abutment

Slope protection

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

1/4" x 3" stainless steel anchor strap. Place as necessary (3'-0" c/c max.) Secure to abutment with 1/2" stainless steel bolts and drilled epoxy coated inserts. See detail below.
**DRAINAGE TROUGH CATCH BASIN**

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

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

**SECTION A-A**
Scale: 1/2" = 1'-0"

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

---

**STATE OF MARYLAND**

**DEPARTMENT OF TRANSPORTATION**

**OFFICE OF STRUCTURES**

**DRAINAGE TROUGH CATCH BASIN - TYPE A**

**DETAILS**

**VERSION**

1.0

**DETAIL NO.** SUP-JT(DT)-101

**SHEET 3 OF 5**
DRAINAGE TROUGH CATCH BASIN - TYPE B

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

ELEVATION

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

SECTION B-B

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

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

**Detail No. SUP-JTODT-101**
**SUP-JT(DT)-101**

**DEPARTMENT OF TRANSPORTATION**

**STATE HIGHWAY ADMINISTRATION**

**OFFICE OF STRUCTURES**

**STATE OF MARYLAND**

**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.*